

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN (AUTONOMOUS) THANJAVUR-613007
DEPARTMENT OF TAMIL – BA TAMIL 2018

Sem	Part	Code	Subject code	Title of the paper	Inst. Hrs.	Credit	Exa m. Hrs.	Marks		Total
								ஆண்கள்	பெண்கள்	
I	I	என்1	18லு1எ1	எச (ஐதக ஐஸக) சயுக , ஐஸக ஃரஸ , பஸ்டு	6	3	3	25	75	100
	ஊ	என்2	18லு1எ1	English Made Easy - I	6	3	3	25	75	100
	ஊ	என்1	18லு1எ01	ஐதக ஐஸக	6	5	3	25	75	100
		என்2	18லு1எ02	ஐஸக தயு	6	5	3	25	75	100
		புள்1	18லு1எபுள்1	தயு ஐஸக ஃரஸ	4	3	3	25	75	100
	ஊ	என்	18லு1எ	Value Education	2	2	3	25	75	100
Total					30	21		150	450	600
II	ஊ	என்2	18லு2எ2	எச (ஐஸக ஐஸக) புதக , தயு புதக கஸ , ஐஸக ஃரஸ	6	3	3	25	75	100
	ஊ	என்2	18லு2எ2	English Made Easy - II	6	3	3	25	75	100
	ஊ	என்3	18லு2எ03	தயு ஐஸக	6	5	3	25	75	100
		என்4	18லு2எ04	ஐஸக ஃரஸ	6	5	3	25	75	100
		புள்2	18லு2எபுள்2	தயு	4	3	3	25	75	100
	ஊ	என்	18லு2எ	Environmental Studies	2	2	3	25	75	100
Total					30	21		150	450	600
III	ஊ	என்3	18லு3எ3	எச (தயு) உரைநடை, அயு யு, ஐஸக ஃரஸ	6	3	3	25	75	100
	ஊ	என்3	18லு3எ3	Fluency in English - I	6	3	3	25	75	100
	ஊ	என்5	18லு3எ05	அறு ஐஸக	6	5	3	25	75	100
		என்6	18லு3எ06	தயு ஐஸக	6	5	3	25	75	100
		புள்3	18லு3எபுள்3	யுக	4	3	3	25	75	100
	ஊ	என்1	18லு3எஎன்01	பஸ்டு தயு	2	2	3	25	75	100
ஊ	என்	18லு3எ	தயு ஐஸக	-	5	3	-	-	100	
Total					30	21		150	450	600
IV	என்4	18லு4எ4	எச (பஸ்டு ஐஸக) ஐஸக ஃரஸ தயு, ஐஸக	6	3	3	25	75	100	
	என்4	18லு4எ4	Fluency in English - II	6	3	3	25	75	100	
	என்7	18லு4எ07	தயு	5	5	3	25	75	100	
	என்8	18லு4எ08	யுபயுபயு	5	5	3	25	75	100	
	புள்4	18லு4எபுள்4	தயு ஃரஸ, பஸ்டு	4	3	3	25	75	100	
	என்2	18லு4எஎன்02	ஐஸக தயு	2	2	3	25	75	100	
	என்	18லு4எஎன்	Life Skills	2	2	3	25	75	100	
என்	18லு4எஎன்	தயு, பஸ்டு, அயு	-	5	3	-	-	100		
Total					30	23		175	525	700
V	என்9	18லு5எ09	தயு	7	6	3	25	75	100	
	என்10	18லு5எ10	தயு	6	5	3	25	75	100	
	என்11	18லு5எ11	தயு	6	5	3	25	75	100	
	என்1	18லு5எஎன்1	தயு	5	4	3	25	75	100	
	என்2	18லு5எஎன்2	office management	2	2	3	25	75	100	
	என்3	18லு5எஎன்3	தயு தயு	2	2	3	25	75	100	
	என்	18லு5எஎன்	Soft skill Development	2	2	3	25	75	100	
Total					30	28		175	450	700
VI	என்12	18லு6எ12	தயு	5	5	3	25	75	100	
	என்13	18லு6எ13	தயு	5	5	3	25	75	100	
	என்14	18லு6எ14	தயு	5	4	3	25	75	100	
	என்15	18லு6எ15	தயு, பஸ்டு	4	4	3	25	75	100	
	என்2	18லு6எஎன்2	தயு	5	4	3	25	75	100	
	என்3	18லு6எஎன்3	தயு	5	3	3	25	75	100	
	என்	18லு6எஎன்	தயு (தயு, தயு, தயு)	1	1	3	25	75	100	
	என்	18லு6எஎன்	தயு	-	1					
Total					30	28		175	475	700
Grant Total					180	140		975	2800	3900



K.N.Govt. Arts College(W) Autonomous, Thanjavur – 7.
M.A./M.Sc./M.Stat./M.Com./..... Course Structure CBCS
 (For candidates Admitted from the academic year 2018 – 2019 onwards)

Sem.	Code	Subject code	Title of the paper	Hrs.	credit	Exam.	Marks		Total
							ஹாஜ்மி.	சிம	
I	எீஎீஹூ	18லுஶீண்1வீ01	ஶுக்க ஶுலக்க - I	6	5	3	25	75	100
	எீஎீ2	18லுஶீண்1வீ02	ஶுக்க ஶுலக்க - II	6	5	3	25	75	100
	எீஎீ3	18லுஶீண்1வீ03	அற ஶுலக்க	6	5	3	25	75	100
	எீஎீ4	18லுஶீண்1வீ04	ஶுதாஸகா ஶுமுத்தத	6	5	3	25	75	100
	ஸியசி1	18லுஶீண்1வீசிஸிவீ1	சுறதஶு	6	4	3	25	75	100
			Total	30	24	15	125	375	500
II	CC5	18லுஶீண்2வீ05	பக ஶுலக்க	6	5	3	25	75	100
	CC6	18லுஶீண்2வீ06	காபபாட	6	5	3	25	75	100
	CC7	18லுஶீண்2வீ07	ஶுதாஸகா ஶுசாஸலத	6	5	3	25	75	100
	எீஎீ8	18லுஶீண்2வீ08	ஶயாஸுய	6	5	3	25	75	100
	MBE2	18லுஶீண்2வீசிஸிவீ2	உஸரயாசுர	6	4	3	25	75	100
	SS1	18லுஶீண்2ஹீவீ1	ஶுசாஸுப கஸல	-	5	3			100
			Total	30	24	15	125	375	500
III	CC9	18லுஶீண்3வீ09	ஶுதாஸகா ஶுபாருஶாத (ஶு - - - 5 ஶு - - -)	6	4	3	25	75	100
	CC10	18லுஶீண்3வீ10	ஶயாஸுயஶுப	6	4	3	25	75	100
	CC11	18லுஶீண்3வீ11	சாஶ ஶுலக்க	6	4	3	25	75	100
	MBE3	18லுஶீண்3வீசிஸிவீ3	அயுஶ து	6	4	3	25	75	100
	MBE4	18லுஶீண்3வீசிஸிவீ4	ஶுபபாஸக	6	4	3	25	75	100
	SS2	18லுஶீண்3ஹீவீ2	துஸரயா ஶுரஸ	-	5	3			100
			Total	30	20	15	125	375	500
IV	CC12	18லுஶீண்4வீ12	ஶுதாஸகா ஶுபாருஶாத (ஶு - - - நானக ஶு - - -)	6	4	3	25	75	100
	CC13	18லுஶீண்4வீ13	ஶுபபாருஶ உஸ ஶுசுமஶு	6	4	3	25	75	100
	CC14	18லுஶீண்4வீ14	ஆராய ஶுறயு	6	5	3	25	75	100
	MBE5	18லுஶீண்4வீசிஸிவீ5	துயாஸுய ஶுரஸ	6	4	3	25	75	100
	Project work	18லுஶீண்4வீ15 ஶீண்ஶீ	துடட கடடு Project	6	5	3			100
			Total	30	22	15	125	375	500
			Grant Total	120	90		500	1425	2000

செய்யுள் (இக்கால இலக்கியம்)
சிறுகதை - இலக்கிய வரலாறு பயன்முறைத் தமிழ்

பருவம் - ஐ டூ1 கற்பித்தல் : 6 தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு1வு1
நோக்கம் - இக்காலக் கவிஞர்களின் தமிழுணர்வு, நாட்டுப்பற்று, சமூகச் சிந்தனை மிக்க
படைப்புகளை அறிமுகப்படுத்துதல்.

பயன்கள் - வாழ்வினை மேம்படுத்தும் படைப்புகளை மாணவியர் அறியும் விதமாக
உணர்த்துதல்.

அலகு -1 - மரபுக்கவிதைகள்

1. பாரதியார் கவிதைகள்
 1. நாட்டு வணக்கம்
 2. உபதேசம்
- பாரதிதாசன் கவிதைகள்
 1. தமிழ் வளர்ச்சி
 2. இயற்கைச் செல்வம்
 3. கொட்டு முரசே
2. நாமக்கல் கவிஞர் பாடல்கள் - சமுதாயமலர்
3. பட்டுக்கோட்டைக் கல்யாணசுந்தரம் - உப்புக்கல்லை வைரம் என்று சொன்னால்

அலகு - 2 - புதுக்கவிதைகள்

1. இன்குலாப் - காந்தள் நாட்கள்
 - (அ) ஒரு பூவின் தன் வரலாறு
 - (ஆ) கண்ணீர்க் கோடு
2. சக்தி ஜோதி - கடலோடு இசைத்தல்
 - (அ) கிளி புராணம்
 - எனக்கான ஆகாயம்
 - (ஆ) வேங்கை இருந்த நிலம்
3. கதிர்பாரதி - மெசியாவுக்கு மூன்று மச்சங்கள்
 - (அ) உன் பாசாங்குக்கும், பசப்புகளுக்கும் மயங்கியிருக்கும் நிலம்.

அலகு - 3 -சிறுகதைத் தொகுப்பு-தமிழ்த்துறை வெளியீடு(கு.நா.அ.ம.கல்லூரி, தஞ்சாவூர்)

அலகு - 4 - பயன்முறைத் தமிழ்

1. வலிமிகுதலும், மிகாமையும்
2. வாக்கிய வகைகளும், அமைக்கும் முறைகளும்
3. பிழையான சொற்களையும், தொடர்களையும் திருத்துதல்

அலகு - 5 - தமிழ் இலக்கிய வரலாறு

1. மரபுக்கவிதை, புதுக்கவிதை, சிறுகதை, நாவல், உரைநடை

பார்வைநூல்கள்

1. மு. வரதராசனார்
2. தமிழண்ணல்
3. சுபர் சந்திரபோஸ்
4. ஆனந்தன்

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

இக்கால இலக்கியம்

பருவம் - ஐ ஊஊ1கற்பித்தல் : 6 தரப்புள்ளி : 5பாடக்குறியீட்டு எண் : 18மு1வு01
நோக்கம்: தற்கால இலக்கிய வடிவங்களையும், உள்ளடக்கம் மற்றும் உத்திகளையும்
அறிமுகம் செய்தல்.

பயன்கள்: படைப்பாளிகளின் சமூகச்சிந்தனையை உள்வாங்கி மாணவர்கள், தம் சிந்தனை
ஆற்றலை வெளிக்கொணர்தல்.

அலகு 1 :

பாரதியார் கவிதைகள் (5)

1. பாரத தேசம்
2. பாரத ஜனங்களின் தற்கால நிலை
3. செந்தமிழ்நாடு
4. தமிழ்
5. பெண்கள் விடுதலைக் கும்மி

பாரதிதாசன்

1. சஞ்சீவி பருவத்தின் சாரல்

அலகு 2 :

1. யூமாவாசுகி (என் தந்தையின் வீட்டைச் சந்தையிடமாக்காதீர்...3, 19)
2. யுக பாரதி (உறுத்துவன, தோட்டக்காரன்...)
3. பா. விஜய் (நான், கடவுளின் காதலி..)
4. சினேகன் (தஞ்சை தமிழர் அடையாளம், உன்னை நீ நம்பு)
5. கவிபாஸ்கர் (நத்தாங்கூடு, பட்டினியாய்ப் பத்தாயம்)
6. புனிதா கணேசன் (பொய்மையும் வாய்மையிடத்து... பூப்பதெப்படி?)
7. கிருணப்பிரியா (அருபப் புலம்பல்கள்.. அரங்கேற்றம்...)
8. பு. இந்திராகாந்தி (மழை...உனெக்கென ஒரு சிறகு...)
9. மு.வேம்பு (நேரம், சோலையே நீங்கள்தான்...)
10. பொ. திராவிடமணி (செடியேற்கா மலர்கள்... சில கேள்விகள்...)
11. ம. கண்ணம்மாள் (வேட்கை... அன்பை நடும் பெண்)
12. தி. ஹேமலதா (நெற்களஞ்சியம்... மெல்ல.. மெல்லப்.. புலனாகி) -(22)

அலகு 3 :

மேலாண்மை பொன்னுசாமி சிறுகதை

- (மின்சாரப் பூ (கங்கைப் புத்தக நிலையம் சென்னை -17) முதல் ஐந்து கதைகள்)

அலகு 4 :

கண்ணதாசன் ரத்த ப்பங்கள், கண்ணதாசன் பதிப்பகம்,சென்னை. 7

அலகு 5 :

ரா. கனகலிங்கம் - என் குருநாதர் பாரதியார், அகரம் 01, நிர்மலாநகர், தஞ்சாவூர்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

இலக்கியத் திறனாய்வு

பருவம் - ஐ ஊஊ2கற்பித்தல் : 6 தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு1வு02

நோக்கம்: தற்கால இலக்கிய வடிவங்களையும், வகைகளையும் மற்றும் இலக்கியக் கொள்கைகளையும் அறிமுகம் செய்தல்.

பயன்கள்: படைப்பாளிகளின் படைப்புச் சிந்தனையை உள்வாங்கி மாணவர்கள், தம் சிந்தனை ஆற்றலை வெளிக்கொணர்தல்.

அலகு - 1 இலக்கிய விளக்கம் - இலக்கியக் கொள்கைகள் - திறனாய்வு விளக்கம் - திறனாய்வுச் சிந்தனைகள் - திறனாய்வாளர் தகுதிகள் - இலக்கிய ஆராய்ச்சி - முன்னோடி ஆராய்ச்சியாளர்கள்.

அலகு - 2 திறனாய்வு வகைகள் - முடிவுமுறை - பாராட்டுமுறை - செலுத்துநிலை - வரலாற்றுமுறை - ஒப்பீட்டுமுறை - பகுப்புமுறை - மொழியியல் விளக்கமுறை - மதிப்பீட்டுமுறை - மூலப்பாடத் திறனாய்வு.

அலகு - 3 இலக்கிய இயக்கங்கள் - நடப்பியல் - நவீனத்துவம் - பின் நவீனத்துவம் - அமைப்பியல் - பின் அமைப்பியல் - பெண்ணியம் - தலித்தியம் - மார்க்சியம் - உளவியல்.

அலகு - 4 புனைகதை தோற்றமும் வளர்ச்சியும் - சிறுகதை அமைப்பு - சிறுகதைக்கூறுகள் - உள்ளடக்கம் - கதைப்பின்னல் தொடக்கம் - முடிவு - சிறுகதை உத்திகள் - நோக்குநிலை - பின்னணி குறியீடு நடை - சிறுகதைத் திறனாய்வுகள்.

அலகு - 5 யாப்பிலக்கணம் - பாரதி முதலான மரபுக்கவிஞர்கள் - மரபுக்கவிதைக் கூறுகள் - புதுக்கவிதை விளக்கம் - புதுக்கவிதை படைத்த கவிஞர்கள் - புதுக்கவிதைத் திறனாய்வுகள்.

பாடநூல் : இலக்கியத் திறனாய்வியல் - ஓர் அறிமுகம் - பகுதி 1 முதற்பதிப்பு ஏப்ரல் - 2012. முனைவர் இரா. சாவித்திரி.

பார்வை நூல்கள்:

1. இலக்கியக் கலை - அ.ச. ஞானசம்பந்தன்
 2. இலக்கியக் கொள்கையும் இசங்களும் - சுப்பையா
 3. இலக்கியத் திறனாய்வு வகைகள் - தி. நடராஜன்
 4. இலக்கிய மரபு - மு. வரதராசனார்
 5. இலக்கியத்திறன் - மு. வரதராசனார்
- (அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தமிழ் இலக்கிய வரலாறு

பருவம்-ஐ யுன1 கற்பித்தல் : 4தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு1வுயுவு1

நோக்கம்:தமிழ் இலக்கிய நூல்களின் தோற்றம், வளர்ச்சி ஆகியனவற்றைக் கற்பித்தல்.

தமிழ் இலக்கியங்களின் வடிவ, உள்ளடக்க மாற்றங்களைத் தெளிவுபடுத்துதல்.

பயன்கள் : தமிழ் இலக்கியங்கள் காலந்தோறும் தோன்றி வளர்ந்த வரலாற்றை அறிவர்.

இலக்கியங்களுக்கும் அரசியல் வரலாற்றுக்கும் இடையே உள்ள உறவை அறிவர்.

அலகு - 1

சங்கம் பற்றிய செய்திகள் - முதல் - இடை - கடைச்சங்கங்கள் - சங்க இலக்கியங்கள் - பத்துப்பாட்டும் எட்டுத் தொகையும்.

அலகு - 2

சங்கம் மருவிய கால இலக்கியங்கள் - இரட்டைக் காப்பியங்கள் - பதினெண்கீழ்க் கணக்கு நூல்கள்.

அலகு - 3

ஐம்பெருங்காப்பியங்கள் - ஐஞ்சிறு காப்பியங்கள் - கம்பராமாயணம் - பெரியபுராணம் - சீறாப்புராணம் - தேம்பாவணி.

அலகு - 4

பக்தி இலக்கியங்கள் - சிற்றிலக்கியங்கள் - பிள்ளைத்தமிழ் - கலம்பகம் - உலா - தூது - அந்தாதி - தனிப்பாடல்கள்.

அலகு - 5

தற்கால இலக்கியங்கள் - மரபுக்கவிதை - புதுக்கவிதை - உரைநடை - சிறுகதை - புதினம் - நாடகம் - கட்டுரை - இலக்கியம்.

பாடநூல் : 1.தமிழ்இலக்கிய வரலாறு - ச.சுபாஸ்சந்திரபோஸ்

2.தமிழ்இலக்கிய வரலாறு -பு.இந்திராகாந்தி - பொ.திராவிடமணி

பார்வை நூல்கள்:

1. தமிழ் இலக்கிய வரலாறு - மு. வரதராசனார்
2. தமிழ் இலக்கிய வரலாறு - தமிழண்ணல்
3. தமிழ் இலக்கிய வரலாறு - மது. சா. விமலாநந்தன்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

செய்யுள் (இடைக்கால இலக்கியம்)
புதினம், தமிழில் பிறசொற்கலப்பு, இலக்கிய வரலாறு

பருவம்-ஐஐ ஓஊ2கற்பித்தல் : 6 தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு2வு2

நோக்கம் - சமய இலக்கியங்களின் வழி ஆன்மீகச் சிந்தனையை வளர்த்தல். மனம், மொழி, மெய் இவற்றை நல்லாற்றுப்படுத்துதல்.

பயன்கள் - சமய இலக்கியங்களின் வழி சமூக ஒருமையை நிலைநிறுத்துதல்.

அலகு - 1

திருஞானசம்பந்தர் தேவாரம் - திருநாகேச்சரம் பதிகம்

“பொன்னேர் தரும் மேனியனே தொடங்கி

கலமார் கடல்கூழ் காழியார் கோன் வரையிலான”- 11 பாடல்கள்.

திருநாவுக்கரசர் தேவாரம் - “திருக்கச்சி ஏகம்பம் பதிகம்”

கரவாடும் வன்னெஞ்சர்க்கு அரியானைக் கரவார்பால் தொடங்கி

அடுத்தானை உரித்தானை அருச்சுனற்குப் பாசுபதம் வரை - 11 பாடல்கள்.

பூதத்தாழ்வார் பாடல்கள் - 2251 - 2260 வரை

திருத்தஞ்சை மாமணிக்கோயில் பாடல்கள் (பாசுரங்கள்) தமருள்ளம் தஞ்சை தலையரங்கம் தண்கால் தொடங்கி முதல் பின்னின்று தாயிரப்பக் கேளான் பெரும்பனைத்தோள் வரையிலான - 10 பாடல்கள்.

திருப்பாணாழ்வார் அருளிச்செய்த அமலன் ஆதிபிரான் முழுவதும்

அலகு - 2

தமிழ்விடுதாது இருந்தமிழே உன்னாலிருந்தேன் எனத் தொடங்கி அப்பனியால் வாடாதே என்று முடியும் கண்ணி வரை - 10 கண்ணிகள்.

குற்றாலக்குறவஞ்சி- சிங்கனும் சிங்கியும் எதிர்த்துரையாடல் இத்தனை நாளாக என்னுடன் சொல்லாமல் தொடங்கி குட்டத்து நாட்டாரும் காயாங் குளத்தாரும் இட்ட சவடியடியா சிங்கா வரையிலான - 22 கண்ணிகள்.

அலகு - 3

தமிழில் பிறசொற்கலப்பு- தமிழில் பிறசொற்கள் புகுந்த விதம், தெலுங்குச் சொற்கள், கன்னடச் சொற்கள், அரபுச் சொற்கள், பாரசீகச் சொற்கள், சமஸ்கிருதச் சொற்கள், ஆங்கிலச் சொற்கள்.

அலகு - 4

நாவல் “பயிர் முகங்கள்” முனைவர் ச. சுபர்சந்திரபோஸ்,

அலகு – 5

தமிழ் இலக்கிய வரலாறு – பக்தி இலக்கியங்களின் தோற்றம், பன்னிரு திருமுறைகள், நாலாயிர திவ்யப் பிரந்தம், சிற்றிலக்கியங்கள்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

நன்னூல் எழுத்ததிகாரம்

பருவம்-ஐஐ ஊஊ3 கற்பித்தல் : 6 தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு2வு03

நோக்கம் : தமிழின் அடிப்படைப்பயிற்சி இலக்கணமான நன்னூல் மூலம் எழுத்திலக்கணப் போக்கை அறிந்து கொள்ளுதல்.

பயன் : எழுத்திலக்கணக் கூறுகள் மற்றும் சொற்றொடர் அமைப்பைத் தெளிவாக அறிதல். பிற தமிழிலக்கணப் பரப்புகளுக்கு எழுத்திலக்கணம் அடிப்படையாக இருத்தலை உணர்தல்.

அலகு – 1

பாயிரம் சிறப்புப்பாயிரம் - பொதுப்பாயிரம்.

அலகு – 2

எழுத்தியல்

அலகு – 3

பதவியல்

அலகு – 4

உயிரீற்றுப் புணரியல்

அலகு – 5

மெய்யீற்றுப் புணரியல், உருபுபுணரியல்

பாடநூல் : நன்னூல் காண்டிகையுரை

பார்வை நூல்கள்: நன்னூல் மூலமும் சிவஞான முனிவர் விருத்தியுரையும்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

இலக்கணவரலாறு

பருவம்-ஐஐ ஊஊ4 கற்பித்தல் : 6 தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு2வு04

நோக்கம்: தமிழை முதன்மைப் பாடமாகக் கொண்டு பயிலும் மாணவர்கள் தமிழ் இலக்கண வரலாறு பற்றிய முழுமையான அறிவைப் பெறும் வகையில் இப்பாடம் உருவாக்கப்பட்டுள்ளது.

பயன் : மாணவர்கள் இலக்கண வரலாற்று அறிவு பெறுதல்.

அலகு - 1 இலக்கணம் - விளக்கம், இலக்கியமும் இலக்கணமும் - இலக்கணத் தோற்றம் - இலக்கண வகைகள் - எழுத்து, சொல், பொருள், யாப்பு, அணி, ஐந்திலக்கண நூல்கள்.

அலகு - 2 அகத்தியம் - தொல்காப்பியம், இறையனார் களவியல் - பன்னிருபடலம் - புறப்பொருள் வெண்பாமாலை - வீரசோழியம் - நன்னூல் - நேமிநாதம் - இலக்கண விளக்கம் - தொன்னூல் விளக்கம் - சுவாமிநாதம் - முத்துவீரியம்.

அலகு - 3 அகப்பொருள் விளக்கம் - மாறனகப் பொருள் - களவியல் காரிகை - தமிழ்நெறிவிளக்கம் - பன்னிருபாட்டியல் - வெண்பா பாட்டியல் - நவநீதப்பாட்டியல் - வரையறுத்த பாட்டியல் - சிதம்பரப்பாட்டியல்.

அலகு - 4 இடைக்கால யாப்பிலக்கண நூல்கள் - யாப்பருங்கலம் யாப்பருங்கல விருத்தி - யாப்பருங்கலக் காரிகை - காக்கைப் பாடினியம் - சிதம்பரச்செய்யுட்கோவை - இடைக்கால அணி இலக்கண நூல்கள் - தண்டியலங்காரம் மாறனலங்காரம் - விசாகப் பெருமாள் அணி இலக்கணம்.

அலகு - 5 நிகண்டுகள் - சேந்தன் திவாகர நிகண்டு - பிங்கல நிகண்டு - உரிச்சொல் நிகண்டு - சூடாமணி நிகண்டு - அகராதி நிகண்டு - உரைநடையில் அமைந்த இலக்கண நூல்கள் - மொழி வளர்ச்சிக்கு இலக்கணப் பங்களிப்பு.

பாட நூல்: புலவர் இரா. இளங்குமரன், இலக்கண வரலாறு.

மணிவாசகர் பதிப்பகம், 31, சிங்கர் தெரு, பாரிமுனை, சென்னை.

பார்வை நூல்: 1. சோம. இளவரசு - இலக்கண வரலாறு.

2. சரளா ரங்கநாதன், தமிழ்அகராதிகளின் வளர்ச்சிப் போக்கும் அமைப்பு வேறுபாடும்.

3. பெ.மாதையன் - அகராதியியல்.

4. பெ.மாதையன் - நிகண்டு

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

நாட்டுப்புறவியல்

பருவம்-ஐஐ யுஐ2 கற்பித்தல் : 4 தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு2வுயுவு2

நோக்கங்கள்: நாட்டுப்புறவியல் துறையை அறிமுகம் செய்தல்.நாட்டுப்புறவியல் துறை ஆய்வுகளை ஊக்குவித்தல்.

பயன்கள்:தமிழர் பண்பாட்டின் சிறப்பினை உணர்தல்.நாட்டுப்புற ஆய்வுகளில் ஈடுபடுதல்.

அலகு – 1

நாட்டுப்புறவியல் விளக்கம் - உலக அளவில் வாய்மொழி இலக்கிய ஆய்வுகள், தமிழக நாட்டுப்புற இலக்கியத் தொகுப்பும் ஆய்வும் - ஆய்வு வளர்ச்சி – தமிழ் இலக்கியங்களில் நாட்டுப்புற இலக்கியத்தின் செல்வாக்கு.

அலகு – 2

நாட்டுப்புற பாடல்களின் வகைப்பாடு – தாலாட்டுப்பாடல்கள் - குழந்தைப் பாடல்கள் - விளையாட்டுப் பாடல்கள் - காதல் பாடல்கள் - தொழில் பாடல்கள் - பக்திப் பாடல்கள் - ஒப்பாரிப்பாடல்கள்.

அலகு – 3

நாட்டுப்புற கதைப்பாடல்கள் - தமிழ்க் கதைப்பாடலின் தோற்றமும் வளர்ச்சியும் - கதைப் பாடலின் அமைப்பு – கதைப்பாடலின் வகைகள் - கதைப் பாடலின் அடிக்கருத்துகள் - முத்துப் பாட்டன் கதை – கிராம பையன் அம்மாளை.

அலகு – 4

பழமொழி விளக்கம் - வகைப்பாடுகள் - அமைப்புகள் - விடுகதை விளக்கம் - வகைப்பாடுகள் - அமைப்புகள் - விடுகதை பழமொழி வேறுபாடு.

அலகு – 5

நாட்டுப்புற நம்பிக்கைகள் - குழந்தைப்பிறப்பு – திருமணம் - சமயம் - மந்திரம் - சகுனம் பற்றிய நம்பிக்கைகள் - சிறுதெய்வ வழிபாட்டு முறைகள்.

பாடநூல் : சு. சக்திவேல் - நாட்டுப்புறவியல் - ஓர் அறிமுகம்

பார்வை நூல்கள் :

1. மு. இளங்கோவன் : நாட்டுப்புறவியல். வயல்வெளி பதிப்பகம், இடைக்காட்டு
உள்கோட்டை, கங்கைகொண்ட சோழபுரம், அரியலூர் - 1.
2. சு. சண்முகசுந்தரம்: நாட்டுப்புறவியல், மணிவாசகர் பதிப்பகம், சிதம்பரம்.
3. ஆ. இராமநாதன்: தமிழில் புதிர்கள், சமுதாயச் சிற்பிகள் வெளியீட்டகம்,
மஞ்சக்கொல்லை, புவனகிரி.
4. ச.வே. சுப்பிரமணியம்: தமிழில் விடுகதைகள், உலகத் தமிழாராய்ச்சி நிறுவனம்,
சென்னை - 1
5. ஆறு. இராமநாதன் : நாட்டுப்புறப் பாடல்கள் காட்டும் தமிழர் வாழ்வியல்
6. இளங்கோவன் : தமிழில் பழமொழிகள்
7. தே.லுார்து : நாட்டார் வழக்காற்றியல் சில அடிப்படைகள்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

செய்யுள் (காப்பியங்கள்) உரைநடை, அலுவல்முறை மடல்கள்
தமிழ் இலக்கிய வரலாறு.

பருவம்-ஐஐஐஐ ௫௨3 கற்பித்தல் : 6 தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு3வு3

நோக்கம்: 1. காப்பிய இலக்கியச் சிறப்பினைப் பயிற்றுவித்தல்
2. அலுவலகக் கடிதங்களைத் திறம்பட எழுதப்பயிற்றுவித்தல்.

பயன்கள்: 1. தமிழ் இலக்கியங்களையும் பல்வேறு அறிஞர்களின் உரைநடைச் சிறப்புகளையும் அறிதல்.
2. ஆட்சி மொழிச் சொற்களைப் பயன்படுத்தவும் தமிழில் அலுவலகக் கடிதங்களை எழுதவும் கற்றுக் கொள்ளுதல்.

அலகு – 1 சிலப்பதிகாரம் - கானல் வரி
மணிமேகலை - மலர்வனம் புக்க காதை
சீவகசிந்தாமணி - சுரமஞ்சரி இலம்பகம்

அலகு – 2 கம்பராமாயணம் - சுந்தர காண்டம் - இலங்கை எரியூட்டும் படலம்
பெரியபுராணம் - திருநாளைப் போவார் புராணம்.
பெருங்கதை - கரடு பெயர்ந்தது.

அலகு –3 உரைநடை - கனவும் கற்பனையும்
1, 2, 3, 4, 5, 6, 13, 15, 16 பேராசிரியர் பி. விருத்தாசலம்

அலகு – 4 அலுவல்முறைக் கடிதங்கள் ஆட்சிமொழிச் சொற்களை அறிதல், ஆட்சி
மொழிச் சொற்கள் இணைப்பு (100 சொற்கள்).

அலகு – 5 இலக்கிய வரலாறு – காப்பியங்கள், ஐம்பெருங்காப்பியங்கள், பெருங்கதை,
ஐஞ்சிறுகாப்பியங்கள், புராணங்கள்.

பார்வை நூல்கள்:

1. தமிழ் இலக்கிய வரலாறு - மு. வரதராசனார்.
2. நல்ல தமிழ் எழுத வேண்டுமா? - அ.கி. பரந்தாமனார்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

அற இலக்கியம்

பருவம்-ஐஐஐஐ ஊஊ5 கற்பித்தல் : 6தரப்புள்ளி : 5பாடக்குறியீட்டு எண் : 18மு3வு05

நோக்கம்: சிறப்பான வாழ்க்கைக்குக் கடைப்பிடிக்க வேண்டிய நல்வழிகளை (நீதிகளை) மாணவர்கள் அறியச் செய்தல்

பயன்கள்: பழந்தமிழர் காட்டும் நீதிநெறிகளை அறிதல்
அற இலக்கியங்களின் சிறப்பினை உணர்தல்.

அலகு - 1 திருக்குறள் - அறத்துப்பால் - முதல் 10 அதிகாரங்கள்.

பொருட்பால் - இறைமாட்சி முதல் வலியறிதல் முடிய 10 அதிகாரங்கள்.

குடி(அதி.96) மானம்(அதி97), உழவு,(அதி.104) நல்குரவு,(அதி.105)கயமை((அதி.108)

இன்பத்துப்பால் - காதற்சிறப்புரைத்தல், (அதி.113) பிரிவாற்றாமை(அதி.116)

அலகு - 2 நாலடியார் - அவையறிதல் 10 பாடல்கள், பெருமை 10 பாடல்கள்.

பழமொழி - 14. நட்பின் இயல்பு (10 பாடல்கள்,). 33. ஈகை (10 பாடல்கள்,)

அலகு - 3 நான்மணிக்கடிகை - 11. கன்றாமை, 14. வளப்பாத்தியுள், 20. மனைக்குப்பாழ்.

47. மழையின்றி, 92. இளமைப்பருவத்துக்...

திரிகடுகம் - 1 முதல் 5 பாடல்கள்

ஆசாரக்கோவை - 2. பிறப்பு..., 15. ஐம்பூதம்..., 18. நீராடிக்..., 20.

உண்ணுங்கா...,27. இழியாமை..

ஏலாதி - 3. தவமெளிது..., 4. இடர்தீர்த்த..., 5. தனக்கென்று..., 6. நிறையுடைமை.,

9. கற்றாரைக்...

அலகு - 4 இன்னாநாற்பது - 32 முதல் 41 முடிய (10),

இனியவைநாற்பது - 21 முதல் 30 முடிய (10)

முதுமொழிக்காஞ்சி - 7. பொய்ப்பத்து (10)

அலகு - 5ஆத்திசூடி - ஓளவையார், ஆத்திசூடி - பாரதிதாசன்

பார்வை நூல்கள்:

1. வ. சுப. மாணிக்கம் - நீதி நூல்கள், தமிழ்நிலையம், சென்னை.

2. ந. சுப்புரெட்டியார் - தமிழ் இலக்கியங்களில் நீதி - அறம் - முறைமை - ஐந்திணைப் பதிப்பகம், சென்னை.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

நன்னூல் - சொல்லதிகாரம்

பருவம்-ஐஐஐஐ ஊஊ6 கற்பித்தல் : 6 தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு3வு06

நோக்கம்: சொற்கள், சொற்றொடர் அமைப்புகள், சொற்களின் வகைகள் - பயிற்றுவித்தல்

பயன்:சொல்லின் இலக்கணம் அறிந்து கொள்ளல்.

அலகு - 1

சொல்லின் இலக்கணம், சொல்லதிகாரத்தின் கட்டமைப்பு, பெயரியல், வினையியல், பொதுவியல், இடையியல், உரியியல் ஆகிய இயல்களின் உள்ளடக்கச்சுருக்கவிளக்கம்.

அலகு - 2

பெயரியல்

அலகு - 3

வினையியல்

அலகு - 4

பொதுவியல்

அலகு - 5

இடையியல் ௬ உரியியல்.

பாடநூல் :நன்னூல் காண்டிகையுரை.

பார்வைநூல்கள் :

1. நன்னூல் - சண்முக. செல்வகணபதி (உ.ஆ) கற்பகம் பதிப்பகம், தஞ்சாவூர்.
2. நன்னூல் - திருஞானசம்பந்தன் (உ.ஆ) கதிர் பதிப்பகம், திருவையாறு.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

பருவம்-ஐஐஐ யுஊ3 கற்பித்தல் :4 தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு3வுயுவு3

நோக்கம்: இக்காலத்தில் பெரிதும் போற்றப்படும் மகளிரியல் பற்றியும், பெண்ணின மேம்பாட்டிற்குரிய வழிமுறைகளைப் பற்றியும் பயிற்றுவித்தல்.

பயன்: பெண்களிடம் விழிப்புணர்வு ஏற்பட வழிவகைச் செய்தல்.

அலகு - 1 இந்திய மகளிரின் சமூக பொருளாதார நிலை, திருமணம், விதவைமணம், சொத்துரிமை, விதவை மணம் தடை, பலதாரமண ஆதரவு, விவாகரத்து, பாவச்செயல் பெண்கல்வி, பள்ளி இடைவிலகல், தொழில்நுட்பம், தொழிற்கல்வி மற்றும் பிற உயர்கல்வி பெறல் பொதுவாழ்வில் குறிப்பிடத்தக்கன- மகளிர் இந்திராகாந்தி, அன்னை தெரசா.

அலகு - 2 பெண்ணியம் மேலைநாடுகளில் தோற்றமும் வளர்ச்சியும், பெண்ணியக் கருத்து விளக்கம் பெண்ணியக் கோட்பாடுகள், நான்கு பெரும் பிரிவுகள், மிதவாதப் பெண்ணியம், தீவிரவாத பெண்ணியம், மார்க்சியப் பெண்ணியம்.

அலகு - 3 -பெண்களின் நிலையை உயர்த்த மகளிர் சட்டங்கள்.

அ. பதி தடுப்புச் சட்டம் - 1829

ஆ. விதவைகள் மறு மணச்சட்டம் - 1856

இ. இந்து வாரிசு உரிமைச் சட்டம் - 1956

ஈ. பிறப்பு திருமணச்சட்டம் - 1954

உ. இந்து திருமணச் சட்டம் - 1955

ஊ. குழந்தைகள் திருமணச்சட்டம் - 1929

எ. பேறுகால அனுகூலச்சட்டம் - 1961

ஏ. பெண்களை ஒழுக்கமற்ற முறையில் பயன்படுத்துவதை தடைசெய்ய சட்டம்-1956.

ஐ. இசுலாமியப் பெண்கள் (விவாகரத்து உரிமை பாதுகாப்புச் சட்டம்) - 1986

ஓ. சொத்துரிமைச் சட்டம்.

அலகு - 4 மகளிரின் நல்வாழ்வு, தன்னார்வ நிறுவனங்களின் திட்டச் செயல்பாடுள் - மதிப்பீடுகள்

அ. அரசு

1. பெண்களுக்காக அமைக்கப்பட்டிருக்கும் வாரியங்கள்.

2. பெண்களுக்காக செயல்படும் நலத்திட்டங்கள்.

ஆ. மகளிர் தன்னார்வ அமைப்புகள்

1. பிரம்ம சமாஜம், 2. ஆரிய சமாஜம், 3. இராமகிருணமிசன், 4.தியோசாபிகல் சொசைட்டி,6.முகிலா முக்தி மூர்சஜர், முன்னேற்ற பெண்கள் அமைப்பு, விலோசன கீட் கரிசங்க தனா, மனுசி, சிவசத்தி, வங்கதனா போன்ற அமைப்புகளின் மகளிர் சுய உதவிக்குழுக்கள், ஆதரவற்றோர் விடுதிகள், பணிபுரியும் மகளிர்க்கான தங்கும் விடுதிகள்.

அலகு - 5 -மகளிர் வேலைவாய்ப்பு, இல்ல மகளிரின் தங்கும் நிலை, பணிபுரியும் மகளிரின்

தங்கும் நிலை, கிராம நகர்ப்புறங்களில் மகளிரின் நிலை மகளிர் முன்னேற்றம் மற்றும் வளர்ச்சியிலுள்ள இடையூறுகளும், தீர்வுகளும்.

பார்வைநூல்கள்:

1. பெண்ணியம் - டாக்டர். பிரேமா
(உலகத் தமிழாராய்ச்சி நிறுவனம்) சென்னை.
2. பெண்ணியம் -ச. தேவதத்தா
3. இந்திய அரசியலமைப்புச் சட்டம் - தமிழ்நாடு சட்ட ஆட்சி மொழித்துறை
(தமிழாக்கம்)
4. சட்டவியல் -எம். சண்முக சுந்தரம் கழக வெளியீடு.
5. இந்து சட்டப்படி மகளிர் சொத்துரிமை சோ. வேதாச்சலம்
6. பெண் ஏன் அடிமையானாள்? -பெரியார்
7. பெரியாரும் பெண்ணுரிமையும்-அரசு மணிமேகலை

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

பணித்தேர்வுத்தமிழ்

பருவம்-ஐஐஐஐ

வேறு1 கற்பித்தல் :2 தரப்புள்ளி :2பாடக்குறியீட்டு எண் :18மு3வுரு01

நோக்கம்: பணித்தேர்வு எழுதுவதற்குப் பயிற்சி அளித்தல்.

பயன்: வேலை வாய்ப்புப் பெறுதல்

அலகு - 1

மொழியின் இன்றியமையாமை - பேச்சுமொழித் தோற்றம், வளர்ச்சி - எழுத்து மொழித் தோற்றம் வளர்ச்சி - திருந்திய திருந்தா மொழிகள் - தமிழில் பிற மொழிக் கலப்பு - வடமொழி ஆங்கிலம் பிற மொழிகளில் தமிழின் செல்வாக்கு தமிழில் வட மொழிக்கலப்பு, தற்சமம், தற்பவம்.

அலகு - 2

தமிழில் முதல் எழுத்துகள் - சார்பெழுத்துக்கள், பெயர், வினை, இடை, உரி, வேற்றுமை உருபுகள், வினைமுற்று, வினையெச்சம், யாப்புறுப்புக்கள் - ஆசிரியப்பா, வெண்பா, கலிப்பா, வஞ்சிப்பா, மருட்பா இலக்கணம், உவமையணி, தற்குறிப்பேற்ற அணி, வஞ்சப்புக்கழ்ச்சி அணி.

அலகு - 3

சங்க இலக்கிய வகை - தொகை - அமைப்பு - பத்துப்பாட்டில் ஆற்றுப்படை நூல்கள் - எட்டுத் தொகையில் கபிலர், பரணர், பாடல்கள் - நீதி நூல்கள் - திருக்குறள், நாலடியார், நீதிநெறி விளக்கம் - பொது அறிமுகம்.

அலகு - 4

காப்பிய இலக்கியங்கள் - இரட்டைக் காப்பியங்கள், இராமாயணம், இயேசு காவியம், பக்தி இலக்கியங்கள், பன்னிரு திருமுறைகள், பன்னிரு ஆழ்வார்கள், புனைகதை, நாடகம், கவிதை, புதுக்கவிதை (சாகித்திய அகாதமிப் பரிசு பெற்ற நூல்கள்) - பொது அறிமுகம்.

அலகு - 5

மக்கள் தகவல் தொடர்பியல் - வானொலி, தொலைக்காட்சி - இதழ்கள், தகவல் பரிமாற்றம் - உலகம் தழுவிய பொதுச் செய்திகளும் நிகழ்வுகளும், இணையதளம் - கணினிப்பயிற்சி பற்றிய அறிமுகம்.

பாடநூல்கள் : கா. சிவத்தம்பி, தமிழில் இலக்கிய வரலாறு.

பார்வை நூல்கள்:

1. தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி பதிப்பகம்.
2. க. சக்திவேல், தமிழ்மொழி வரலாறு, மணிவாசகர் பதிப்பகம், சிதம்பரம்.
3. சோ. பரமசிவம், நற்றமிழ் இலக்கணம்.
4. அ.கி. பரந்தாமன், நல்ல தமிழ் எழுத வேண்டுமா?
(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

சித்தர் இலக்கியம்

பருவம்-ஐஐஐ ௭௭௭1 கற்பித்தல் : - தரப்புள்ளி : 5பாடக்குறியீட்டு எண் : 18மு3௭௭௭1

நோக்கம்:சித்தர் இலக்கியங்களின் தன்மை இயல்பு, சிறப்பு உத்திகள் போன்றவற்றை உணரச்செய்தல்.

பயன்கள்:சித்தர் இலக்கியம் பற்றிய சிறந்த அறிவை உணரச் செய்தல்.

அலகு 1 :

சித்தர் விளக்கம் - சித்தர் சொற்பொருள் - சொல்லாட்சி - சித்தி பெறும் வழிகள் - சித்திகள் - சித்தர்கள் பற்றிச் சித்தர்கள் - சித்தர்கள் பற்றி ஆய்வாளர்கள் - சித்தர்களின் புறத்தோற்றம் - சித்தர்களின் செயல்கள்.

அலகு 2 :

சித்தர்களின் வரலாறு அகத்தியர் -அகப்பேய் - அழகணி - இடைக்காடர் - இராமதேவர் - உரோமரீ-கடுவெளி - கருவூரார் - காகபுஜண்டர்.

அலகு 3 :

குதம்பை - கொங்கணர் -சட்டை முனி - சிவவாக்கியர் -சூரியானந்தர் - திருமூலர் - நந்தீஸ்வரர் -பட்டினத்தார் - பத்திரகிரியார் - பாம்பாட்டி- வால்மீகர் - வாலைச் சாமி

அலகு 4 :

திருமூலர் திருமந்திரம் - முதல் தந்திரம் - உபதேசப்பகுதியின் முதல் முப்பதுபாடல்கள் - சிவவாக்கியர் பாடல்கள் 151 (ஈணைருமை) முதல் 200 (உருக்கலந்த) முடிய.

அலகு 5 :

கடவுட் கொள்கைகடவுள் சடங்கு சாத்திரங்கள் - தொழில்கள் - கல்வி நிலை பழக்க வழக்கங்கள் - இறப்பு நிலை - நம்பிக்கைகள்.

பார்வை நூல்கள் :

1. டாக்டர். இரா. மாணிக்கவாசகம் - நம் நாட்டுச் சித்தர்கள் அன்னை அபிராமி அருள், சென்னை - 1978
2. டாக்டர். இரா. மாணிக்கவாசகம் - திருமந்திர ஆராய்ச்சி
3. டாக்டர். இரா. மாணிக்கவாசகம் - திருஅருட்பா ஆராய்ச்சி
4. டாக்டர். இரா. மாணிக்கவாசகம் - சித்தர்கள் கண்ட சிறுநீர் மருத்துவம்
5. டாக்டர். இரா. மாணிக்கவாசகம் - சித்தர்கள் சொன்னவை
6. மீ.ப. சோமசுந்தரம் - சித்தர் இலக்கியம் - முதல் தொகுதி, அண்ணாமலைப் பல்கலைக்கழகம் வெளியீடு
7. மீ.ப. சோமசுந்தரம் - சித்தர் இலக்கியம் மூன்றாம் தொகுதி அண்ணாமலைப் பல்கலைக்கழகம் வெளியீடு
8. மீ.ப. சோமசுந்தரம் - சித்தர் இலக்கியம் மூன்றாம் தொகுதி அண்ணாமலைப் பல்கலைக்கழகம் வெளியீடு
9. க. இளமதி சானகிராமன் - சித்தர்களும் சமூகப் பார்வையும்

குறிஞ்சிப் பதிப்பகம், புதுவை 1990

10. க. இளமதி சானகிராமன்
11. க. இளமதி சானகிராமன்
12. அரு. இராமநாதன்

- பேரின்பப் பெருவாழ்வு, புதுவை 1991
- சித்தர்களின் சிந்தனைகள், புதுவை 1991
- ஞானக்கோவை என வழங்கும் சித்தர் பாடல்கள் .

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

பருவம்-ஐர ௫௩4 கற்பித்தல் :6தர்புள்ளி : 3பாடக்குறியீட்டு எண் : 18மு4வு4

நோக்கம்: தொன்மை இலக்கியங்களின் சிறப்பையும், பெருமையையும் உணர்தல், நாடக இலக்கியங்களின் இயல்பு, சிறப்பு உத்திகள் பற்றி அறிதல்.

பயன்கள்: இலக்கியம் பற்றிய சிறந்த அறிவையும், நாடகப் படைப்பாற்றலையும் பெறச் செய்தல்

அலகு - 1

குறுந்தொகை-2 பாடல்கள் (222,தலைப்புனைக் கொளினே... 229,இவன் இவள் ஐம்பால் பற்றவும்)

அகநானூறு- 2 பாடல்கள் (4,முல்லை வைந்நுனைத் தோன்றவும்...86, உழுந்து தலைப்பெய்த...)

கலித்தொகை- 2 பாடல்கள் (பாலைக்கலி 9, எறித்தருகதிர் தாங்கி... குறிஞ்சிக்கலி 51 சுடர்த்தொடிஇ கேளாய்...)

புறநானூறு-5 பாடல்கள் (9,ஆவும் ஆனியற்... 18,முழங்கு முந்நீர்... 74,குழவி இறப்பினும்.. 204,ஈஎன இரத்தல்.. 279கெடுக சிந்தை...)

அலகு -2

முல்லைப் பாட்டு முழுவதும்

அலகு - 3

நாலடியார் (இளமைநிலையாமை, கல்வி இரண்டு அதிகாரங்கள்)

அலகு - 4

கே. ஏ. குணசேகரன் - மாற்றம் மற்றும் இருண்ட வீடு (நாடகம்)

அலகு - 5

தமிழ் இலக்கிய வரலாறு. சங்க இலக்கியம், பதினெண் கீழ்கணக்கு நூல்கள் பொதுக்கட்டுரைகள்.

பார்வை நூல்கள்:

1. கே. ஏ. குணசேகரன், நியூ செஞ்சரி புக் ஹவுஸ், சென்னை.
2. தமிழ்இலக்கிய வரலாறு - ச.சுபாஸ்சந்திரபோஸ்.
3. தமிழ்இலக்கிய வரலாறு - பு.இந்திராகாந்தி - பொ.திராவிடமணி

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தத்துவவியல்

பருவம்-ஐஏ ஊஊ7 கற்பித்தல் :5 தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு4வு07

நோக்கம் :

சமயச் செய்திகளை அறிந்து கொள்ளுதல் - சமயக் கொள்கைகளை அறிந்து கொள்ளுதல்
பயன்:

தத்துவக் கருத்துகளைப் புரிந்து கொள்ளுதல்- சமயமும் தத்துவமும் மனித வாழ்க்கைக்கு உதவும் நிலையை அறிதல்.

அலகு - 1

வேத உபநிடதங்கள் - வேதங்கள் - சிறப்பு - ஒருமை வாதம் - பன்மை வாதம் - ஆன்மா - உரையாடல்கள் - தடைவிடைகள் - பிரபந்தத் தோற்றம் - பகவத்கீதை.

அலகு - 2

அவைதிகத்தத்துவங்கள் - உலகாய்தம் - சமணம் - சமணத்தின் இரு பிரிவுகள் - மூவகை ஜீவன் - அஹிம்சை கடவுள் உண்மையும் இன்மையும் - பௌத்தம் - பிரமாணங்கள் - பௌத்த பேதங்கள் - மணிமேகலையும் பௌத்தமும்.

அலகு - 3

ஐவகை தரிசனம் - சாங்கியம் - யோகம் - வைசேடிகம் - நியாயம் - மீமாம்சை

அலகு - 4

வேதாந்தம் - வேதாந்தத்தின் பழமை - பிரமாணம் - சங்கரர் - சங்கரரின் கொள்கைகள் - மாயாவாதம் - விசி'டாத்வைதம் சங்கரருடன் மாறுபடும் இடங்கள் - தர்ம பூத ஞானம் - பிரபத்தி - த்வைதம்.

அலகு - 5

சைவ சித்தாந்தம் - வேத ஆகமங்கள் - திருமுறைகள் - சைவ சாத்திரங்கள் - பசுபதி பாசம்.

பாடநூல் :இந்தியத்தத்துவஞானம் - கி. லெட்சுமணன்.

பார்வை நூல்கள்:

1. நாலாயிரத்திவ்யப் பிரபந்தம் மயிலைமாதவதாசன் பதிப்பு சாதுஅச்சுக்கூடம் - சென்னை.
2. பக்தி இலக்கியம் (ஓர் அறிமுகம்) ப. அருணாசலம் தமிழ்ப்புத்தகாலயம், சென்னை 1973.
3. இடைக்கால இலக்கியங்கள் ஒருதிறனாய்வு அ. முத்துராசன் தர்மபுரி 1987
4. பக்தி இலக்கியக் கொள்கைகள் மதுரைப் பல்கலைக்கழக இதழ் தொகுதி 2

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

யாப்பருங்கலக்காரிகை

பருவம்-ஐர ஊஊ8 கற்பித்தல் :5 தரப்புள்ளி : 5பாடக்குறியீட்டு எண் : 18மு4வு08

நோக்கம்: யாப்பிலக்கணத்தைத் தெளிவாக அறியச் செய்தல் - பாவினங்களையும் அவற்றின் சிறப்பினையும் மாணவர்க்கு உணர்த்துதல்.

பயன்கள்:மரபுவழிப் பாப்புணைய மாணாக்கருக்குப் பயிற்சியளித்தல்.

அலகு - 1

உறுப்பியல் - எழுத்து, அசை, சீர்.

அலகு - 2

தளை, அடி, தொடை

அலகு - 3

செய்யுளியல் - வெண்பா, ஆசிரியப்பா

அலகு - 4

செய்யுளியல், கலிப்பா, வஞ்சிப்பா, மருட்பா

அலகு - 5

ஒழிபியல்

பாடநூல் :யாப்பருங்கலக்காரிகை - முனைவர் ச.சுபாஸ்சந்திர போஸ்

பார்வை நூல்கள்:

1. புலவர். குழந்தை - யாப்பதிகாரம்
2. சோ. ந. கந்தசாமி - தமிழ் யாப்பியலின் தோற்றமும், வளர்ச்சியும், தமிழ்ப்பல்கலைக்கழகம்
3. புலவர். குழந்தை - தொடையதிகாரம்
4. சோம. இளவரசு - இலக்கண வரலாறு தொல்காப்பியர் நூலகம் சிதம்பரம்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தமிழக வரலாறும் பண்பாடும்

பருவம்-ஐர யுஊ4 கற்பித்தல் :4 தரப்புள்ளி : 3 பாடக்குறியீட்டு எண் : 18மு4வுயுவு4

நோக்கம்:

1. தமிழ் மக்களின் சமூக வரலாற்றைக் கற்பித்தல்
2. தமிழ் மக்களின் பண்பாட்டைப் பயிற்றுவித்தல்.
3. தமிழகத்தில் ஏற்பட்ட பண்பாட்டு ஊடாட்டங்களை உணர்த்துதல்.
4. தமிழ் மக்களின் வாழ்வியல் விழுமியச் சிந்தனைகளைப் பயிற்றுவித்தல்.

பயன் :

1. தமிழ்ச் சமூகம், பண்பாடு, பொருளாதாரம் குறித்த வரலாற்றுணர்வு பெறுவர்.
2. தாய்மொழி மற்றும் தாய்நாட்டுணர்வு பெறுவர்
3. தமிழக அரசின் போட்டித்தேர்வு முதலானவற்றிற்கான அறிவூட்டம் பெறுவர்.

அலகு -1

தமிழக வரலாற்றுக்கான அடிப்படைச் சான்றுகள் - வரலாற்றுக்கு முந்திய தமிழகம் - சிந்துவெளி அகழ்வாராய்ச்சி - சங்க கால மன்னர்கள் ஆட்சி முறை- சங்க காலச் சமுதாய வாழ்வு - வணிகம் - கலை - சமயம் முதலியன.

அலகு - 2

களப்பிரர் காலம் - பல்லவர்கள் - பல்லவர்கள் ஆட்சிமுறை - சமுதாய வாழ்வு - சமய நிலை - கலை வளர்ச்சி - பிற்காலச் சோழப்பேரரசின் தோற்றமும் எழுச்சியும் - சோழர்களின் ஆட்சி முறை - அவர் தம் கோயிற் பணிகள் - சோழர்காலக் கலை, இலக்கிய வளர்ச்சி - சமய நிலை - நடைகள் - கோயில் சிறப்பு - கட்டடங்களும், சிற்பங்களும் - ஓவியக்கலை - மக்கள் பழக்க வழக்கங்கள் - உணவு - ஆடைகள் - அணிகலன்கள் - மருத்துவம் - நம்பிக்கைகள் - பொழுதுபோக்குகள்.

அலகு - 3

பாண்டியரின் ஏற்றமும் எழுச்சியும் - மாறவர்மன் சுந்தரபாண்டியன் - சடையவர்மன் சுந்தரபாண்டியன் - மாறவர்மன் குலசேகர பாண்டியன் - பாண்டிய உள்நாட்டுப் போர் - கல்தான் ஆட்சி - விசயநகர ஆட்சி - கிருணதேவராயர் - நாயக்கர்கள் - பிற்காலத்துப் பாண்டியர்கள் - பிற்காலப் பாண்டியர்களின் கலை, இலக்கிய, சமயப் பணிகள்.

அலகு - 4

மதுரை நாயக்கர்கள் - ஆங்கிலேயர் புகுதல் - மதுரை திருமலை நாயக்கர் - செஞ்சி - மதுரை நாயக்கர்கள் - சொக்கநாதர் -பிற்கால மதுரை நாயக்கர்கள் - தமிழகத்தில் 13 முதல் 18 ஆம் நூற்றாண்டுவரை சமூகநிலை - பழக்க வழக்கங்கள் - இலக்கியம் - சித்தர் பாடல்கள் - சமய நிலை.

அலகு - 5

ஐரோப்பியர்களின் வரவு - போர்ச்சுகீசியர் - டச்சுக்காரர்கள் - கிழக்கிந்தியக் கம்பெனி முதல் கருநாடகப்போர் - இரண்டாம் கருநாடகப்போர் - மைசூர்ப் போர்கள் - பாளையக்காரர்களின் கிளர்ச்சிகள் - மருதுபாண்டியர் - தீர்த்தகிரி - 19ஆம் நூற்றாண்டின் அரசியலும் தமிழகத்தின் நிலையும்- பொருளாதார நிலை - பிற நாட்டார் தொடர்பால்

தமிழர் வாழ்வில் ஏற்பட்ட மாற்றங்கள் - கல்வி - இலக்கியம் முதலான துறைகளில் ஏற்பட்ட மாற்றங்கள்.

பார்வை நூல்கள்:

1. டாக்டர். கே. கே. பிள்ளை – தமிழக வரலாறு மக்களும் பண்பாடும், உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை – 113. பதிப்பு 2009.
2. வே. தி. செல்வம் - தமிழக வரலாறும் பண்பாடும், மணிவாசகர் பதிப்பகம், சென்னை.:
3. டாக்டர். ஹ. சுவாமிநாதன் - தமிழக வரலாறும் பண்பாடும், தீபா பதிப்பகம், சென்னை.
4. டாக்டர்.அ.தட்சிணாமூர்த்தி - தமிழர் நாகரிகமும் பண்பாடும், யாழ் வெளியீடு, சென்னை- 40.
5. பி.இராமநாதன் - தமிழர் வரலாறு, தமிழ்மண் பதிப்பகம், சென்னை.
6. பக்தவச்சலபாரதி – சமூகப் பண்பாட்டு மானுடவியல், அடையாளம் பதிப்பகம், திருச்சி.
7. பா.இறையரசன் - தமிழர் நாகரிக வரலாறு, பூம்புகார் பதிப்பகம், சென்னை.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

இணையமும் தமிழும்

பருவம்-ஐஏ ஆநு2 கற்பித்தல் :2தரப்புள்ளி :2 பாடக்குறியீட்டு எண் : 18மு4வுநு02

நோக்கம்: தற்காலத்தில் அனைத்துத் துறைகளிலும் கணினியின் ஆதிக்கமும் இணையத்தின் தேவையும் நிறைந்துள்ளது. எனவே மாணவர்கள் இணையம் பற்றி அறிதல் அவசியம்.

பயன்: கணினியைப் பயன்படுத்துதல் மட்டுமன்றி இணையத்தின் வழி பல்துறை அறிவினையும், நம் தாய்மொழியாம் தமிழில் பெறமுடிவதை உணர்தல்.

அலகு - 1

இணையம் அறிமுகம் - இணையம் சொல் விளக்கம் - வரலாறு பயன்பாடுகள் - செயல்பாடுகள்.

அலகு - 2

கணினியில் தமிழ் எழுத்துரு உருவாக்கம் - விசைப்பலகை (முநல டிடியசன) சிக்கல்கள் - எழுத்துரு செந்தரம் (ளுவயனெயசனளையவழைடு ழக கழவெள) இணையத்தில் தமிழ் மின்னஞ்சல் - தமிழில் மின்னஞ்சல் இடர்களும் தீர்வுகளும் - இணையத்தமிழ் முன்னோடி - ஒருங்குறி நியமம்.

அலகு - 3

இணையத்தில் தமிழின் பயன்பாடு இணையத்தில் தமிழ்க்கல்வி தமிழ் இணையக்கல்விக்கழகம் - நோக்கம் - பாடத்திட்டங்கள் - சான்றிதழ் - பட்டயம் இணைய வகுப்பறை - தேர்வு முறைகள்.

அலகு -4

இணையத்தில் தமிழ் மின் இதழ்கள் - தோன்றக்காரணம் - சிறப்புகள் - இணைத்தில் அச்ச இதழ்கள் - இணையத்தில் வலைப்பூக்களும் மின் இதழ்களும் - தமிழ் மின் நூலகம் - அதன் பங்களிப்புகள்.

அலகு - 5

இணையத்தில் தமிழ் அகராதி - கலைக்களஞ்சியம் - விக்சிப்பீடியா - மொழிப் பெயர்ப்புகள் - தமிழாய்வு வளர்ச்சியில் இணையத்தின் பங்கு.

பார்வை நூல்கள்:

1. இணையமும் தமிழும் - துரை. மணிகண்டன்,நன்னிலம் பதிப்பகம், சென்னை.
2. தமிழ்மொழி வளர்ச்சியில் இணையத்தின் பங்கு-மு. ஆனந்தகிருணன் (க.ஆ) உலகத்தமிழ் செம்மொழி மாநாட்டுச் சிறப்பு மலர், கோவை.
3. இணையத்தமிழ் வளர்ச்சி - ப.அர. நக்கீரன் (க.ஆ) உலகத்தமிழ்ச் செம்மொழி மாநாட்டுச் சிறப்பு மலர், கோவை.

இணைய முகவரிகள்:

1. [நற்றவயஅடைளமுசப](#)
2. [நற்றிசமுதநஉவஅயனரசயயமுசப](#)
3. [நற்றவயஅடைமுழயாயஅடை](#)

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

கோயிற்கலையும், பண்பாடும், ஆட்சியும்

பருவம்-ஐஏ ௭௭௭2 கற்பித்தல் : - தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு4௭௭௭௭2

நோக்கம் : தமிழர் கலை, பண்பாட்டை அறியச் செய்தல்.

பயன் : கலை, பண்பாட்டைப் பாதுகாத்தல்.

அலகு - 1

கோயில்-சொல் விளக்கம் - பண்டை இலக்கியங்களில் கோயில் என்னும் சொல் இடம் பெற்றமை - கோயிற்கலையின் தோற்றம் - வளர்ச்சி - கட்டடக் கலையின் வளர்ச்சி

அலகு - 2

சேர, சோழ, பாண்டியர்களின் கோயில் அமைப்புகள்- பிற்காலச் சோழர் கோயிற்கலை - பிற்காலப் பாண்டியர் கோயிற் கலை விசயநகரப் பேரரசு காலக் கோயில்கள் இக்காலக் கோயிற்கலை.

அலகு - 3

கோயிலை ஒட்டி வளர்த்த தெய்வீகப் பண்பாட்டின் பொதுக் கூறுகள் - சமூகப் பொது வழிபாட்டின் சிறப்பு - இசை - நடனம் - ஓவியம் - சிற்பம் -முதலிய கலைகளின் வளர்ச்சி - தல புராணங்கள் இவற்றால் அறியப்படும் நாகரிகம் பண்பாடுகள்.

அலகு - 4

திருவிழாக்கள் - அவற்றிற்குரிய அறக்கட்டளைகள் - வழிபாட்டுக்குரிய விதிமுறைகள் - மன்னர்களும் மக்களும் அளித்த அறக்கட்டளைகள் - அவற்றை மேற்பார்வையிடும் முறைகள் - கோயிலைச் சார்ந்த நிலங்களும் பொருள்களும் - அலுவலர்கள் - ஊதியம், இறையிலி, நிலங்கள் அளித்தமை.

அலகு - 5

பொது நிர்வாகம் - மன்னர்கள் நிர்வாகம் - ஊர் நிர்வாகம் - சிலைகள் - உலோகச் சிலைகள் - பிற சிலைகள் - பாதுகாத்தல் - பூசனைப் பொருள்கள் - அவற்றைப் பாதுகாத்தல் - பெருந்தெய்வம் - சிறு தெய்வம் - வழிபாட்டில் வேறுபாடு.

பார்வை நூல்கள்:

1. பி. ஆர். சீனிவாசன் - கோயிற்கலையும் சிற்பங்களும் தமிழாக்கம், எஸ். சுங்கரன் கலைஞன் பதிப்பகம்.
2. நூகசாமி - தமிழகக் கோயிற்கலைகள்தமிழ்நாடு அரசு தொல்பொருள் ஆய்வுத்துறை, சென்னை.
3. ச. இராஜாசிகாமணி - இந்து சமய அறநிலையக் கட்டளைகள் சட்டம் (மூலம் மட்டும்) 69, இராயப்பேட்டை நெடுஞ்சாலை, சென்னை.
4. இலஞ்சி. ஏ. சொக்கலிங்கம் : ஆலயங்கள் உட்பொருள் விளக்கம், பகுதி 1,2 கழக வெளியீடு, சென்னை.
5. ஜே.எம். சோமசுந்தரம் சிற்பமும் கலை வாழ்வும், கழக வெளியீடு, சென்னை.
6. கே. கே. பிள்ளைதமிழக வரலாறும் பண்பாடும் உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை.
7. மயிலை. சீனி. வேங்கடசாமி மகாபலிபுரத்தின் சமணச் சிற்பங்கள், தமிழ்நாடு ஜைன சங்கமமம்,
8. அ. தட்சிணாமூர்த்தி - தமிழர் நாகரிகமும் பண்பாடும். ஐந்திணைப் பதிப்பகம், சென்னை - 35.முதற்பதிப்பு 1987

9. மயிலை. சீனி. வேங்கடசாமி - தமிழர் வளர்த்த அழகுக் கலைகள் - மணிவாசகர் பதிப்பகம், சென்னை -1.4-ஆம் பதிப்பு 1989,ரூ. 25
10. மயிலை. சீனி. வேங்கடசாமி - நுண்கலைகள், வசந்தா பதிப்பகம், சென்னை - 88.
11. மயிலை. சீனி. வேங்கடசாமி - இறைவன் ஆடிய எழுவகைத்தாண்டவம்,வசந்தா பதிப்பகம், சென்னை - 88.
12. மயிலை. சீனி. வேங்கடசாமி - பழங்காலத் தமிழரசர்கள்,வசந்தா பதிப்பகம், சென்னை - 88. முதற்பதிப்பு 2003,ரூ. 80

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

காப்பியங்கள்

பருவம்-ஏ ஊஊ9 கற்பித்தல் :7 தரப்புள்ளி : 6 பாடக்குறியீட்டு எண் : 18மு5வு09

நோக்கம்: தமிழ்க் காப்பியங்களை அறிமுகப்படுத்துதல், காப்பியங்கள் கூறும் வாழ்வியல் அறங்களை உணர்த்துதல், காப்பியங்களில் காணப்படும் இலக்கியச் சுவையைப் பயிற்றுவித்தல்.

அலகு - 1

சிலப்பதிகாரம் - புகார்க் காண்டம் - கானல் வரி

அலகு - 2

மணிமேகலை 1 முதல் 10 காதைகள்

அலகு - 3

சீவக சிந்தாமணி - மண்மகள் இலம்பகம்

அலகு - 4

கம்பராமாயணம் - சுந்தர காண்டம் - திருவடிதொழுத படலம் (முழுமையும்)

அலகு - 5

பெரியபுராணம் - கண்ணப்ப நாயனார் புராணம் - தேம்பாவணி - வளன் சனித்த படலம் (37 பாடல்கள்) சீறாப்புராணம் - ஹரிஜரத்துக் காண்டம் -பாத்திமா திருமணப் படலம் (1 முதல் 20 பாடல்கள்).

பார்வை நூல்கள் :

1. சிலப்பதிகாரம் - கழக வெளியீடு
2. மணிமேகலை - கழக வெளியீடு
3. சீவசிந்தாமணி - கழக வெளியீடு
4. கம்பராமாயணம் - கம்பன்கழக வெளியீடு, சென்னை.
5. தேம்பாவணி - வர்த்தமானன் பதிப்பகம், சென்னை - 17.
6. சீறாப்புராணம், எ.வி.எம். ஜாபர்தீன் நூர்ஜகான் டிரஸ்ட், 6டி, பிரிம்ரேஸ் கார்டன் தேனாம்பேட்டை, சென்னை - 18.
7. வ.சுப.மாணிக்கம் - இரட்டைக்காப்பியங்கள்
8. கி.வ.ஜகந்நாதன் - தமிழ்க்காப்பியங்கள்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தண்டியலங்காரம்

பருவம்- ஏனைய10 கற்பித்தல் :6 தரப்புள்ளி : 5 பாடக்குறியீட்டு எண் : 18மு5வு10

நோக்கம்: அணி இலக்கணக் கோட்பாட்டைப் பயிற்றுவித்தல்

பயன் : அணி இலக்கியத்தின் இன்றியமையாமையை அறியச்செய்தல்.

அலகு - 1

தன்மையணி, உவமை அணி

அலகு - 2

உருவக அணி, தீவக அணி, வேற்றுப் பொருள் வைப்பணி

அலகு - 3

வேற்றுமை அணி, ஒட்டணி, அதிசயவணி, தற்குறிப்பேற்றணி

அலகு - 4

நுட்ப அணி, இலேச அணி, நிரனிறையணி, சுவையணி

அலகு - 5

தம்மேம்பாட்டுரையணி, பரியாயவணி, சிலேடையணி, ஒப்புமைக் கூட்டு அணி, மாறுபடு புகழ் நிலையணி, புகழாப்புகழ்ச்சியணி, வாழ்த்தணி, பாவிக அணி.

பாடநூல் : தண்டியலங்காரம், கழக வெளியீடு.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

சிற்றிலக்கியம்

பருவம் - ஏ ஊஊ11 கற்பித்தல் :6தரப்புள்ளி :5பாடக்குறியீட்டு எண் : 18மு5வு11

நோக்கம்: சிற்றிலக்கியத்தின் பல்வேறு வகைமைகளை அறிமுகப்படுத்துதல்.
சிற்றிலக்கியங்களில் அமைந்துள்ள சமயம் சார்ந்த செய்திகளைக் கற்பித்தல்

பயன்கள்: தமிழ் இலக்கியங்களின் வளத்தினை அறிதல்.

அலகு - 1

மதுரை மீனாட்சியம்மை பிள்ளைத் தமிழ் - குமரகுருபரசுவாமிகள்
(பருவங்கள்தோறும் கடைசி மூன்று பாடல்கள்)

அலகு - 2

திருக்குற்றாலக் குறவஞ்சி - திரிகூடராசப்பக்கவிராயர்
(நாட்டுவளம், நகர்வளம், மலைவளம்)

அலகு - 3

தமிழ்விடு தூது

அலகு - 4

கலிங்கத்துப்பரணி - கவிச்சக்கரவர்த்தி செயங்கொண்டார்
கடவுள் வாழ்த்துமுதல் இந்திரஜாலம் வரை

அலகு - 5

குலோத்துங்க சோழன் உலா - ஒட்டக்கூத்தர்

பார்வை நூல்கள் :

மதுரை மீனாட்சியம்மை பிள்ளைத்தமிழ்
தமிழ்விடுதூது
குலோத்துங்கசோழன் உலா

உரையாசிரியர்

முனைவர். சு. சுபா'சந்திரபோஸ் வெளியீடு - இயல் பதிப்பகம், தஞ்சாவூர்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

கல்வெட்டியல்

பருவம்-ஏ ஆடிநா1 கற்பித்தல் :5தரப்புள்ளி :4 பாடக்குறியீட்டு எண் : 18மு5வுநடுவு1

நோக்கம் : தமிழின் தொன்மையைச் சான்றுகளுடன் பயிற்றுவித்தல், கல்வெட்டுகள் வழிப் பழத்தமிழர் வரலாற்றைக் கற்பித்தல்.

பயன் : மாணவர்கள் தமிழ்மொழியின் தொன்மையை அறிவர், தமிழ்மொழி, இனத்தின் வரலாற்றை உணர்வர்

அலகு : 1 பண்டையக் குறியீடுகளும் எழுத்துக்களும் - பூலாங்குறிச்சிக்கல்வெட்டு எழுத்துக்கள் - தமிழ்நாட்டு எழுத்து முறைகளின் வளர்ச்சி □ தமிழ்க்கல்வெட்டுக் கண்டுபிடிப்புகள்.

அலகு : 2 கல்வெட்டுக்களும் இலக்கியமும் - தமிழ் கல்வெட்டுக்களும் வரலாறும் - செப்பேடுகள் பதிப்பித்தலில் அணுகுமுறைகள் - மெய்க்கீர்த்தி □ ஓலையும் கல்வெட்டும்.

அலகு : 3 சோழர் காலத்திய ஆவணப்பதிவுமுறைகள் - சில அரிய சொற்கள் - ஆள்பொயர்கள் காட்டும் சமுதாயம் - மாராயமும் மாராயனும் - வைத்திய குலம்.

அலகு : 4 கல்வெட்டில் இந்து ப்பமுசலிம்சமய ஒருமைப்பாடு ப்ப சேலம் மாவட்டக் கல்வெட்டுகள் - விடுகாதழகிய பெருமாள் - எழுத்துப் பொறிப்புப் பெற்ற தீர்த்தங்கரர் திருமேனி □ அழுந்தாரும் அழிந்தியூரும்.

அலகு : 5 தொண்டியில் ஒரு புதிய கல்வெட்டு □ வரலாற்று நோக்கில் நாகபட்டினம் - தஞ்சை மராட்டியர் கல்வெட்டுக்களும் செப்பேடுகளும் - ஓலை ஆவணங்களும் முத்திரை ஓலைகளும்.

பாட நூல் : முனைவர் எ. சுப்பராயலு , முனைவர் செ. இராசு (பதிப்பாசிரியர்கள்), தமிழ்க் கல்வெட்டியலும் வரலாறும், தமிழ்ப்பல்கலைக்கழக வெளியீடு.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

போட்டித்தேர்வுத் தமிழ்

பருவம்- ஏ ஞாடநு3 கற்பித்தல் :2தரப்புள்ளி :2பாடக்குறியீட்டு எண் : 18மு5ஞாடநுஊ3

நோக்கம் : பொதுத் தேர்வு எழுதுவதற்குப் பயிற்சி அளித்தல்

பயன் : வேலைவாய்ப்புப் பெறுதல்

- அலகு : 1 மொழி - விளக்கம் - மொழிகளின் தோற்றம் வளர்ச்சி - திருத்திய திருத்தாத மொழிகள் தமிழில் பிறமொழிக்கலப்பு ப தொல்காப்பியம் - எழுத்து, சொல், பொருள், எழுத்தியல், சொல்லியல், பெயர் வகைகள், வினையியல், இடையியல், உரியியல், பொதுவியல்.
- அலகு : 2 வாக்கிய வகைகளும் அமைப்பு முறைகளும் : வாக்கியம் என்றால் என்ன? வாக்கிய வகைகள் - செய்தி வாக்கியம், வினா வாக்கியம், விழைவு வாக்கியம், உணர்ச்சி வாக்கியம், தனி வாக்கியம், தொடர் வாக்கியம், வலிமிகுதல் - வலிமிகுலும் மிகாமையும் - வலிமிகும் விதிகளின் தொகுப்பு, வலிமிகாமைக்குரிய விதிகள், எளிய சந்தி விதிகள்
- அலகு : 3 யாப்பிலக்கணம் -ஆசிரியப்பா, வெண்பா, கலிப்பா, வஞ்சிப்பா, மருட்பா, பொருளணிகள் - தன்மை நவற்சி அணி ,உவமை அணி, எடுத்துக்காட்டு உவமை அணி, இல்பொருள் உவமை அணி, தற்குறிப்பேற்ற அணி, ஐய அணி, வஞ்சப் புகழ்ச்சி அணி- பொருளிலக்கணம் (அகப்பொருள், புறப்பொருள்)
- அலகு : 4 பண்டைய இலக்கியம் : சங்க இலக்கியம், சங்கம் மருவிய இலக்கியம் - காப்பியங்கள், பக்தி இலக்கியம், சமய இலக்கியம், சிற்றிலக்கியங்கள்: தூது, உலா, கலம்பகம், பிள்ளைத்தமிழ், அந்தாதி, குறவஞ்சி, பரணி, கோவை நூல்கள்.
- அலகு : 5 இக்கால இலக்கியம் : புனைகதை, சிறுகதை, நாடகம், - கவிதை : மரபுக்கவிதை, புதுக்கவிதை (தமிழக அரசு மற்றும் சாகித்திய அகாதாமிப் பரிசுபெற்ற நூல்கள்) உலகம் தழுவிய பொதுச் செய்திகளும் நிகழ்வுகளும் - மக்கள் தகவல் தொடர்பு சாதனங்கள் - இதழ்கள், செய்தித்தாள்கள், கணிப்பொறி.
- குறிப்பு : போட்டித் தேர்விற்கு மாணவிகளை தயார் செய்யும் விதமாக ஐந்து அலகுகளில் உள்ள பொது அறிமுகச் செய்திகள் மட்டும்

பார்வை நூல்கள்

1. தமிழண்ணல, புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி பதிப்பகம்.
 2. சோம. இளவரசு, இலக்கிய வரலாறு, மணிவாசகர் பதிப்பகம்
 2. அ.கி. பரந்தாமனார், நல்ல தமிழ் எழுத வேண்டுமா? பாரிநிலையம்.
- (அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

நம்பியகப்பொருள்

பருவம் - ஏஜ ஊஊ12 கற்பித்தல் :5தரப்புள்ளி :5பாடக்குறியீட்டு எண் : 18மு6வு12

நோக்கம்: தமிழின் அகப்பொருள் மரபு வளர்ச்சியை அறியச் செய்தல்.

பயன்கள்: அகத்திணைக் கோட்பாட்டை அறிந்து கொள்ளுதல்.

அலகு - 1

அகத்திணையியல்

அலகு -2

களவியல்

அலகு -3

கற்பியல்

அலகு -4

வரைவியல்

அலகு -5

ஒழிபியல்

பாடநூல்கள் :

நம்பியகப்பொருள், கழக வெளியீடு

பார்வை நூல்கள் :

1. தஞ்சைவாணன்கோவை - கழக வெளியீடு

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

புறப்பொருள் வெண்பாமாலை

பருவம் - ஏஐ ஊஊ13 கற்பித்தல் :4தரப்புள்ளி :4 பாடக்குறியீட்டு எண் : 18மு6வு13

நோக்கம்: புறப்பொருள் திணை, துறை மரபுகளின்திறன் அறிதல் தமிழரின் வீரநிலைப்பண்பாட்டை அறிதல்.

பயன்கள் : மாணவர்கள் புறப்பொருள் இலக்கண அறிவுபெறுதல். புறப்பொருள் திணைத்துறை விளக்கங்களைக் கற்றல், தமிழரின் வீரநிலைப்பண்பாட்டைக் கற்றல்.

அலகு : 1

வெட்சிப்படலம், கரந்தைப்படலம்.

அலகு : 2

வஞ்சிப் படலம், காஞ்சிப்படலம்.

அலகு : 3

உழிஞைப் படலம், நொச்சிப் படலம்.

அலகு : 4

தும்பைப் படலம்,வாகைப் படலம்,

அலகு : 5

பாடாண்படலம், பொதுவியல்.

பாடநூல்கள் : புறப்பொருள் வெண்பாமாலை – கழக வெளியீடு.

பார்வை நூல்கள் :

1. பண்டைத்தமிழர் போர்நெறி – கா.கோவிந்தன்.
2. பண்டைத்தமிழர் வீரப்பண்பாடு – கதிர்.மகாதேவன்
3. தமிழரின் வீரநிலைக்காலப்பாடல்கள் - க.கைலாசபதி
4. புறத்திணையியல் கலைச்சொல் அகராதி – பாவலரேறு ச.பாலசுந்தரம்.

பருவம்- ஏஐ ஊஊ11 கற்பித்தல் :6 தரப்புள்ளி : 4பாடக்குறியீட்டு எண் : 18மு5வு11
 நோக்கம்: சங்க இலக்கிய அகபுற மரபு கற்பித்தல்
 பயன்: இலக்கிய அறிவு பெறுவர்.

அலகு – 1நற்றிணை

1. மருதம் (பா. எண். 100,உள்ளுதொறும்... 150நகை நன்கு உடையன்..)
2. நெய்தல் (பா. எண். 67, சேய்விசும்பு.. 94நோய் அலைக் கலங்கிய..)
3. பாலை (பா. எண். 66, மிளகு பெய்தனைய.. 71மன்னாப் பொருட்பிணி..)

குறுந்தொகை

1. குறிஞ்சி (பா. எண். 81,இவளே நின்சொற்.. 150சேணோன் மாட்டிய..)
2. மருதம் (பா. எண். 8, கழனி மாஅத்து... 157குக்கூ என்றது..)
3. நெய்தல் (பா. எண். 49,அணிந்பல்லன்ன... 118புள்ளும் மாவும்...)

அலகு – 2 ஐங்குறுநூறு

1. இளவேனிற் பத்து
2. பாசறைப் பத்து

பதிற்றுப்பத்து

1. இரண்டாம் பத்து (குமட்டுர்க் கண்ணனார்)
2. ஏழாம் பத்து (கபிலர்)

அலகு – 3 பரிபாடல்

1. திருமால் பற்றியது (பா. எண். 19, 44)
2. செவ்வேள் (பா. எண். 311, 413)

கலித்தொகை

1. குறிஞ்சிக்கலி (பா. எண். 40,அகவினம் பாடுவாம்...)
2. முல்லைக்கலி (பா. எண். 123,கருங்கோட்டு நறும்புன்னை...)

அலகு – 4 அகநானூறு

1. களிற்றியானை நிரை - குறிஞ்சி (பா.எண். 48 அன்னாய் வாழி..),
2. மணிமிடை பவளம் - நெய்தல் (பா.எண். 140 பெருங்கடல் வேட்டத்து...)
3. நித்திலக்கோவை - முல்லை (பா.எண். 344 ஓடாநல்லேற்று உரிவை),

புறநானூறு

பாடல் எண்கள். 110, கடத்தடுதானை...121,ஒருதிசை ஒருவனை..137,முரசின் இரங்கு

அலகு – 5

முல்லைப்பாட்டு முழுவதும்.

பாடநூல்கள் :

- 1.எட்டுத் தொகை மூலமும் உரையும் நச்சினார்க்கினியர் உ.வே.சா. வெளியீடு.
- 2.பத்துப்பாட்டு மூலமும் உரையும், உரையாசிரியர் சோமசுந்தரனார், கழக வெளியீடு.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தமிழின் செம்மொழிப் பண்புகள்

பருவம் - ஏஜ் ஊஊ15 கற்பித்தல் :4தரப்புள்ளி :4பாடக்குறியீட்டு எண் : 18மு6வு15

நோக்கம்: 'செம்மொழித்தமிழ்' என்பதை மாணாக்கர்களுக்கு அறிவுறுத்தல்
பயன்கள்: செம்மொழி பற்றிய அறிவு பெறுதல்

அலகு 1 :

செம்மொழி-விளக்கம், உலக அளவில் இடம்பெறும் செம்மொழிகள், தமிழின் தொன்மை - எழுத்து - வடிவம், தமிழ் வளர்த்த மன்னர்கள்.

அலகு 2 :

தமிழ்மொழி வரலாறு, திராவிட மொழிகளில் தமிழின் சிறப்பு, தமிழின் தொன்மை, செம்மொழிக்குரியபண்புகள் தமிழில் பெறுமிடம்.

அலகு 3 :

செம்மொழி அங்கீகாரமும், அதன் இன்றியமையாமையும், தமிழ், செம்மொழி எனக் குரல்கொடுத்தவர்கள், செம்மொழிக்காகத் தொண்டாற்றிய செம்மல்கள், தமிழ் செம்மொழி இயக்கம் குறித்த செய்திகள், தனித்தமிழ் இயக்கம் முதலிய இயக்கங்கள் ஆற்றிய தொண்டுகள் செம்மொழி நிறுவனச் செயல்பாடுகள்.

அலகு 4 :

தமிழ்ச் செம்மொழி 41 நூல்கள் பற்றியறிதல், அந்நூல்களின் பதிப்பு, உள்ளடக்கம், உயர்சிந்தனை குறித்தறிதல், கவிஞர்களின் மொழிப் பற்றினை விவரித்தல்.

அலகு 5 :

தொல்காப்பியத்தின் சிறப்பு, கட்டமைப்பு, உரையாசிரியர்களின் சிறப்பு, தொல்காப்பியம் பிற இலக்கண நூல்களுக்கு மூலநூலாகவிளங்குதல் ஆகியவற்றைத் தொகுத்துக் கூறல்.

பார்வை நூல்கள் :

1. தமிழ்மொழி வரலாறு -சு. சக்திவேல்.மணிவாசகர் பதிப்பகம், பாரிமுனை, சென்னை – 108.
2. திராவிட மொழிகளின் ஒப்பாய்வு-ஜி. ஜான் சாமுவேல்.ஆசியவியல் நிறுவனம், சென்னை – 119.
3. செம்மொழிச் செம்மல்கள் : முனைவர் பா.இறையரசன், தமிழ்மண் பதிப்பகம்.
4. செவ்விலக்கிய ஆய்வுகள்-(தொ.ஆ) ஸ்ரீ. பிரேம்குமார்(செந்தமிழ்ச்செல்வி இதழ்க்கட்டுரைகள்) நியு செஞ்சுரிப் பதிப்பகம், சென்னை.
5. தமிழ்ச் செவ்வியல் இலக்கியங்கள்- பெ. மாதையன், நியு செஞ்சுரி பதிப்பகம், சென்னை.
6. உலகத்தமிழ்ச் செம்மொழி மாநாடு - ஆய்வுகோவை. 2010.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

சுவடியியல்

பருவம் - ஏஜ ஆண்டு2கற்பித்தல் :5தரப்புள்ளி:4பாடக்குறியீட்டு எண்: 18மு6வுநடுவு2

நோக்கம்: சுவடியியல் குறித்து மாணவர்கள் அறிதல். சுவடிப்பதிப்பு பற்றிய அறிவு பெறுதல்.

பயன்கள்: ஓலைச்சுவடிகள் குறித்த ஆர்வத்தை ஏற்படுத்துதல், சுவடிகளை நூல்களாகப் பதிப்பிக்கவிருப்பம் ஏற்படுத்துதல்.

அலகு 1 : சுவடியியல்-சொற்பொருள் விளக்கம்- நோக்கம் - பயன்- தோற்றமும் வளர்ச்சியும் பழங்கால எழுதுபொருள்கள் - ஏடு தயாரிக்கும் முறைகள் - பதப்படுத்தும் முறைகள் சுவடிகளின் அமைப்புகள் - சுவடிகளின் வகைகள் -எழுத்தாணி வகைகள் - சுவடி எழுதும் முறைகள்.

அலகு 2 : சுவடி - திரட்டுதல், சுவடி திரட்டுதலின் நோக்கம். சுவடி திரட்டும் முறைகள் - சுவடி திட்டிடுதலின் பயன் - சுவடிகள் விளக்க அட்டவணை தயாரித்தல்.

அலகு 3 : சுவடி எழுத்துகள் - மெய்யெழுத்துக்களின் இயல்பு - குறில் நெடில் வேறுபாடினமை - குறியீடுகள் - தமிழ் எண்கள் - நீட்டல் நிறுத்தல் முதலான அளவைகள் கூட்டெழுத்துகள் - சொற்குறியீடுகள்.

அலகு 4 : சுவடி பெயர்த்து எழுதுதல் - படியெடுப்பதில் ஏற்படும் சிக்கல்கள் - சுவடிகளை பாதிக்கும் உயிரியல் காரணிகள் - வேதிமக்காரணிகள், சுவடிகளைச் செப்பனிடும் மரபு வழிமுறைகள் நவீன முறைகள்.

அலகு 5 :மூலபாட ஆய்வு - சொற்பொருள் - தோற்றமும் வளர்ச்சியும் - மூலபாட ஆய்வு முறைகள் - மூலபாடத்தேர்வு முறைகள் - பாட வேறுபாடு சொற்பொருள் - வகைகள் (இடம், பொருள், காலம், வடிவம், தன்மை, எண்)

பாடநூல்கள்:

சுவடியியல் மோ.கோ. கோவை மணி, பாமொழி பதிப்பகம், தஞ்சாவூர் 2006.

பார்வை நூல்கள்:

1. இரா. இளங்குமரன், சுவடிக்கலை அரிமா பதிப்பகம், சேலம், சுவடிப்பயிற்சிகையேடு
2. பூ. சுப்பிரமணியம், சுவடியியல், உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை.
3. அ. விநாயகமூர்த்தி, மூலபாட ஆய்வியல், பாலமுருகன் பதிப்பகம், மதுரை 1978.
4. மு.கோ. இராமன், உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை 1980.
5. சுவடியியல் ஆய்வு தி. மாகலெட்சுமி, மற்றும் க.ப. வித்யாதரன், ஸ்தபதி பதிப்பகம், சென்னை.
6. சுவடிப் பாதுகாப்பு வரலாறு, ப.பெருமாள், கோவிலூர் மடாலய வெளியீடு, கோவிலூர், காரைக்குடி, 2012.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

பருவம் - ஏஜ ஆஃடு3 கற்பித்தல்:5தரப்புள்ளி:3பாடக்குறியீட்டு எண் : 18மு6வுடுவு3

நோக்கம்: படைப்புத்திறனை வளர்த்தல்

பயன்கள்: படைப்புத்திறன் பெறுவதால் படைப்பாளராதல்

அலகு - 1

சிறுகதை - சிறுகதையின் இலக்கணம் - சமுதாயச் சிக்கலை - அடிப்படையாகக் கொண்டு ஐந்து பக்கங்களுக்குமிகாமல் சிறுகதை எழுதுதல் - கருவுக்கேற்ற கதைகளை உருவாக்கப் பயிற்றுவித்தல்.

அலகு - 2

ஆசிரியப்பா - வெண்பா - விருத்தப்பா வடிவங்களில் கவிதை படைத்தல் - மரபுக்கவிதை, புதுக்கவிதை எழுதுதல் - மையக்கருத்தை அடிப்படையாகக் கொண்டு 20 அடிகளுக்கு மிகாமல் கவிதை எழுதுதல்.

அலகு - 3

ஓரங்க நாடகம் எழுதுதல் - வானொலி அல்லது தொலைக்காட்சி அல்லது திரைப்படத்திற்கு வழங்கப்படும் சூழலைச் சிந்தனையில் கொண்டு ஐந்து காட்சிகளுக்கு மிகாமல் ஓரங்க நாடகம் எழுதுதல்.

அலகு - 4

நேர்முக வருணனை எழுதுதல் - கோயில் திருவிழா, கலை இலக்கியப் பண்பாட்டு நோக்கு விழா, விளையாட்டு விழா ஆகியன பற்றி நேர்முக வர்ணனையை வானொலி, தொலைக்காட்சி திரைப்படத்திற்கு எழுதப் பழகுதல்.

அலகு - 5

உரைநடைக் கட்டுரை எழுதப் பழகுதல் - அறிவியல் - உளவியல் - சமூகவியல் - கல்வியியல் - பொருளியல் - தகவல்களை மனதில் கொண்டு ஐந்து பக்கங்களுக்கு மிகாமல் கட்டுரை எழுதப் பழகுதல்.

பார்வை நூல்கள் :

1. எழுதுவது எப்படி? மகரம் வாசகர் வட்டம்.
2. தற்காலத் தமிழ்ச்சிறு கதைகள், சாகித்ய அகாடெமி வெளியீடு.
3. நடிக்க நாடகம் எழுதுவது எப்படி? பாட்டை, வைகறைப்பதிகம், திண்டுக்கல்.
4. கோ. செல்வம், புகழ் கோபுரம், புவனம், பதிப்பகம், சென்னை.
5. மா. இராமலிங்கம், புதிய உரைநடை தமிழ்ப் புத்தகாலயம், சென்னை.
6. கி.வா.ஜ. கவி பாடலாம், அமுத நிலையம்.
7. ரா. ரங்கராஜன், சிறுகதை எழுதுவது எப்படி?
8. சுஜாதா, திரைக்கதை எழுதுவது எப்படி?
9. மு. சந்தானம், கவிதை மை.
10. நாடகவியல், மதுரை காமராசர் பல்கலைக்கழக வெளியீடு.
11. சக்தி பெருமாள், நாடகத்தின் தோற்றமும் வளர்ச்சியும்
12. மா. இராமலிங்கம், இருபதாம் நூற்றாண்டுத் தமிழ் இலக்கியம்.
13. சென்னை வானொலிப் பொன்விழா மலர், அகில இந்திய வானொலிக்குழு, சென்னை
14. மருதூர். அரங்கரான், பாட்டியல் நூல்கள்.
15. அ. கி. பரந்தாமனார், கவிஞராக.
16. புலவர். குழந்தை, தொடை அதிகாரம், யாப்பதிகாரம்.

17. சரவணத் தமிழன், யாப்பு நூல்.
18. பெருஞ்சித்தரனார், பைந்தமிழ்பாட்டிலக்கணம், களிச்சாறு (கவிதைத் தொகுதி)
19. பாவலரேறு பாலசுந்தரனார், தென்னூல், தாமரை வெளியீடு.
20. தா. ஏ. ஞானமூர்த்தி, படைப்பிலக்கியம்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

பருவம் - ஏஐ புளு கற்பித்தல்:1 தரப்புள்ளி:1 பாடக்குறியீட்டு எண் : 18மு6புளு

அலகு 1:

பாலியல் பாலின உடற்கூறு ரீதியாக நிர்ணயித்தல் - ஆணாதிக்கம் - பெண்ணியம் - பாலினப் பாகுபாடு - வேலைப்பாகுபாடு - பாலின ஒரு படிந்தானவைகள் - பாலின உணர்வூட்டல் - பாலின சம வாய்ப்பு - பாலின சமத்துவம் - பாலின மையநீரோட்டமாக்கல் - அதிகாரப்படுத்துதல்.

அலகு 2:

பாலின சமத்துவக் கல்வி - பல்கலைக்கழக மானியக்குழுவின்வழிகாட்டுதல்கள் - ஏழாவது ஐந்தாண்டுத் திட்டம் முதல் பதினொராவது ஐந்தாண்டுத்திட்டம் - பாலின சமத்துவக்கல்வி, பெய்ஜிங் மாநாடு மற்றும் பெண்களுக்கு எதிரான அனைத்து வரன் முறைகளையும் ஒழிப்பதற்கான சர்வதேச உடன்படிக்கை - இணைத்தல் - உட்படுத்துதல் - ஒதுக்கல்.

அலகு 3:

பாலியல் பாகுபாட்டிற்கான தளங்கள் - குடும்பம் - பாலின விகிதாச்சாரம், கல்வி, - ஆரோக்கியம் - ஆளுமை - மதம் - வேலை ஏளு வேலைவாய்ப்பு - சந்தை ஊடகங்கள் - அரசியல் - சட்டம் -குடும்ப வன்முறை - பாலியல் துன்புறுத்தல் - அரசு கொள்கைகள் மற்றும் திட்டங்கள்.

அலகு 4:

பெண்கள் மேம்பாடு மற்றும்பாலின சமத்துவம் மேம்பாடு - முயற்சிகள் - சர்வதேச பெண்களுக்கான சகாப்தம் - சர்வதேச பெண்கள் ஆண்டு- பெண்களின் மேம்பாட்டிற்கான தேசிய கொள்கை - பெண்கள் அதிகார ஆண்டு 2001 - சர்வதேச கொள்கைகளை மைய நீரோட்டமாக்கல்.

அலகு 5:

பெண்கள் இயக்கங்கள் மற்றும் பாதுகாப்பு நிறுவன ஏற்பாடுகள்- தேசிய மற்றும் மாநில மகளிர் ஆணையம் - அனைத்து மகளிர் காவல் நிலையங்கள் - குடும்ப நீதி மன்றங்கள் - குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும் சட்டம் 2005 - பணியிடங்களில் பெண்கள் மீதான பாலியல் துன்புறுத்தல்களை தடுப்பதற்கான உச்ச நீதி மன்ற வழிகாட்டுதல்கள் - தாய் சேய் சேம நலச் சட்டம் - பெண் சிசுவை கருவிலேயே கண்டறியும் தொழில் நுட்பம் (முறைப்படுத்துதல் மற்றும் தவறாகப் பயன்படுத்தலை தடை செய்திடும்) சட்டம் - ஈவ்டிசிங் (பெண்களைத் தொல்லை செய்தல்) தடுப்புச் சட்டம் - சுய உதவிக் குழுக்கள் - பஞ்சாயத்து அமைப்புகளுக்கான 73ஆவது மற்றும் 74ஆவது சட்ட சீர்திருத்தம்.

பார்வை நூல்கள்:

1. பாலியலைப் புரிந்து கொள்வோம், ஏக்தா, மதுரை.

2. மு. ஆளாசையிடு டுயற சுநடயவபை வழ றழஅநெ யனெ உடனெஇ ஊநவெசயட டுயற யுநெலெஇ 2001.
3. ஊயசை டுநஉடயஎயவாைஇ முழெற லுழரச சுபாவஎஇ வுயஅடையேனர ளுழஉயட றுநடகயசந டுயசஎஇ ஆயனசயஎ 1987.
4. டாயவவயஉாயசலய ஆயடனெஇ ளுநஓரயட ஏழைடநெந யனெ டுயறஇ றுநஎவ டெபெயட ஊழஅஅனெஎழெ கழச றழஅநெஇ முழடமயவய 2002.
5. ளுநஓரயட ர்யசயஎஎஅநவெ யவ வாந றழசமிடயஉந – யு புரனெநஇ ளுயமஎளாைஇ 1991இ நேற னுநடாை.
6. அஜிதா, குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும்சட்டம், ஏக்தா, மதுரை 2005.
7. பொன். கிருணசுவாமி, ஜே. பால்பாஸ்கர், ஆ. ஜான் வின்சென்ட், பெண்களும் உச்ச நீதிமன்றமும், சோக்கோ வாசகர் வட்டம், மதுரை 2004.
8. வனஜா சியாமா சுந்தரி, பெண்களுக்கான சட்டங்கள், உலகத் தோழமை மையம், செகந்திராபாத்.
9. குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும் சட்டம் - 2005, றுழஅநெ'எ ஐவெநபசயவநன யேவழையெட னுநஎநடழிஅநவெ வுசரஎவஇ வுசஊால.
10. ஜி.ஆர். ரவீந்திரநாத், ராகிங் ஒழிப்போம், ஈவ்டிசிங் ஒழிப்போம், ஐ.ஐ.ஐ.இ வெளியீடு, சென்னை.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

இக்கால இலக்கியம் - 1 (கவிதையும், நாடகமும்)

பருவம் - ஐ ஊஊ1 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண்:18மீ1வு01

நோக்கம்: இலக்கிய வடிவங்களில் கவிதை, நாடகம் ஆகியவற்றை அறிமுகப்படுத்துதல்
படைப்பிலக்கியத் திறனை உணர்த்துதல்

பயன்கள்: புதிய படைப்பிலக்கியச் சிறப்பினையும் நயத்தினையும் அறிவர்.

அலகு - 1 மரபுக்கவிதை
பாரதியார் - கண்ணன் பாட்டு முழுவதும்
பெருஞ்சித்திரனார் - ஐயை முழுவதும்

அலகு - 2 புதுக்கவிதை
மீரா - குக்கூ
நா. காமராஜன் - கறுப்புமலர்கள்

அலகு - 3 கவிதை நாடகம்
பாரதிதாசன் - வீரத்தாய்,
அ.பழநி.-அனிச்ச அடி

அலகு - 4 உரைநடை நாடகம் - சோ. ராமசாமி - யாருக்கும் வெட்கமில்லை
தற்காலத் தமிழ் நாடகங்கள் - வெளி ரங்கராஜன் (தொகுப்பு)

அலகு - 5 கவிதையியல் - க. பூரணசந்திரன்

பார்வை நூல்கள்:

1. பாரதியார் கவிதைகள்
2. பாரதிதாசன் கவிதைத் தொகுப்பு
3. பெருஞ்சித்திரனார் - ஐயை,(தென்மொழி நூல் வெளியீடு விற்பனையகம், சென்னை.)
4. மீரா - குக்கூ, அகரம், தஞ்சாவூர்.
5. நா. காமராஜன் - கறுப்பு மலர்கள்
6. தற்காலத் தமிழ் நாடகங்கள்
வெளி ரங்கராஜன் (தொகுப்பு) காவ்யா, சென்னை.
7. கவிதையியல் - க. பூரணசந்திரன், உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

இக்கால இலக்கியம் - ஐஐ (உரைநடையும், புனைகதையும்)

பருவம் - ஐ ஊஊ2 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் :18மீ1வு02

நோக்கம் :இக்கால வடிவங்களில் உரைநடை, புனைகதை ஆகியவற்றை அறிமுகப்படுத்துதல்.

படைப்பிலக்கியத் திறனை உணர்த்துதல்.

பயன்கள் : புதிய படைப்பிலக்கியச் சிறப்பினையும் நயத்தினையும் நடையினையும் அறிவர்.

அலகு - 1 - உரைநடை

1. நான் கண்டதும் கேட்டதும்
2. புதியதும் பழையதும்

அலகு - 2 - உரைநடை

மு. வரதராசனார் - அறமும் அரசியலும்.

சி. என். அண்ணாத்துரை - ஏ! தாழ்ந்த தமிழகமே

அலகு - 3 - புனைகதை (சிறுகதை)

சி. என். அண்ணாத்துரை - செவ்வாழை சிறுகதைத் தொகுப்பு

ஜெயகாந்தன் - குருபீடம்

அலகு - 4 - புனைகதை (புதினம்)

எஸ். இராமகிருஷ்ணன் - நெடுங்குருதி

அகிலன் - சித்திரப்பாவை

அலகு - 5 - நவீனத் தமிழ் இலக்கிய அறிமுகம் - ஜெயமோகன்

பார்வை நூல்கள் :

1. நான் கண்டதும் கேட்டதும், புதியதும் பழையதும் உ.வே. சாமிநாதையர், உ.வே.சா. நூலகம், 2, அருண்டேல் சாலை, பெசண்ட்நகர், சென்னை.
2. எஸ். இராமகிருஷ்ணன் - நெடுங்குருதி - உயிர்மை சென்னை.
3. - நவீனத் தமிழ் இலக்கிய அறிமுகம் - ஜெயமோகன் கிழக்குப்

பதிப்பகம், முதல்தளம், அம்பாள் பில்லிங், லாயிட்ஸ் ரோடு, இராயப்பேட்டை, சென்னை.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

அற இலக்கியம்

பருவம் - ஐ ஊஊ3கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் : 18மீ1வு03

நோக்கம்: செம்மார்ந்த அறக்கருத்தை உணர்தல்

பயன்கள்: அறத்தைத் தெளிவாக உணர்தல். பழம் நூல் பெருமையறிதல்.

அலகு - 1 திருக்குறள் - பொருட்பால் (12 அதிகாரங்கள்), காலம் அறிதல், இடம் அறிதல், தெரிந்து தெளிதல், தெரிந்து வினையாடல், சுற்றந்தழால் (49-53), அமைச்சு, சொல்வன்மை, வினைத்திட்டம், வினைசெயல்வகை (64-68) நட்பு, நட்பாராய்தல்,கூடாநட்பு(79,80,83).

அலகு - 2

பழமொழி - கல்வி - 11 பாடல்கள் (1-11).

பெரியாரைப் பிழையாமை - 4 பாடல்கள் (61 - 64).

தெரிந்து செய்தல் - 13 பாடல்கள் (184-196).

நாலடியார், துறவு (அதிகாரம் 6) 10 பாடல்கள் (51 - 60),

மேன் மக்கள் (அதிகாரம் -16) 10 பாடல்கள் (151 - 160).

அலகு - 3

நீதிநெறிவிளக்கம் 51 - 100 பாடல்கள்

அலகு - 4

திரிகடுகம் 10 - 30 பாடல்கள், களவழி நாற்பது 11-20 பாடல்கள்

அலகு - 5

இனியவை நாற்பது 31- 40 பாடல்கள், பாரதியார் - புதிய ஆத்திசூடி -முழுவதும்

பார்வை நூல்கள்:

1. பதினெண் கீழ்க்கணக்கு நூல்கள்
2. நீதிநெறி விளக்கம்
3. புதிய ஆத்திசூடி, பாரதியார்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தொல்காப்பியம் - எழுத்ததிகாரம்

பருவம் - ஐ ஊஊ4 கற்பித்தல் :6 தரப்புள்ளி :5பாடக்குறியீட்டு எண் :18மீ1வு04

நோக்கம்: தமிழ்மொழியின் இலக்கணத்தைச் சிறப்பாகப் பயிற்றுவித்தல்

பயன்கள்: மாணவர்கள் இலக்கண அறிவு பெறுதல்.

அலகு - 1

தொல்காப்பியம் - சிறப்புப் பாயிரம், நூன் மரபு, மொழிமரபு.

அலகு - 2

பிறப்பியல், புணரியல்

அலகு - 3

தொகை மரபு, உருபியல்

அலகு - 4

உயிர் மயங்கியல், புள்ளி மயங்கியல்

அலகு - 5

குற்றியலுகரப் புணரியல்

பாடநூல் :

தொல்காப்பியம் எழுத்ததிகாரம் - இளம்பூரணர் உரை, கழக வெளியீடு.

பார்வை நூல்கள்:

1. தொல்காப்பியம் எழுத்ததிகாரம் - ச.சுபாஸ்சந்திர போஸ், இயல் பதிப்பகம், தஞ்சாவூர்.
2. தமிழிலக்கணம் - பி. விருத்தாசலம், கபிலர் நகர், வெண்ணாற்றங்கரை, தஞ்சாவூர்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

சிந்தனையியல்

பருவம் - ஐ ஆண்டு1 கற்பித்தல் :6 தரப்புள்ளி :4பாடக்குறியீட்டு எண்:18மீ1வுநடுவு1

நோக்கம்: உலக அறிஞர்களின் கருத்துக்களை அறிமுகம் செய்தல்.

பயன்கள்: மாணவர்கள் உலகப் பொதுநோக்கை அறிதல்.

அலகு 1 :

சிந்தனையியல்-விளக்கம்-இந்தியச்சிந்தனைகள் வேதம், உபநிடதம், சமண
பௌத்தசிந்தனைகள் சங்க காலம் நீதி இலக்கிய காலம், (அறிவியல்) பக்தி
இலக்கியச் சிந்தனைகள்- ஆதி சங்கரர்- மேலை நாட்டுச் சிந்தனைகள்- சாக்ரடீஸ்-
அரிஸ்டாடில் கிறித்துவ இசுலாமியச் சிந்தனைகள், இக்காலச் சிந்தனைகள் தொழில்
அறிவியல் புரட்சி குடியாட்சி, சிந்தனை மாற்றங்கள், 20 ஆம் நூற்றாண்டு
சிந்தனையாளர்கள்.

அலகு 2 :

காரல் மார்க்ஸ், மார்க்சீயக் கோட்பாடுகள், கருத்து முதல் வாதமும், பொருள்
முதல் வாதமும், மூலதனமும், அவர்தம் கருத்துக்களும், சொத்துரிமை மதம்,
குறித்தசிந்தனைகள்.

அலகு 3 :

காந்தியடிகள் வரலாறு, அகிம்சை சத்தியாக்கிரகம் சமயக்கோட்பாடு சமுதாய
ஒற்றுமை, பெண்கள் தாழ்த்தப்பட்டோர் முன்னேற்றம் கிராம ராஜ்யம், சுதேசிக் கொள்கை,
அரசியல், விடுதலை, பொருளாதாரம்.

அலகு 4 :

அம்பேத்கார் வரலாறு - சமூக உரிமைப்போராட்டங்கள், அரசியல் சட்டமும்
அம்பேத்காரும். அவர் தம் சாதனைகள் பெரியார் - அரசியல் சமுதாயச் சிந்தனைகள்,
மூட நம்பிக்கை ஒழிப்பு, சாதி ஒழிப்பு, விதவை மறுமணம் மொழி இலக்கியச்
சிந்தனைகள் எழுத்துச் சீர்திருத்தம் எம்.எஸ். தன்னம்பிக்கைச் சிந்தனைகள்.

அலகு 5 :

வள்ளலார் வரலாறு, கோட்பாடுகள், அருட்பெருஞ்சோதி தனிப்பெருங்கருணை, சமரச
சுத்த சன்மார்க்க நெறி சமுதாயச் சிந்தனைகள், ஜீவகாருணிய ஒழுக்கம்,
விவேகானந்தர் வரலாறு-இராமகிருஷ்ணரும், விவேகானந்தரும், கல்வி சமுதாயச்
சிந்தனைகள் அறிவியல் மெய்ம்மையியல் இணைப்பு தொண்டு நிறுவனங்களும்
சமயமும்.

பாடநூல் : சிந்தனையியல், தமிழ்த்துறை வெளியீடு, கு.நா.அ.ம.கல்லூரி, தஞ்சாவூர்.

பார்வை நூல்கள்:

1. வள்ளலார் ஓர் அறிமுகம் - மா.ரா.பொ. குருசாமி
2. இராமலிங்க அடிகள் வரலாறு - ஊரன் அடிகள்
3. வள்ளலார் கண்ட ஒருமைப்பாடு - மா.பொ.சி
4. கார்ல் மார்க்ஸ் வாழ்க்கைச் சுருக்கம்- நா. தர்மராஜன்
5. பெரியார் ஈ.வே.ரா. சிந்தனைகள் -வே. ஆனைமுத்து (பதிப்பு) (3 தொகுதிகள்)
6. புரட்சியாளர் பெரியார் - நெ.து. சுந்தரவடிவேலு
7. பெரியாரியல் - விவேகானந்தர்
8. வேதாந்தச் சொற்பொழிவுகள் - விவேகானந்தர்
9. இந்து சமயம் - விவேகானந்தர்
10. எனது சிந்தனைகள் - விவேகானந்தர்
11. இராமகிருஷ்ணர் இயக்கமும் தமிழ்நாடும்-பெ.சு. மணி
12. சுவாமி விவேகானந்தர் - ரா. குணபதி
13. சிந்தனையாளர் பெரியார் - நன்னன்
14. அம்பேத்கார் பேசுகிறார் - கோ. சாமிதுரை
15. சமூகப்புரட்சியாளர் டாக்டர். அம்பேத்கார்- டாக்டர். ப. சீனிவாசன்
16. சத்திய சோதனை - காந்தியடிகள்
17. தமிழர் தலைவர் - சாமி. சிதம்பரனார்
18. காந்தியச்சிந்தனைகள் - மா.பா. குருசாமி
19. பெரியார் ஒரு முழுப் புரட்சியாளர் - பேரா. ந. இராமநாதன்
20. தன்னம்பிக்கை - எம்.எஸ். உதயமூர்த்தி
21. உன்னால் முடியும் தம்பி - எம்.எஸ். உதயமூர்த்தி

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

பக்தி இலக்கியம்

பருவம் - ஐஐ ஊஊ5 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் : 18மீ2வு05

நோக்கம்: மனித நேயத்தை உணர்த்தும் மதக் கருத்துக்களை உணர்தல்.

பயன்கள்: 1. மனித ஒருமைப்பாடு பெறுதல்.
2. அன்பே கடவுள் என உணர்ந்து மனித ஒற்றுமையை வளர்த்தல்.
3. அனைத்து உயிர்களிடத்தும் அன்பு கொண்டு உலக நன்மைக்கு உறுதி கொள்ளல்.

அலகு - 1 திருஞானசம்பந்தர் - 2ஆம் திருமுறை,
திருநள்ளாறு பதிகம். “போகம் ஆர்த்த...”.
திருநாவுக்கரசர்-திருவொற்றியூர்பதிகம்-
“வண்டோங்கு செங்கமலங் கழுநீர்...”.
சுந்தரமூர்த்தி சுவாமிகள் - திருஆரூர்பதிகம்,
“கரையும் கடலும் மலையும் ...”.

அலகு - 2 திருமூலர் திருமந்திரம்
யாக்கை நிலையாமை, செல்வ நிலையாமை, இளமை நிலையாமை.

அலகு - 3 நாலாயிர திவ்ய பிரபந்தம் - திருமங்கையாழ்வார் -
சிறிய திருமடல்முழுவதும் (80 வரிகள்)

அலகு - 4 குணங்குடி மஸ்தான் சாகிபு பாடல்கள் முகையிதீன் சதகம் (1-20)

அலகு - 5 தேம்பாவணி - ஐயம் நீங்கு படலம் - கனவில் தெளிந்த ஐயம் (1-30)

பார்வை நூல்கள்:

1. ஞான சம்பந்தர் - தருமபுர ஆதினம் - 1954
2. அப்பர் - தருமபுர ஆதினம் - 1953
3. சுந்தரர் - தருமபுர ஆதினம் - 1964
4. நாலாயிர திவ்ய பிரபந்தம் - வர்த்தமாணன் பதிப்பகம்.
5. குணங்குடி மஸ்தான் சாகிபு பாடல்கள், முல்லைநிலையம்
6. தேம்பாவணி, பாரி நிலையம், சென்னை.
7. ஞான சம்பந்தர் தேவாரம் - உமா பதிப்பகம், சென்னை.
8. நாவுக்கரசர் தேவாரம் - உமா பதிப்பகம், சென்னை.
9. சுந்தரர் தேவாரம் - விஜயா பதிப்பகம், கோயம்புத்தூர்.
10. திருமூலர் திருமந்திரம், உமா பதிப்பகம், சென்னை.
11. சமய இலக்கிய விளக்கம் - தமிழ்ப்புத்தகாலயம்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

காப்பியங்கள்

பருவம் - ஐஐ ஊஊ6 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் :18மீ2வு06

நோக்கம்:

காப்பிய இலக்கியங்களின் தனிச்சிறப்பினைப் பயிற்றுவித்தல். காப்பிய இலக்கியங்கள் புலப்படுத்தும் வாழ்வியலைப் புலப்படுத்தல். அக்காலப் பண்பாட்டுப் பெருமைகளை அறியச் செய்தல்.

பயன்:

காப்பிய இலக்கியங்களைப் பயில்வதன் மூலமாக நமது பண்பாட்டுச் சிறப்புகளை மீட்டுருவாக்கம் செய்தல். காப்பியங்கள் கூறும் வாழ்வியல் அறங்களை உணர்த்துதல்.

அலகு - 1 சிலப்பதிகாரம் - மதுரைக்காண்டம் முழுவதும் (13 காதைகள்)

அலகு - 2 மணிமேகலை - 3 காதைகள் (9-11 வரை) பீடிகை கண்டு பிறப்புணர்ந்த காதை முதல் பாத்திரம் பெற்ற காதை வரை.

அலகு - 3 சீவகசிந்தாமணி, சுரமஞ்சரியார் இலம்பகம் (107 பாடல்கள்)

அலகு - 4 கம்பராமாயணம் - கும்பகர்ணன் வதைப் படலம்.

இராவணகாவியம் - இராவணப்படலம் முழுவதும்

அலகு - 5 தேம்பாவணி - சீனயி மாமலை காண்படலம் (56 பாடல்கள்)

சீறாப்புராணம் - மழையழைப்பித்த படலம் (21 பாடல்கள்)

பார்வை நூல்கள்:

1. சிலப்பதிகாரம் - கழக வெளியீடு
2. மணிமேகலை - கழக வெளியீடு
3. சீவகசிந்தாமணி - கழக வெளியீடு
4. கம்பராமாயணம் - கம்பன்கழக வெளியீடு, சென்னை.
5. இராவணகாவியம் - முத்தமிழ் நிலைய வெளியீடு (1946)
6. தேம்பாவணி - வர்த்தமானன் பதிப்பகம், சென்னை - 17.
7. சீறாப்புராணம், எவி.எம். ஜாபர்தீன் நூர்ஜகான் டிரஸ்ட், 6டி, பிரிம்ரேஸ் கார்டன் தேனாம்பேட்டை, சென்னை - 18.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தொல்காப்பியம் - சொல்லதிகாரம்

பருவம் - ஐஐ ஊஊ7 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் :18மீ2வு07

நோக்கம்: சொல்லிலக்கண மரபுகளையும் சொற்களின் அமைப்பையும், வகைகளையும் மாணவர்களுக்குக் கற்பித்தல்.

பயன்கள்:தமிழ்ச் சொற்களின் வகைகளைக் கற்றுக் கொள்ளல்.

அலகு - 1

கிளவியாக்கம்

அலகு - 2

வேற்றுமையியல், வேற்றுமை மயங்கியல்.

அலகு - 3

விளிமரபு, பெயரியல்

அலகு - 4

வினையியல், இடையியல்

அலகு - 5

உரியியல், எச்சவியல்

பாடநூல்:

1. தொல்காப்பியம் - சொல்லதிகாரம் - சேனாவரையர் உரை- கழக வெளியீடு.

பார்வை நூல்கள் :

1. தமிழண்ணல் - சொல்லதிகாரம்
2. ஐந்திலக்கணம் - இ.சுந்தர மூர்த்தி
3. சொல்லிலக்கண கலைச் சொற்கள் - மீள் வாசிப்பு - கு. பெரியசாமி
4. பொற்கோ - இலக்கணக்களஞ்சியம்
5. மொழியில் நோக்கில் தமிழிலக்கணம்- முனைவர். சண்முக. செல்வகணபதி
6. தொல்காப்பியம், சொல்லதிகாரம், ச.சுபாஸ்சந்திரபோஸ், இயல் பதிப்பகம், தஞ்சாவூர்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

மொழியியல்

பருவம் - ஐஐ ஊஊ8 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் :18மீ2வு08

நோக்கம்: தமிழ்மொழியின் வரலாற்றினையும், தமிழ் மொழியின் அமைப்பையும், இலக்கண நுட்பங்களையும் அறிந்து கொள்ளுதல்.

பயன்கள்: தமிழ் மொழியின் பயன்பாட்டையும் சிறப்பினையும் அறிந்து கொள்ளுதல்.

அலகு - 1

மொழியும் மொழியியலும் - மொழியியல் ஆய்வு - வரலாற்று நோக்கில் இலக்கணமும் மொழியியலும் - ஒலியியல் - உயிரொலிகள் - மெய்யொலிகள் - தடையொலி - மூக்கொலி - மருங்கொலி- மாற்றொலி - வல்லொலி மெல்லொலி மாற்றம்.

அலகு - 2

ஒலியனியல் ஒலியன் விளக்கம் - ஒலியன் கொள்கைகள் - உறழ்ச்சி மாற்றொலிகளும் வகையொலிகளும் - தமிழ் ஒலியன்கள் ஒலி அழுத்தம் - தனி உருபுகளும் கட்டு உருபுகளும்.

அலகு - 3

உருபனியல் - உருபன் - உருபு, மாற்றுருபு, உருபன் - உருபன்களைக் கண்டறியும் விதம் - உருபன்களின் வகைகள்.

அலகு - 4

பெயர்ச்சொல் - பெயர்வகை - பொதுப்பெயர் - பதிலீடுபெயர்கள் - மூவிடப் பெயர்கள் - சுட்டுப் பெயர்கள் - வினாப்பதிலீடுபெயர் எண்ணுப்பெயர் - திணைப்பாகுபாடு.

அலகு - 5

தொடரியல் - சொல்லியைபு - சொல்லும் சொற்றொடரும் சொற்றொடர் அமைப்பு - புதைநிலை வடிவம் புறநிலைவடிவம். தமிழ்த் தொடர் அமைப்புகள் - இன்றைய மொழியியலாய்வு விளக்க மொழியியல் - சமுதாய மொழியியல், வரலாற்று மொழியியல் மானிட மொழியியல்.

பாடநூல் :

பரமசிவம், இக்காலமொழியியல் அறிமுகம் - அடையாளம் பதிப்பகம், புத்தாந்தம்.

பார்வை நூல்கள்:

1. மொழியியல் - டாக்டர். ரா. சீனிவாசன், சாரதா பதிப்பகம், சென்னை - 14
2. தொல்காப்பியரின் சொல்லிலக்கணக் கோட்பாடு - இரா. காசிராஜன், மதி பதிப்பகம், மதுரை.
3. இராஜாராம், ஒலியியல், தமிழ்ப்பல்கலைக்கழகம் - தஞ்சாவூர்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

உரையாசிரியர்கள்

பருவம் - ஐஐஆஊரு2 கற்பித்தல் :6தரப்புள்ளி :4பாடக்குறியீட்டு எண் :18மீ2வுருடுவு2

நோக்கம்: இலக்கண, இலக்கிய உரைகள் மற்றும் உரையாசிரியர்களை அறிதல்

பயன்கள்: இலக்கண, இலக்கிய வளர்ச்சியில் உரையாசிரியர்களின் பங்களிப்பை உணர்தல்.

அலகு 1 :

உரையின் தோற்றமும் வளர்ச்சியும் - உரையாசிரியர்கள் - உரையின் வகைகள்.

அலகு 2 :

இலக்கண உரையாசிரியர்கள் -இறையனார் அகப் பொருள் உரை - இளம்பூரணர், சேனாவரையர், பேராசிரியர், நச்சினார்க்கினியர்

அலகு 3 :

சிவஞான முனிவர் மயிலை நாதர், சங்கர நமச்சிவாயர், ஆறுமுக நாவலர் - யாப்பு - காரிகை - தண்டியலங்காரம் - நம்பியகப் பொருள் உரைகள் - சாமுண்டி தேவ நாயகர், பாவலர் உரை.

அலகு 4 :

இலக்கிய உரையாசிரியர்கள் - பத்துப்பாட்டு - எட்டுத் தொகை உரைகள் - பதினெண்கீழ்க்கணக்கு உரைகள்.

அலகு 5 :

பதிப்பாசிரியர்கள் - இடைச்செருகல்கள் - உரையில்லாத நூல்கள் - மறைந்து போன உரை நூல்கள்

பாட நூல்:

மு.வை. அரவிந்தன்- உரையாசிரியர்கள் மணிவாசகர் பதிப்பு,817, சிங்கர் தெரு, பாரிமுனை, சென்னை - 600 018.

பார்வை நூல்கள்:

1. பேரா. இரா. மோகன் - உரை மரபு நெல்லை. ந. சொக்கலிங்கம்
2. வ. சுப. மாணிக்கம் - தொல்காப்பியத்திறன்
3. வ. சுப. மாணிக்கம் - தொல்காப்பியக்கடல்

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

சொற்பொழிவுக்கலை

பருவம் - ஐஐ
:18மீ2௭௭வு1

௭௭1

கற்பித்தல் : -

தரப்பள்ளி :5

பாடக்குறியீட்டு எண்

நோக்கம்: இலக்கியங்களின் நோக்கினையும், போக்கினையும் அறியச் செய்தல்
படைப்பிலக்கியச் சிந்தனையை மேம்படுத்துதல்.

பயன்கள்: இலக்கியச் சிறப்பினையும், கவின் மிக்க நயத்தினையும் அறியச் செய்தல்.

அலகு 1 :

சொற்பொழிவுக்கலை-சிறப்பியல்புகள் - சொற்பொழிவுக் கலையின் வரலாறு - புகழ்பெற்ற
சொற்பொழிவாளர்கள் - உலக அரங்கில் சொற்பொழிவுக் கலையின் வரலாறு

அலகு 2 :

தமிழில் சொற்பொழிவுக்கலை - இலக்கியங்களில் சொற்பொழிவு பற்றிய குறிப்புகள்
திருக்குறளில் சொற்பொழிவு - சொற்பொழிவுக் கலையின் பயன்பாடுகள்

அலகு 3 :

சொற்பொழிவின் வகைகள் - பாட்டு விளக்கம் (பிரசங்கம்) - கதா காலட்சேபம் -
அறவுரை - சொற்போர் - அரசியல், இலக்கிய ஆராய்ச்சிச் சொற்பொழிவுகள்.

அலகு 4 :

சொற்பொழிவுக் கலை உத்திகள் - எழுத்துரை - அவையச்சம் - அவையச்சத்தை
நீக்கும் வழி முறைகள் - சிறந்த சொற்பொழிவின் இலக்கணம் - சொற்பொழிவின்
தொடக்கம் - சிறந்த தொடக்கத்திற்கான உத்திகள் - சொற்பொழிவின் முடிப்பு -
சிறந்த முடிப்பிற்கான உத்திகள். சொற்பொழிவுப் பொருளை விவரிக்கும் வழிமுறைகள் -
மொழிநடை.

அலகு 5 :

தலைமையுரை - வாழ்த்துரை - வரவேற்புரை - நன்றியுரை - பாராளுமன்ற சட்ட
மன்ற உரைகள் - நீதிமன்ற வழக்குரை - பட்டிமன்ற வழக்காடு மன்ற உரைகள்.

பார்வை நூல்கள்:

1. நீங்களும் பேச்சாளர் ஆகலாம் - குமரி அனந்தன், வானதி பதிப்பகம், சென்னை-17.
2. பேச்சாளராக அரிய வழிகாட்டி- அ.கி. பரந்தாமனார், பாரி நிலையம், சென்னை - 17.
3. நீங்களும் பேச்சாளராகலாம் - பி.சி. கணேசன், வானதி பதிப்பகம், சென்னை - 17.
4. அண்ணாவின் மேடைக்கலை - பொன். செல்வகணபதி, பாரதிப்பதிப்பகம், சென்னை- 17.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தொல்காப்பியம் பொருளதிகாரம் (முதல் 5 இயல்கள்)

பருவம் - ஐஐஐ ஊஊ9 கற்பித்தல் :6 தரப்புள்ளி :4 பாடக்குறியீட்டு எண் :18மீ3வு09

நோக்கம்: தமிழின் அகமரபுகளைக் கற்றறிதல்.

பயன்கள்: அக, புறத்திணைக் கோட்பாட்டு அறிதல்

அலகு - 1

அகத்திணையியல்

அலகு -2

புறத்திணையியல்

அலகு -3

களவியல்

அலகு -4

கற்பியல்

அலகு -5

பொருளியல்

பாடநூல் : தொல்காப்பியம் - பொருளதிகாரம், இளம்பூரணர் உரை,கழக வெளியீடு.

பார்வை நூல்கள்:

1. க. வெள்ளைவாரணர், தொல்காப்பியத்தமிழ் இலக்கிய வரலாறு, அண்ணாமலைப் பல்கலைக்கழகம்.
2. ச. அருணாசலம் (பதி) அகத்திணையியல், மதுரை காமராசர் பல்கலைக்கழகம்.
3. சி. இலக்குவனார், தொல்காப்பிய ஆராய்ச்சி
4. ச. சோமசுந்தரபாரதியார், தொல்காப்பியப் பொருட் படலப் புத்துரை
5. கு.வே. பாலசுப்பிரமணியன், சங்க இலக்கியத்தில் புறப்பொருள்
6. வ. சுப. மாணிக்கம், தமிழ்க்காதல்

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

மொழிபெயர்ப்பியல்

பருவம் - ஐஐஐ ஊஊ10 கற்பித்தல் :6 தரப்புள்ளி :4 பாடக்குறியீட்டு எண் :18மூ3வு10

நோக்கம் : பிற மொழியில் உள்ள கருத்துக்களை அறிந்து கொள்ளுதல், ஒப்பீட்டாய்விற்கு வழி வகுத்தல்.

பயன் : மொழி பெயர்ப்பில் உள்ள சிக்கல்களையும், அவற்றைக் களைவதற்கான வழிமுறைகளையும், ஆழமாகக் கற்கச்செய்தல்.

அலகு : 1

மொழி பெயர்ப்பினைப் பற்றி பல்வகை விளக்கங்கள் மூலமொழி, இலக்கு மொழி பற்றிய கண்ணோட்டம் - தோற்றம் - வளர்ச்சி - நோக்கம் - பயன் - இன்றியமையாமை - மேலைநாட்டு மொழிகளில் மொழிபெயர்ப்பு - தமிழ்நாட்டில் மொழிபெயர்ப்பு - உலக அரங்கில் மொழிபெயர்ப்பின் இன்றைய இன்றியமையாமை - இன்றியமையாப் பணிகள்.

அலகு : 2

மொழிபெயர்ப்பு வகைகள் - நல்ல மொழி பெயர்ப்பு - கவிதை மொழிபெயர்ப்பு - பத்திரிகை மொழி பெயர்ப்பு - அறிவியல் மொழிபெயர்ப்பு - கணிப்பொறிவழி மொழிபெயர்ப்பு - படைப்பிலக்கியங்கள் மொழிபெயர்ப்பு - பகவத்கீதை மொழிபெயர்ப்பு - விவிலிய மொழிபெயர்ப்பு - பாரதியின் மொழிபெயர்ப்பு - நம்பகநிலை மொழிபெயர்ப்பு - விரிவான மொழிபெயர்ப்பு.

அலகு : 3

குறிப்பிடத்தகுந்த மொழிபெயர்ப்பாளர்கள் - அடிப்படைத்தகுதிகள் - இருமொழி - பன்மொழி அறிவின் இன்றியமையாமை - பிறத் துறைகளில் ஆழ்ந்த பயிற்சியும் புலமையும் - மூலநூலாசிரியருக்கு ஒத்த திறன் - படைப்பு மனம் - அறிவியல் பார்வை.

அலகு : 4

மொழிபெயர்ப்பின் அடிப்படைகள் - கொள்கைகள் - நிகரன் கொள்கை (வாநழசல மக நுஙரளையடநெந) இயங்குநிலை நிகரன்கள் (னூலயெஅஊ நுஙரளையடநெந) சூழல்கள் ஒத்தமைவு (ரவெநஓரயட உழளெளவைநெல)இவற்றின் விளக்கங்கள் - மொழிபெயர்ப்பின் பொதுவான சிக்கல்களுக்கான காரணிகள் - தமிழ் மொழிக்கே உரிய சிக்கல்கள் - மரபுச்சொற்கள் - வழக்குச் சொற்கள் - உறவுமுறைச் சொற்கள்.

அலகு - 5

தமிழ் ஆங்கில மொழி பெயர்ப்புகளை ஒப்பு நோக்கல் - அறிவியல் தொழில் நுட்ப இலக்கியங்களை மொழிபெயர்க்கும் முறை - ஆட்சி ஆவணங்களை மொழிபெயர்த்தல் - ஆங்கிலச்சொற்கள் - பிறமொழிச் சொற்கள் - இணைப்பழமொழிகளும் மரபுத் தொடர்களும் - மொழிபெயர்ப்பு - சான்றுகள்.

பாடநூல் : சு.சண்முக வேலாயுதம், மொழிபெயர்ப்பியல், உலகத்தமிழாராய்ச்சி நிறுவனம் சென்னை. 1985

பார்வை நூல்கள் :

1. ச.ஈஸ்வரன், மொழிபெயர்ப்பியல், பாவை பப்ளிகேசன்ஸ், சென்னை-2005
2. சி.சிவசண்முகம், ஞ வே.தயாளன், மொழிபெயர்ப்பியல், அன்னம், சிவகங்கை -1989
3. சேதுமணிமணியன், மொழிபெயர்ப்பியல் கோட்பாடுகளும் உத்திகளும், செண்பகம் வெளியீடு, மதுரை - 1990.
4. செ.இராஜேஸ்வரி, மொழிபெயர்ப்பியல் ஆய்வு, நெல்லையா பதிப்பகம் - மதுரை.1992.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

சங்க இலக்கியம்

பருவம் - ஐஐஐ ஊஊ11 கற்பித்தல் : 6 தரப்புள்ளி : 4
:18மீ2வு11

பாடக்குறியீட்டு எண்

நோக்கம் : சங்க இலக்கிய வாழ்வியல் மரபுகளை பயிற்றுவித்தல்.

பயன் : மாணவர்கள் சங்க இலக்கியப் பயிற்சி பெறல்.

அலகு : 1

1. குறுந்தொகை – பாடல் எண் 1 முதல் 25 வரை
2. ஐங்குறுநூறு – நெய்தல் திணையில் 20 பாடல்கள்
- அ. தாய்க்கு உரைத்த பத்து (பாடல் எண் 101 முதல் 110 வரை)
- ஆ. தோழிக்கு உரைத்த பத்து (பாடல் எண் 111 முதல் 120 வரை)

அலகு : 2

1. நற்றிணை-பாடல் எண் 1 முதல் 20 வரை
2. அகநானூறு-
 - அ. கறிற்றுயானை நிரை-
(பாடல் எண் - 6, 16, 26, 36, 46, மருதத்திணைப்பாடல்கள் 5)
 - ஆ. மணிமிடைப்பவளம் - (பாடல் எண் - 151, 153, 155)
 - இ. நித்திலக்கோவை -(பாடல் எண் -277, 299)(பாலைத்திணைப் பாடல்கள் 5)

அலகு : 3

1. கலித்தொகை- முல்லைக்கலிப் பாடல்கள் - 5
(பாடல் எண் : 101 முதல் 105 வரை)
2. பரிபாடல் - வையைப் பற்றிய பாடல் - 1
(நிறை கடல் முகந்து... 6 வது பாடல் மட்டும்)

அலகு : 4

1. பதிற்றுப்பத்து- ஐந்தாம் பத்து இரண்டு பாடல்கள்
(சுடர்வீ வேங்கை, தசம்பு துளங்கிருக்கை)
2. புறநானூறு- தெரிவு செய்யப்பட்ட பாடல்கள் 30.
(பாடல் எண் : 02, 09, 30, 34, 46, 74, 86, 87, 182-200, 216, 217, மற்றும் 278)

அலகு : 5

பத்துப்பாட்டு- குறிஞ்சிப்பாட்டு முழுவதும்

பார்வை நூல்கள் :

1. சங்க இலக்கியம் - கழகப் பதிப்பு (பழைய உரை)
2. சங்க இலக்கியம் - தமிழ் மண் பதிப்பகம், வெளியீடு.
(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

அறிவியல் தமிழ்

பருவம் - ஐஐஐஐ

ஆண்டு கற்பித்தல் :6 தரப்புள்ளி :4

பாடக்குறியீட்டு எண் :18மீ3வுருடுவு3

நோக்கம்:1. தாய்மொழி வழியாக அறிவியல் பற்றி சிந்திக்கவும் செயலாற்றவும் தூண்டுதல்.
2. படைப்பிலக்கியங்களில் அறிவியல் சிந்தனைப் படைப்புகள் வளரச் செய்தல்.

பயன்கள்:1. அறிவியல் தொழில்நுட்ப யுகத்தின்வளர்ச்சிப் பற்றி மாணவர் அறிவு பெறுவர்.
2. அறிவியலைத் தமிழ் மூலம் தன்மயமாக்கும் முயற்சிகளை மாணக்கர் முன்னெடுப்பர்.

அலகு 1 :

அறிவியல் தமிழின் தோற்றம் - வளர்ச்சி - வரலாறு - பலதுறை அறிவியல் தமிழ் நூல்கள் உருவாகி வளர்ந்தமை.

அலகு 2 :

தமிழில் அறிவியல் இதழ்கள் - அறிவியல் இதழ்களின் தன்மை - சிறுவர்களுக்கான அறிவியல் இதழ்கள் - கலைக்கதிர், அறிக அறிவியல், துளிர் - பொது அறிமுகம்.

அலகு 3 :

சங்க இலக்கியத்தில் அறிவியல் கூறுகள் - பத்துப்பாட்டு - எட்டுத்தொகை - பதினெண்கீழ்க் கணக்கு நூல்களில் - பக்தி இலக்கியம் - சிற்றிலக்கியம்- இக்கால இலக்கியம் முதலான நூல்களில் அறிவியல் தமிழ் - அறிவியல் கூறுகள் இடம்பெற்றுள்ள தன்மை.

அலகு 4 :

கலைச் சொல் விளக்கம் - தமிழில் கலைச்சொல்லாக்க நெறிகள் - புதுச் சொற்படைப்பு - சொல்லாக்க பகுதி, விசுவநாதன் - சொல்லாக்க வகைகள் - மொழிபெயர்ப்பு - எழுத்துப் பெயர்ப்பு - கடன் வாங்கல் - சுருக்க மொழிபெயர்ப்பு விளக்க முறை.

அலகு 5 :

தமிழ்நாடு அறிவியல் இயக்கத்தின் அறிவியல் பரப்புப் பணிகள் - இணையவழித் தமிழ்ப்பணி - அறிவியல் தமிழ் அறிஞர்கள் - இராம. சுந்தரம், சா. கிருணமூர்த்தி - ந. அப்புசாமி.

பார்வை நூல்கள் :

1. அறிவியலும் இலக்கியமும் - பொ.திராவிடமணி - பு. இந்திராகாந்தி.
2. அறிவியல் தமிழக வரலாறு (1866 - 1950) தி பார்க்கர் வெளியீடு, இராயப்பேட்டை, சென்னை.
3. கலைச்சொல்லாக்கம் - இராதா செல்லப்பன்.
4. இணையத் தமிழ் - அனைத்திந்திய அறிவியல் தமிழ்க்கழகம், தஞ்சாவூர் - 2003.
5. பன்முக நோக்கில் அறிவியல் தமிழும் கலைச்சொல்லாக்கமும், அனைத்திந்திய அறிவியல் தமிழ்க்கழகம் - 2016.
6. அறிவியல் தமிழ் - தமிழக அறிவியல் ஆசிரியர் மன்றம், 2012.

7. அறிவியல் தமிழ் - பதிப்பாசிரியர் இராமநாதன், இராம. சுந்தரம், கரந்தை தமிழ்ச் சங்கம், தமிழ்ப் பல்கலைக் கழகம் - 1995.
8. செம்மொழித் தமிழ் அறிவியல், அனைத்திந்திய அறிவியல் தமிழ்க் கழகம், தஞ்சாவூர்.
9. இலக்கியமும் அறிவியலும் - அனைத்திந்திய அறிவியல் தமிழ்க்கழகம் - 2008.
10. தமிழில் அறிவியல், இதழ்கள், இரா. பாவேந்தன், முதற்பதிப்பு – 1998.
11. அறிவியல் தமிழ் நூல்களும் இதழ்களும், அனைத்திந்திய அறிவியல் தமிழ்க்கழகம் - 2004.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

ஒப்பிலக்கியம்

பருவம் - ஐஐஐ ஆஹு4 கற்பித்தல் :6 தரப்புள்ளி :4 பாடக்குறியீட்டு எண் :18மூ3வுநடுவு4

நோக்கம் : ஒப்பிலக்கிய மரபுகளை மாணாக்கருக்குக் கற்பித்தல்.

பயன் : பிறமொழிகள் மற்றும் பல்வேறு இலக்கியங்களைப்பற்றிய அறிவைப் பெறுதல்.

அலகு - 1

ஒப்பிலக்கியம் - சொற்பொருள் விளக்கம் - ஒப்பிலக்கியத்தின் பண்பும் பயனும் - மூவகை இலக்கியம். (தேசிய இலக்கியம் - உலக இலக்கியம் பொது இலக்கியம்) ஒப்பிலக்கியத்தில் அறிவியல் அணுகு முறைகள்.

அலகு - 2

தமிழில் ஒப்பிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் - பண்டைய உரையாசிரியர், தமிழ்ப்புலவர் முதலியோரின் ஒப்பிலக்கிய நோக்கு - வ.வே.சு. ஐயர், எஸ்.வையாபுரிப்பிள்ளை, டாக்டர். க. கைலாசபதி, தனிநாயக அடிகள் முதலானோரின் ஒப்பிலக்கியத் தொண்டு - அண்மைக் கால ஒப்பிலக்கிய வளர்ச்சி.

அலகு - 3

இலக்கிய வகைகள் - வகைக் கொள்கைகள் - அடிக்கருத்தியல் - அடிக்கருத்தும் குறிப்பொருளும் - தொன்மம் தொன்மை வகைகள்.

அலகு - 4

தொல்காப்பிய மெய்ப்பாட்டியலும் வடமொழி இரசக் கோட்பாடும் - கம்பனும் வால்மீகியும் - திருக்குறளும் பிற மொழி நீதி இலக்கியங்களும் (வடமொழி - இலத்தீன், சீன அற நூல்கள்).

அலகு - 5

தமிழ் வீரயுகப் பாடல்கள் - தமிழ் முல்லைத்திணைப் பாடல்களும் கிரேக்க முல்லைப் பாடல்களும் - சங்கப் பாடல்களும் கிரேக்க (லிரிக்) தன்னுணர்ச்சிப் பாடல்களும் - கம்பனும், மில்டனும் - பாரதியும் - லீலியும், - பாரதியும் விட்மனும், - இளங்கோவும் - கேஸ்பியரும், - தற்காலத் தமிழிலக்கியங்களில் மேலை நாட்டுத் தாக்கம்.

பார்வை நூல்கள் :

1. ஒப்பிலக்கிய அறிமுகம் - டாக்டர். தமிழண்ணல்
2. ஒப்பியல் இலக்கியம் - டாக்டர். கைலாசபதி
3. ஒப்பிலக்கியக் கொள்கைகள் - டாக்டர். ம. திருமலை
4. காப்பியக் காலம் - டாக்டர். எஸ். வையாபுரிப்பிள்ளை.
5. ஒப்பிலக்கியம் - வை.சச்சிதானந்தம்
6. க.த.திருநாவுக்கரசு, திருக்குறள் - நீதி இலக்கியம், சென்னைப் பல்கலைக்கழகம்.

திரைப்பட வரலாறு

பருவம் - ஐஐஐ ௭௭௭2 கற்பித்தல் : - தரப்புள்ளி :5 பாடக்குறியீட்டு
எண்:18மு3௭௭௭வு2

நோக்கம்: திரைப்பட வரலாறு மாணவர் அறியச் செய்தல்.

பயன்கள்: திரைப்படம் உருவான பின்னணி நயம் அறிதல்

அலகு - 1

திரைப்படம் - முதல் திரைப்படம் - திரைப்படம் உருவான பின்னணி.

அலகு - 2

ஊமைப்படம் - முழுநீளத் திரைப்படம் - திரைப்படம் -திரைப்பட உருவாக்கம் -
வளர்ச்சி நிலை.

அலகு - 3

உலக அளவில் திரைப்படம் வளர்ந்த விதம் - திரைப்படக் கர்த்தாக்கள் -
திரைப்படத்தில் ஒலி இணைந்த விதம்.

அலகு - 4

பேசும் திரைப்படம் - இந்தியத் திரைப்படம் - வரலாறும், வளர்ச்சியும்

அலகு - 5

தமிழ்த் திரைப்படங்களின் தோற்றமும் வளர்ச்சியும் - வண்ணத் திரைப்படம் - குறும்படம்
- மாநில மொழித் திரைப்படங்கள்.

பார்வை நூல்கள்:

1. தமிழ் சினிமாவின் கதை - அறந்தை. நாராயணன், என்.சி.பி.எச்., சென்னை.
2. சலனம் - திரைப்படத் தொகுப்பு
3. இந்தியத் திரைப்படம் - கே. வி. ஜோர்
4. எஸ். இராமகிருணன் - நூற்றாண்டுத் தமிழ் சினிமா வரலாறு.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தொல்காப்பியம் - பொருளதிகாரம்

(பின் நான்கு இயல்கள்)

பருவம் - ஐஏ ஊஊ12கற்பித்தல் :6 தரப்புள்ளி :4 பாடக்குறியீட்டு எண் :18மீ4வு12

நோக்கம்: படைப்பிலக்கிய பயில்விற்குத் தொல்காப்பியரின் பங்களிப்பை அறிதல்.

பயன்கள்: படைப்பிலக்கிய மரபுகள் அறிதல்.

அலகு - 1

மெய்ப்பாட்டியல் - முழுமை

அலகு - 2

உவமையியல் - முழுமை

அலகு - 3

செய்யுளியல் (1 - 119 நூற்பா முடிய)

அலகு -4

செய்யுளியல் (120-235 நூற்பா முடிய)

அலகு -5

மரபியல் முழுமையும்.

பாடநூல் :

1. தொல்காப்பியம் பொருளதிகாரம், பேராசிரியர் உரை. குழக வெளியீடு.

பார்வை நூல்கள்:

1. தொல்காப்பியம் பொருளதிகாரம், ச.சுபாஸ்சந்திர போஸ், இயல் பதிப்பகம், தஞ்சாவூர்.

2. க.வெள்ளைவாரணர், தொல்காப்பியம் தமிழ் இலக்கிய வரலாறு, அண்ணாமலைப் பல்கலைக்கழகம்.

3. அ.ம. சத்யமூர்த்தி தொல்காப்பிய மரபியல்- ஓர் ஆய்வு

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

ஒப்பீட்டு நோக்கில் உலகச் செம்மொழிகள்

பருவம் - ஐஏஊஊ13கற்பித்தல் :6 தரப்புள்ளி :4 பாடக்குறியீட்டு எண் :18மூ4வு13

1. தமிழ்ச் செம்மொழி நூல்களுடன் உலகச் செம்மொழி நூல்களின் தொன்மையினை ஒப்பீட்டுக் காணல்.
2. தமிழ்ச் செம்மொழி நூல்களின் வெளிப்படும் செறிவார்ந்தப் பண்புகளை இக்கால நூல்களில் உணரச் செய்தல்.

அலகு - 1

மொழியின் தொன்மை - திராவிட மொழிக் குடும்பங்கள் தமிழ் மொழியின் தனித்தன்மை - உலகமொழிக் குடும்பங்கள் உலக மொழிகளின் தோற்றம், கட்டமைப்பு.

அலகு - 2

செம்மொழி - செம்மொழியின் செம்மைப் பண்புகள் - தமிழ்ச் செம்மொழி இலக்கியங்கள் - உலகச் செம்மொழிகளின் இலக்கியங்கள் (தொல்காப்பியம், சங்க இலக்கியங்கள், இரட்டைக்காப்பியங்கள், அற இலக்கியங்கள், முத்தொள்ளாயிரம், இறையனார் களவியல் உரை, சமஸ்கிருதம், இலத்தீன், கிரேக்கம், சீனம், அரேபியம், ஈபுரு)

அலகு - 3

கால அடிப்படையில் உலகச் செம்மொழிகளில் தொகையாக்கங்கள் (கிரேக்கம், இலத்தீன், தமிழ், ஈபுரு, அரேபியம், சீனம், சமஸ்கிருதம், தமிழின் எதிர்காலம், ஒரு தொலைநோக்கு.)

அலகு - 4

உலகச் செம்மொழி இலக்கிய பாடுபொருள் விழுமியங்கள், கிரேக்கம், இலத்தீன், வீரம், காதல், கையறுநிலை, தமிழ் - அகம், புறம் - அறநெறி இசைசீனம் - அரசியல், தத்துவம், அரேபியம் - வாய்மொழிக்கதை மரபுகள் ஒப்பீட்டு நோக்கில் உலகச் செம்மொழிகள் பொதுப் பண்புகள்.

அலகு - 5

சங்க இலக்கியப் பாடல்களை கிரேக்கப் பாடல்களோடு ஒப்பிடல், (வாய் மொழி மரபு, பாணர் மரபு, வீரயுகப் பண்புகள், கையறு நிலை) தொல்காப்பியப் பொருளதிகாரம் - அரிஸ்டாட்டிலின் கவிதையிலும் (தமிழ், கிரேக்கம், ஒப்பீடு) கதை மரபுகள் - இதிகாசம் காப்பியம் (ஹோமரின் இலியர், ஒடிசி, வர்ஜிலின் காப்பியம், சிலப்பதிகாரம், மணிமேகலை)

பார்வைநூல்கள் :

1. ச. அகத்தியலிங்கம், சங்க இலக்கியங்கள், செவ்வியல் இலக்கியங்களே! மணிவாசகர் பதிப்பகம், சென்னை 1997 – 34, 69.
2. சுந்தர சண்முகனார், தமிழ் நூல் தொகுப்புக்களஞ்சியம், மணிவாசகர் பதிப்பகம், சென்னை.
3. க. கைலாசபதி, தமிழ் வீரயுகப் பாடல்கள் (கு.வெ.பா. மொழி பெயர்ப்பு) குமரன் பதிப்பகம், சென்னை – 2007
4. தமிழும், உலகச் செம்மொழிகளும் - மு. அருணாசலம், ப. ஜெயக்குமார்.
5. கிரேக்க லிரிக் இலக்கியங்களும், சங்க இலக்கியங்களும் செண்பகம் இராமசாமி – செண்பகம் பதிப்பகம், சென்னை. பாவை பப்ளிகேசன்ஸ், சென்னை
6. தொன்மைச் செம்மொழித் தமிழ் - பி. இராமநாதன் தமிழ்மண் பதிப்பகம், சென்னை.
7. செம்மொழி ஏன்? எதற்கு – கு. வெ. பாலசுப்ரமணியன்
8. உலக மொழிகளின் வரலாறு – முனைவர். அரங்க சுப்பையா

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

ஆராய்ச்சி நெறிமுறைகள்

பருவம் - ஐஏ ஊஊ14 கற்பித்தல் :6 தரப்புள்ளி :5 பாடக்குறியீட்டு எண் :18மூ4வு14

- நோக்கம்: 1. ஆய்வு நெறிமுறைகள் அறிமுகம் செய்தல்
2. ஆய்வு செய்வதற்கான அடித்தளங்களை கற்பித்தல்
3. ஆய்வில் ஈடுபடத் தூண்டுதல்

அலகு 1 :

ஆய்வு – சொல்லும் பொருளும் - ஆய்வு கருதுகோள்.

அலகு 2 :

ஆய்வு முறைகள் (ஆநவாழன மூக சுநளநயசஉா) ஆய்வாளர் பண்புகள் - ஆய்வியல் உத்திகள்.

அலகு 3 :

கள ஆய்வு – தரவுகளைச் சேகரித்தல் - வினாநிரல் - நேர்காணல் - முதன்மை, துணைமைச் சான்றுகளின் பட்டியல் தயாரித்தல்.

அலகு 4 :

நூலகப் பயன்பாடு – ஆய்வேட்டின் அமைப்பு குறியீடுகள் - மேற்கோளும் அடிக்குறிப்பும் - இயல் பகுப்பு முறை.

அலகு 5 :

ஆய்வேட்டின் அமைப்பு – துணை நூற்பட்டியல் - பின்னிணைப்புகள் - மொழிநடை – பிழையின்றி எழுதுதல் - ஆய்வேட்டின் பொதுக் கட்டமைப்பு.

பார்வை நூல்கள்:

1. முனைவர். கு.வெ. பாலசுப்ரமணியன் - உமா நூல் வெளியீட்டகம், தஞ்சை.
2. இலக்கிய ஆராய்ச்சி நெறிமுறைகள் - முத்து சண்முகம், முத்து பதிப்பகம், மதுரை 1976.
3. ஆராய்ச்சி நெறிமுறைகள் - தமிழண்ணல்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

தமிழ் மொழி வரலாறு

பருவம் - ஐஏஆஊந5 கற்பித்தல் :6 தரப்புள்ளி :4 பாடக்குறியீட்டு எண் :18KP4TELT5

நோக்கம்: 1. தமிழ் மொழியின் தொன்மையை உணர்த்துதல்

2. தமிழ் மொழியில் காலந்தோறும் வளர்ந்து வந்துள்ள வரலாற்றைக் கற்பித்தல்பயன்கள்:
தமிழ்மொழியின் பழமை, சிறப்பு போன்றவற்றை உணர்வர்.

அலகு - 1மொழி அமைப்பும் வரலாறும் - மொழி - வரலாற்றுச் சான்றுகள் - தொல் திராவிட மொழியும் தமிழும்

அலகு - 2 - பழங்காலத்தமிழ் - தமிழ் பிராமிக் கல்வெட்டுகளில் மொழி - தொல்காப்பியத் தமிழ், சங்க காலத் தமிழ்

அலகு - 3 - சங்கம் மருவிய காலத்தமிழ் - பல்லவர் காலத்தமிழ் - சோழர் காலத்தமிழ் - இடைக்காலத் தமிழ்

அலகு - 4 - நாயக்கர் காலத்தமிழ் - இருபதாம் நூற்றாண்டுத் தமிழ் - தமிழில் பிறமொழிக் கலப்பு வரலாறு.

அலகு - 5 - தமிழின் கிளை மொழிகளும் வரலாறும் - தமிழ்ச் சொற் பொருள் மாற்ற வரலாறு - தமிழ்ச் சொற்றொடர் அமைப்பு வரலாறு - தமிழ் வரிவடிவ வரலாறு.

பார்வை நூல்கள்:

1. தமிழ் மொழி வரலாறு - சு. சக்திவேல்
2. தமிழ் மொழி வரலாறு ஓர் அறிமுகம் - வி.கோ. சூரிய நாராயணசாஸ்திரி
3. தமிழெழுத்தின் வரிவடிவம் - சி. கோவிந்தராசனார்
4. மொழி வரலாறு - மு. வரதராசனார்.

(அனைத்து அலகுகளிலும் வினாக்கள் சமமாக அமைதல் வேண்டும்)

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ENGLISH MADE EASY –I

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
I	ELC1	18K1E1	6	3	3	25	75

OBJECTIVES

- To introduce the students to the productive and active skills
- To introduce the students to the nuances of prose/ poetic literary texts and style.

UNIT-I SHORT FICTION

1. James Thurber – The Curb in the Sky
2. Saki- The Open Window

UNIT- II PROSE

1. William Ralph Inge - Happy People
2. Stephen Leacock- My Lost Dollar.

UNIT- III POETRY

1. Henry Wadsworth Longfellow – A Psalm of Life
2. William Wordsworth- Daffodils

UNIT-IV DRAMA

1. Stanley Houghton – The Dear Departed

Unit-V

1. Reading Comprehension – Unit-I & Unit-II only.
2. Choose the Best Answer– Unit- I/ II/ III/ IV
3. Match the Following Words/ Phrases- Unit- I/ II/ III/ IV
4. Fill in the Blanks- Unit- I / II/ III/ IV

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	<i>English Made Easy</i>	E. Suresh Kumar Sumita Roy A. Karunakar	Orient Blackswan Private Limited, 2016

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ENGLISH MADE EASY –I

QUESTION PATTERN FOR THE PAPER TITLED ENGLISH MADE EASY-I

****Questions pertaining to Section- A must be chosen from all the Four units**
Questions pertaining to Comprehension passage Section- B must be chosen only from Unit-I and
Unit-II. Questions pertaining to Section-B must be chosen from all Four Units.
Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage _ <u>(Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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PROSE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
I	CCI	18K1E01	6	5	3	25	75

OBJECTIVES

- To introduce the students to various styles of Prose Writers.
- To make the students to improve their style of writing.

UNIT- I

- 1.Francis Bacon – Of Truth.
- 2.Joseph Addison – Sir Roger and Will Wimble.
- 3.Sir Richard Steele – Sir Roger De Coverley’s Portrait Gallery.

UNIT- II

- 1.Oliver Goldsmith – Beau Tibbs.
- 2.Charles Lamb – A Dissertation Upon Roasted Pig.
- 3.William Hazlitt – Common Sense.

UNIT- III

- 1.James Leigh Hunt – On Getting Upon Cold Mornings.
- 2.R. L. Stevenson – Walking Tours.
- 3.A. G. Gardiner – On Saying Please.

UNIT- IV

- 1.Bertrand Russell – Knowledge and Wisdom.
- 2.Max Beerbohm – Going Out for a Walk.
- 3.G. K. Chesterton – On Running After One’s Hat.

UNIT- V

- 1.Robert Lynd – On Good Resolutions.
- 2.E. M. Forster – Tolerance.
- 3.Jacob Bronowski – The Values of Science.

References

1. Robb W. Cuthbert. *A Representative Anthology Blackie Books*, 1948.
2. Francis Bacon. *Essays of Francis Bacon*. Create space Independent Publishing, 2014.
3. J. Jacob Bronowski. *The Common Sense of Science*. Harvard University Press, 1978.
4. E. M. Forster. *Two Cheers For Democracy*. Mariner Books, 1962

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PROSE

QUESTION PATTERN FOR THE PAPER TITLED PROSE

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q. No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No .15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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BRITISH POETRY - CHAUCER TO THE MODERNS

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
I	CC2	18K1E02	6	5	3	25	75

OBJECTIVES

- To introduce the students to the poetry of diverse literary periods.
- To introduce the students to the literary techniques and movements.

UNIT- I - POETRY (DETAILED)

- 1.Geoffrey Chaucer - “The General Prologue” (Lines 1-42 only) from The Canterbury Tales.
- 2.Sir Philip Sidney - “My mouth doth water and my breast do swell” from Astrophel and Stella
- 3.Edmund Spenser - “One day I wrote her name upon the strand”

UNIT -II – POETRY

- 1.John Donne - A Hymn to God the Father.
- 2.John Milton - Paradise Lost Book IV (1-100) lines only
- 3.George Herbert - Pulley

UNIT- III - POETRY (DETAILED)

- 1.Wordsworth –Ode on the Intimations on Immortality
- 2.S.T.Coleridge - Rime of the Ancient Mariner.
- 3.John Keats - Ode to a Nightingale.

UNIT IV – POETRY

- 1.Robert Browning - My Last Duchess
- 2.Mathew Arnold - Forsaken Merman
- 3Alfred Lord Tennyson - Tithonus

UNIT- V – POETRY

- 1.W.B.Yeats - A Prayer to My Daughter.
- 2.G.M.Hopkins - Though Art Indeed Just, Lord
- 3.W.H.Auden - The Unknown Citizen

References

- 1.Charles Mahoney. *A Companion to Romantic Poetry*. Wiley – Blackwell, 2010
- 2.Harold Bloom. *John Donne and the Metaphysical poets*. Chelsea House Publishers, 2010.
- 3.Peter Brown. *A Companion to Chaucer*. Blackwell publishers, 2002.
- 4.Pramod K.Nayar. *English Poetry to the Elizabethans to the Restoration*. Orient Black Swan Pvt Ltd,2012.
- 5.Pramod K.Nayar.*The English Romantic Poets: An Anthology*.Orient Black Swan Pvt Ltd, 2013.
- 6.Margaret Ferguson. *Norton Anthology of Poetry*.W.W.Norton Company, 2004.

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BRITISH POETRY - CHAUCER TO THE MODERNS

QUESTIONS PATTERN FOR THE PAPER TITLED BRITISH POETRY - CHAUCER TO THE MODERNS.

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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SOCIAL HISTORY OF ENGLAND

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
I	AC1	18K1EAE1	4	3	3	25	75

OBJECTIVES

- To introduce the historical events of all ages.
- To introduce the social, political, economical and religious status in England.

UNIT- I

Renaissance / Reformation

The Stuart Age

Puritanism

UNIT- II

The Age of Queen Anne.

Industrial Revolution.

Agrarian Revolution.

UNIT-III

The Effects of French Revolution.

The Reform Bill

The Development of Transport and Communication.

The Development of Education in 19th Century.

UNIT -IV

Effects of I and II World War.

Social Security and the Welfare State.

The Effects of Cold War.

UNIT- V

Trade Unionism.

The Origin and Growth of Political Parties.

Contemporary life in England.

Prescribed Texts

S .No	Title of the Book	Author	Publisher & Year
1	The Social History of England	Padmaja Ashok	Orient Blackswan Private Limited.2011

References

1.A.G.Xavier *An Introduction to the Social History of England*. S. Viswanathan Publishers and Pvt. Ltd 2009.

2.Simon Jenkins *A Short History of England* Profile Books Ltd. 2012.

3.G.M. Trevelyn *English Social History : A survey of six centuries character to Queen Victoria* Book Club Associates 1973

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SOCIAL HISTORY OF ENGLAND

QUESTION PATTERN FOR THE PAPER TITLED SOCIAL HISTORY OF ENGLAND

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q No. 16 to 20	Essay Questions(300 words)	3x10=30	30
Total					75

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ENGLISH MADE EASY –II

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
II	ELC2	18K2E2	6	3	3	25	75

OBJECTIVES

- To introduce the students to the productive and active skills
- To introduce the students to the nuances of prose/ poetic literary texts and style

UNIT-I- SHORT FICTION

- 1.Eudora Welty – A Visit of Charity
- 2.Rabindranath Tagore- The Home Coming.

UNIT –II- PROSE

- 1.Aldous Huxley – Benares
- 2.George Bernard Shaw – Spoken English and Broken English.

UNIT-III- POETRY

- 1.Percy Bysshe Shelley – Stanzas Written in Dejection Near Naples
- 2.Alfred Lord Tennyson-Ulysses

UNIT-IV DRAMA

1. Shakespeare Retold : Julius Caesar

UNIT-V

1. Reading Comprehension – Unit-I & Unit-II only.
- 2.Choose the Best Answer– Unit- I/ II/ III/ IV
- 3.Match the Following Words/ Phrases- Unit- I/ II/ III/ IV
4. Fill in the Blanks- Unit- I / II/ III/ IV

PRESCRIBED TEXT

S. No	Title of the Book	Author	Publisher & Year
1	English Made Easy	E. Suresh Kumar Sumita Roy A. Karunakar	Orient Blackswan Private Limited, 2016

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ENGLISH MADE EASY –II

QUESTION PATTERN FOR THE PAPER TITLED ENGLISH MADE EASY-II

****Questions pertaining to Section- A must be chosen from all the Four units**
Questions pertaining to Section- B must be chosen only from Unit-I and Unit-II
Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage_-(<u>Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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SHORT STORIES AND FICTION

Semester	Course	Sub.Code	Hour	Credits	Exam hour	Marks	
						I.A	E.A
II	CC3	18K2E03	6	5	3	25	75

OBJECTIVES

To introduce the students to Short Story and Fiction writings over centuries.

To help learners appreciate different themes, strategies, and techniques employed by the writers

UNIT -I SHORT-STORIES

1. Saki - Alice and the liberal party (British).
2. Somerset Maugham – The Verger (British).
3. Nathaniel Hawthorne – The Snow-Image (American).

UNIT II- SHORT-STORIES

1. Rabindranath Tagore - The Post Master (Indian).
2. Lakshmi Kannan - Muniyakka (Indian).
3. Leo Tolstoy - The Candle (Russian).

UNIT- III- SHORT-STORIES

1. Anton Chekhov - The Bet (Russian).
2. Katherine Mansfield - An Ideal Family (New Zealand).
3. Chinua Achebe - The Sacrificial Egg (African)

UNIT- IV- FICTION

1. Charles Dickens - David Copperfield

UNIT- V - FICTION

1. Virginia Woolf- To the Lighthouse.

References

1. A. Joseph and Balasubramanian M, eds. *Memorable Tales*. PoGo Publishing House, 2013.
2. Kannan, Lakshmi. *India Gate and Other stories*. Disha Books, 1993.
3. Dickens Charles. *David Copperfield*. Bradbury&Evans. 1849.
4. Woolf, Virginia. *To the Lighthouse*. Hogarth Press UK.1927.

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SHORT STORIES AND FICTION

QUESTION PATTERN FOR THE PAPER TITLED SHORT STORIES AND FICTION

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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LITERARY FORMS AND TERMS

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
II	CC4	18K2E04	6	5	3	25	75

OBJECTIVES

- To introduce the students to varied Literary genres.
- To inculcate the students a proper understanding of all Literary Forms and terms and their features.

UNIT- I - ELEMENTS OF POETRY

Rhyme - Meter - Stanza forms - Type of verse - Ballad - Epic and Mock - Epic - Metrical romance - Dramatic Monologue - Limerick - Lyric - Ode - Elegy - Pastoral elegy - Idyll - Sonnet - Epistle - Satire.

UNIT- II PROSE – NON-FICTION

Biography - Autobiography - Essay : Aphoristic Essay - Personal Essay - Character Sketch - Critical Essay - Periodical Essay.

UNIT- III PROSE - FICTION

Elements of Fiction - Plot - Narrative Technique - Characterization - Setting - Dialogue - Short Story - Novel - Picaresque novel - Historical Novel - Sentimental Novel - Domestic Novel - Gothic Novel - Science Fiction Novel - Regional Novel.

UNIT- IV DRAMA - FEATURES OF THEATRE AND DRAMA

Tragedy - Comedy - Dramatic design - Classical Greek tragedy - Neoclassical tragedy - Senecan or Revenge Tragedy - Origin and Growth of Drama in England - Romantic Tragedy - Romantic Comedy - Tragic comedy - Chronicle Plays - Features of Elizabethan Theatre and Drama - Masque and Anti -Masque - Comedy of Humour - Heroic tragedy - Comedy of Manners - Genteel Comedy - Sentimental Comedy.

UNIT- V FIGURES OF SPEECH

Imagery - Simile and Metaphor - Personification - Onomatopoeia - Alliteration - Apostrophe - Hyperbole - Oxymoron - Allegory - Allusion - Anticlimax - Cliche - Euphemism - Irony - Metonymy - Paradox - Synecdoche - Transferred Epithet.

Prescribed Texts

S.No	Title of the Book	Author	Publisher & Year
1	A Companion to Literary Forms	Padmaja Ashok	Orient Blackswan.2015

References

- 1.J.A Cuddon. *A Dictionary of Literary forms and Literary theory*. Wiley - Black well, 2013
- 2.Mary Klages. *Key Terms in Literary Theory*, Bloomsbury publications, 2012
- 3.Chris Baldick. *The Concise Oxford Dictionary of Literary Terms*, Oxford University Press.
- 4.Peter Childs. *The Routledge Dictionary of Literary Terms*, Routledge, 2005.

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LITERARY FORMS AND TERMS

QUESTION PATTERN FOR THE PAPER TITLED LITERARY FORMS AND TERMS

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q .No. 12(a) or 12(b) Q. No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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HISTORY OF ENGLISH LITERATURE - I

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
II	AC2	18K2EAE2	4	3	3	25	75

OBJECTIVES

- To introduce the students about the Literatures of varied literary periods.
- To introduce the students to the literary genres and the literary movements.

UNIT- I

The Age of Chaucer.

UNIT- II

The Age of Shakespeare.

UNIT- III

The Age of Milton.

UNIT- IV

The Age of Dryden.

UNIT- V

The Age of Pope

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	An Outline History of English Literature	William Henry Hudson	G. Bell & Sons Ltd, 1913.

References

1. Harry Braimers . *A Short history of English Literature*. Routledge, 1984.
2. Ronald Carter *The Routledge History of English Literature* Routledge, 1997.
- 3 Andrew Sanders. *The Short Oxford History of English Literature*. Oxford University Press, 2004.

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(Applicable to the candidates admitted from the academic year 2018 onwards)

HISTORY OF ENGLISH LITERATURE - I

QUESTION PATTERN FOR THE PAPER TITLED HISTORY OF ENGLISH LITERATURE-I

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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FLUENCY IN ENGLISH-I

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
III	ELC3	18K3E3	6	3	3	25	75

OBJECTIVES

- To introduce the students to the productive and active skills
- To introduce the students to the nuances of prose/ poetic literary texts and style

UNIT-I

1. Kadambari Murali – Inzy Lets Things Flow Over Him
2. Tarun J. Tejpal – It's only a Game. Enjoy

UNIT-II

1. Salman Rushdie – Haroun and the Sea of Stories
2. Mrinal Pande – Girls

UNIT-III- Poetry

1. Payal Kapadia – An Exchange
2. Nirendranath Chakrabarti - Amalkanti

UNIT-IV

1. Subroto Bagchi – Go Kiss the World.

UNIT-V

1. Reading Comprehension – Unit-I, Unit-II and Unit- IV only.
2. Choose the Best Answer– Unit- I/ II/ III/ IV
3. Match the Following Words/ Phrases- Unit- I/ II/ III/ IV
4. Fill in the Blanks- Unit- I / II/ III/ IV

Prescribed texts

S. No	Title of the Book	Author	Publisher & Year
1	Fluency in English – I	Promodini Varma	Orient Blackswan Private Limited, 2016

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FLUENCY IN ENGLISH-I

QUESTION PATTERN FOR THE PAPER TITLED FLUENCY IN ENGLISH -I

****Questions pertaining to Section- A must be chosen from all the Four units
 Questions pertaining to Section- B must be chosen only from Unit-I , Unit-II and Unit- IV
 Questions pertaining to Section – C must be chosen from all the Four units.****

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage.-(<u>Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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B.A English Programme- Course Structure Under CBCS

BRITISH DRAMA

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
III	CC5	18K3E05	6	5	3	25	75

OBJECTIVES

- To introduce the students to the dramatic genre of the Elizabethan to the Modern Period..
- To enable the students to understand and critically assess the texts in accordance with the socio - politico - cultural milieu.

UNIT- I (DETAILED)

Christopher Marlowe - Dr. Faustus

UNIT- II

Ben Jonson - The Alchemist

UNIT- III

Oliver Goldsmith - She Stoops to Conquer.

UNIT- IV(DETAILED)

George Bernard Shaw - Pygmalion

UNIT- V

Samuel Beckett - Waiting for Godot.

Prescribed Texts

1. Christopher Marlowe. Jew of Malta. Macmillan Publishers India Ltd, 1998.
2. Ben Johnson. The Alchemist. University Tutorial Press Ltd, London 1968.
3. Oliver Goldsmith. She stoops to conquer. Oxford University Press.2000
4. Shaw. Pygmalion. Mahaam Publishers. 2013
5. Samuel Beckett. Waiting for Godot. Faber's Faber London. 1956

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BRITISH DRAMA

QUESTION PATTERN FOR THE PAPER TITLED BRITISH DRAMA

Questions should be equally chosen from **all the constituents of the five units**. Questions related to annotations **must be strictly chosen only from the detailed texts. (Dr Faustus and Pygmalion)**

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b)	Annotation (Explain with reference to context from the detailed texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 26 to 30	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS
AMERICAN LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
III	CC6	18K3E06	6	5	3	25	75

OBJECTIVES

- To introduce the students to study American Literature
- To teach the students about different eras, genres and authors.

UNIT –I- POETRY(DETAILED)

- 1.Emily Dickinson - I heard a fly Buzz when I died.
- 2.Edgar Allan Poe - The Haunted Palace.
- 3.Wallace Stevens - The Snow Man.

POETRY(NON- DETAILED)

- 4.Robert Frost - The Death of the Hired Man
- 5.E..E Cummings - The Eagle

UNIT- II -PROSE

- 1.Emerson - Experience (Extract from Essays : Second Series)
- 2 Henry David Thoreau - ‘ The Battle of the Ants’ from Walden
- 3.Martin Luther King - The Trumpet of Conscience

UNIT- III – DRAMA(DETAILED)

- 1.Eugene O’ Neil - Long Day’s Journey into the Night

UNIT-IV - SHORT STORIES

- 1.Washington Irving - RipVan Winkle
- 2.Nathaniel Hawthorne - Young Goodman Brown
- 3.William Faulkner - That Evening Sun.

UNIT- V – FICTION

- 1.Zora Neale Hurston - Their Eyes were Watching God.

References

- 1.David Lehman. *The Oxford Book of American Poetry*, Oxford University Press. 2006.
- 2.Ralph Waldo Emerson. *Essay by Ralph Waldo Emerson* First second series. Read Books 2008
- 3.Edgar Allan Poe. *The Complete Poetry of Edgar Allan Poe*. Penguin USA 2008.
- 4.Wallace Stevens. *The Collected Poems of Wallace Stevens* Vintage 1990.
- 5.Tiffany K.Wayne. *Critical companion to Emerson* Cambridge University Press, 2010.
- 6.Kenin. J. Haynes. *Cambridge companion to Edgar Allan Poe*. Cambridge University Press., 2002.
- 7.Harold Bloom’s *Modern Critical Interpreters. Eugene O’ Neil’s Long Day Journey into Night* Chelsea House Publications, 2009.
- 8.Martian Scofield. *The Cambridge Introduction to American short story*. Cambridge University Press. 2006.
- 9.Harold Bloom *Modern American Drama*. Chelsea House Publications, 2005
- 10.Sharo L. Jones *Critical Insights : Zora Neale Hurston* Salem Press 2013.

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AMERICAN LITERATURE

QUESTION PATTERN FOR THE PAPER TITLED AMERICAN LITERATURE

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts(Poetry and Drama)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q.No.1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q.No.11(a) or 11(b) Q.No.12(a) or 12(b)	Annotations(Explain with reference to context from the detailed texts)	2x5=10	25
		Q.No.13(a) or 13(b) Q.No.14(a) or 14(b) Q.No.15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q.No.16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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HISTORY OF ENGLISH LITERATURE - II

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
III	AC3	18K3EAE3	4	3	3	25	75

OBJECTIVES

To introduce the students to varied Literary genres.

- To familiarize the students with the literary terms, movements and concepts.

UNIT- I

The Age of Johnson.

UNIT- II

The Age of Wordsworth.

UNIT- III

The Age of Tennyson.

UNIT -IV

The Age of Thomas Hardy.

UNIT- V

The Age of T.S.Eliot to The Present Age.

Prescribed texts

S. No	Title of the Book	Author	Publisher & Year
1.	An Outline History of English Literature	William Henry Hudson	G.Bell & Sons Ltd. 1913.

References

1.Harry Blaimiers *A Short History of English Literature* Routledge 1984.

2.Ronald Carter *The Routledge history of English Literature* Routledge 1997

3.Andrew Sanders *The Oxford history of English Literature* Oxford University press, 2004.

QUESTION PATTERN FOR THE PAPER TITLED HISTORY OF ENGLISH LITERATURE II

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b) Q. No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS

SELF-STUDY PAPER

SINGLE AUTHOR STUDY: RABINDRANATH TAGORE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks
						EA
III	SS1	18K3SSE1	-	5	3	100

UNIT-I- POETRY

Rabindranath Tagore - Gitanjali –No.1-5

- The Little Flute
- Song for My Lord
- Music of Life
- Purity
- Moment's Indulgence

UNIT-II- POETRY

Rabindranath Tagore--- Gitanjali-No.6-10

- The Flower
- Song Undressed
- The Bondage Finery
- The Fool and the Beggar
- The Poorest, The Lowliest, and the Lost.

UNIT-III- PROSE

- Rabindranath Tagore –**
1. To the Students Part –I & II (Excerpts from Talks in China).
 2. The Realisation of Beauty.

UNIT-IV SHORT STORIES-

Rabindranath Tagore

1. Kabuliwalla
2. The Postmaster.

UNIT-V DRAMA

Rabindranath Tagore- Chitra

References

1. William Radice. Rabindranath Tagore: Selected Short Stories. Penguin books, 1991.
2. Amiya Chakravarty. A Tagore Reader. Beacon Press, 1961.

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SELF-STUDY PAPER
SINGLE AUTHOR STUDY: RABINDRANATH TAGORE

**QUESTION PATTERN FOR THE PAPER TITLED SINGLE AUTHOR STUDY-
RABINDRANATH TAGORE.**

Questions should be equally chosen from all the constituents of the five units

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x3= 30	30
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b) Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x6 = 30	30
3	Section-C	Q. No. 16 to 20 4 Essay Questions out of 5	Essay Questions (300 words)	4 x 10 = 40	40
				Total	100

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B.A English Programme- Course Structure Under CBCS

NON-MAJOR ELECTIVE
MODERN ENGLISH AND USAGE-I

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
III	NME1	18K3EEL01	2	<u>2</u>	3	25	75

OBJECTIVES

- To introduce the students to the basic grammar in English.
- To introduce the students to the usage of common words in English.

UNIT- I

Use of Nouns/ Pronouns

Use of Adjectives- Adjective Patterns

UNIT- II

Use of Verbs- Verb patterns , Verbs with Adverbs/ Prepositions

Use of Adverbials- Position/ Sequence/ Word order

UNIT-III

Use of Agreement- Pronoun/ Determiner and Antecedent, Subject and Complement, Subject and Verb

UNIT-IV

Use of Conditionals

UNIT-V

Use of words-able/ about/ about to/ absent/ accommodation/ according to/ accustom/ advice/ advise/ afford/ afraid/ agree/ almost/ already/ although/ always / another/ any/ anybody/ answer/ apologise/ as /as if / as though/ as long as/ as soon as / as well/ as well as/ be/ because/ because of / besides/ better/ both/ both.. and/ call/ capable/ incapable/ in case/ certain / come from/ comprise/ concern- concerned/ depart-departure/ despite/ due to/ either..or/ even if / even though/ every-everybody - everyone/ everyday.. every day/ everyone.. every one.

Reference

S. No	Title of the Book	Author	Publisher & Year
1	ABC of Common Grammatical Errors : For Learners and Teachers of English	Nigel D Turton	Macmillan 1995
2	Modern English :A Book of Grammar, Usage and Composition.	Krishnaswamy .N	Laxmi Publication.2009

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B.A English Programme- Course Structure Under CBCS

NON-MAJOR ELECTIVE
MODERN ENGLISH AND USAGE-I

QUESTION PATTERN FOR THE PAPER TITLED MODERN ENGLISH AND USAGE-I

Multiple Choice Questions should be chosen only from Unit-I to Unit- IV/ Correct the Sentences from Unit-I to Unit V / Essay Questions from Unit- V .

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q.No1- 25	Multiple Choice Questions from <u>Unit- I to Unit IV</u>	25X1=25	25
2	B	Q .No 26-50	Correct the Sentences Unit I toUnit V	25X1= 25	25
3	C	Q .No 51- 55	Essay Questions from <u>Unit -V</u>	5x5=25	25
				Total	75

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B.A English Programme- Course Structure Under CBCS

FLUENCY IN ENGLISH-II

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
IV	ELC4	18K4E4	6	3	3	25	75

OBJECTIVES

- To introduce the Students to the Productive and Active Skills
- To introduce the Students to the nuances of Prose/ Poetic Literary Texts and Style

UNIT-I

1.Kalpna Sharma

– Hitting Dowry For a Six

2 Manju Kapur

– Chocolate

UNIT-II

1.Chasso

– Soapnut Leaves

2 Roald Dahl

– Lamb to the Slaughter

UNIT-III

1. Esther Morgan

– The Lost Word

2. Rita Ann Higgins

– Some People.

UNIT-IV

1. Ramachandra Guha

– A Gandhian in Garhwal : Chandi Prasad Bhatt.

UNIT-V

1. Reading Comprehension

– Unit-I, Unit-II and Unit- IV only.

2 Choose the Best Answer– Unit- I/ II/ III/ IV

3.Match the Following Words/ Phrases - Unit- I/ II/ III/ IV

4. Fill in the Blanks

- Unit- I / II/ III/ IV

PRESCRIBED TEXT

S.No	Title of the Book	Author	Publisher & Year
1	Fluency in English	Promodini Varma	Orient Blackswan Private Limited, 2016

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FLUENCY IN ENGLISH-II

QUESTION PATTERN FOR THE PAPER TITLED FLUENCY IN ENGLISH -II

****Questions pertaining to Section- A must be chosen from all the Four units**

Questions pertaining to Section- B must be chosen only from Unit-I , Unit-II and Unit- IV

Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage _ <u>(Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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B.A English Programme- Course Structure Under CBCS

INDIAN WRITING IN ENGLISH

Semester	Course	Sub .Code	Hour	Credits	Exam hour	Marks	
						I.A	E.A
IV	CC7	18K4E07	5	5	3	25	75

OBJECTIVES

To familiarize the students with major Indian Writers in English.

To enable them to understand, appreciate and critically evaluate the texts in their socio- cultural environment

UNIT- I- POETRY (DETAILED)

- 1.Toru Dutt - The Young Captive
- 2.Sarojini Naidu – Coramandel Fishers.
- 3.Sir Aurobindo - Surreal Science.

POETRY (NON - DETAILED)

- 4.Jayantha Mahapatra - Dawn at Puri.
- 5.Arun Kolatkar - The Priest's Son.

UNIT- III -PROSE

- 1.C. Raja Gopalachari - Jail Companions.
- 2.Rabindranath Tagore – Nationalism in India
- 3.Amaranantha Jha - The Teaching of English in India.

UNIT- IV -DRAMA (DETAILED)

- 1.Mahesh Dattani - Tara.

UNIT-IV SHORT STORIES

1. Raja Rao – The Cat and Shakespeare
2. Mulk Raj Anand – Lajwanti
- 3.Kushwant Singh – The Portrait of a Lady.

UNIT -V : FICTION

- 1.Sashi Deshpande - That Long Silence

References

- 1.R.P Singh, R.P and S.K.Prasad.(eds)*Anthology Of English Poetry*. India: Orient Blacks
- 2.Srinivasa Iyengar,K.R. *Indian Writing in English*.India: Sterling Publishers Pvt.Ltd,1971.
3. Mahesh Dattani Plays: *Critical Perspectives* ed. Angelie Multani, Delhi: Pencraft,2007.
- 4.Nalini Bhusan and Jay L. Garfield. *Indian Philosophy in English : From Renaissance to Independence*. Oxford University Press, 2011

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INDIAN WRITING IN ENGLISH

QUESTION PATTERN FOR THE PAPER TITLED INDIAN WRITING IN ENGLISH

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts(Poetry and Drama)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q.No.1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q.No.11(a) or 11(b) Q.No.12(a) or 12(b)	Either/ Or Choice based Annotations from Unit I & Unit III detailed	2x5=10	25
		Q.No.13(a) or 13(b) Q.No.14(a) or 14(b) Q.No.15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q.No.16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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B.A English Programme- Course Structure Under CBCS

LITERATURE AND ENVIRONMENT

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
IV	CC8	18K4E08	5	5	3	25	75

OBJECTIVES

- To create an awareness to the students with regard to ecology and environment.
- To introduce the students to a wide array of writers who have inspired greater attention to and respect for the biophysical world.

UNIT I - POETRY (DETAILED)

- 1.Wendell Berry - Testament
- 2.James Weldon Johnson - Lift Every Voice and Sing.
- 3.Joy Harjo - A Map to the Next World

POETRY (NON-DETAILED)

4.Mary Oliver - At Black River.
5.Akananuru :Mullai - 274.
(The hero speaks to the charioteer)
My soft - miened wife, young and chaste,
Is adorned with the fragrant Mullai blossom
She is now in a lovely village
Amidst a woodland, cool and fragrant;
The rainy season sets in at mid night
The clouds rumble shaking as it were
The entire firmament
And pour a main to the great grief of serpents.
At this hour a shepherd makes fire
with his churning sticks
And lights a small torch to guard safely
His fold of sheep of quivering heads;
He stands all alone his shoulders a sling wrought of strong cords,
Which contains a pot and a piece of leather;
One side of his body is drenched
By the tiny and innumerable rain – drops
The whistling sounds
which he makes flexing his tongue
Pass rushing the air
And cause a fox that goes
In quest of frisking lambs,
To take to its heels
Into the short and thorny bushes! --- Itaikkatanar

UNIT II – PROSE

- 1.Amitav Ghosh - The Great Derangement climatic change and the Unthinkable - Part II History (page - 117 - 155)
- 2.Greg Garrard - Eco criticism - Chapter I Beginnings : Pollutions (Page No.1-15)
- 3.Henry David Thoreau - “The Ponds” from Walden; or, Life in the Woods.

UNIT III - DRAMA (DETAILED)

- 1.Doris Lessing - Play with a Tiger

UNIT IV - SHORT STORIES

- 1.Ernest Hemingway - The Big Two - Hearted River
- 2.Jayanta Mahapatra - “The Mango Tree” from the Green Gardener
- 3.Sinclair Ross - A Field of Wheat

UNIT V - FICTION

- 1.Margaret Atwood - The Year of the Flood.

References

- 1.Dr. A. Dhakshinamurthy *Akananuru. ManimitaiPavalan.* Trichy. Bharathidasan University publication, 1999.
- 2.Amitav Ghosh. *The Great Derangement. Climate Change and the Unthinkable India* Penguin Random House, 2016.
- 3.Greg Garrard. *Ecocriticism.* London :Routledge, 2004.
- 4.Doris Lessing. *Play with a Tiger.* London; Michael Joseph, 1962
- 5.JayantaMahapatra. *The Green Gardener and other stories* New Delhi : Orient Longman ltd, 1997.
- 6.Margaret Atwood. *The Year of the Flood.* Canada : Mccelland and Stewart, 2009.
- 7.Thoreau.H.D. *Walden: or, Life in the Woods.* Boston, MA: Ticknor and Fields. 1854.

QUESTION PATTERN FOR THE PAPER TITLED LITERATURE AND ENVIRONMENT

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts Poetry and Drama)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed texts)	2x5=10	25
		Q .No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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Department of English

B.A English Programme- Course Structure Under CBCS

HISTORY OF ENGLISH LANGUAGE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
IV	AC4	18K4EAE4	4	3	3	25	75

OBJECTIVES

- To help the students to develop correct pronunciation and fluency in English.
- To help the learners to learn and to speak effectively in English in real life and career related situations.

UNIT I

Theories on the Origin of Language.

Place of English in the Indo - European Family.

Grimm's Law, Verner's Law, i-mutation

UNIT II

Characteristics of Old English and Middle English

Impact of Renaissance and Reformation on the Growth of the English Language.

The Rise and Growth of Standard English

UNIT III

Change of Meaning

Growth of Vocabulary

Spelling Reform

Syllable, Stress, Intonation, Strong & Weak forms, Syntax

UNIT IV

Morphology - free morphemes, bound morphemes, lexical morphemes, functional morphemes, inflectional morphemes, morphological description, morphs and allomorphs.

UNIT V

Language, Society and Culture , Socio-Linguistics, Social Dialects, Social Class, Education, Age and Gender, Ethnic Background, Idiolect , Style, Register, Jargon, Language and Culture, Language Universals.

Prescribed Texts

1.F.T.Wood : *An Outline History of English Language*.LaxmiPublications.2014.

2.George Yule : *The Study of Language* ,Cambridge University Press.2014

References

1.C.L.Wren : *The English Language*. Ajay Book House.2009.

2.Albert.C.Baugh : *History of English Language*. Allied Publishers.1997

3.Henry Bradley : *The Making of English* ,Dover Publications.2006.

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HISTORY OF ENGLISH LANGUAGE

QUESTION PATTERN FOR THE PAPER TITLED HISTORY OF ENGLISH LANGUAGE

Questions should be equally chosen from all the constituents of the five units.

<u>S. No</u>	<u>Section</u>	<u>Questions</u>	<u>Type</u>	<u>Marks</u>	<u>Total Marks</u>
1.	Section – A	Q. . 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q.No.15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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Department of English

B.A English Programme- Course Structure Under CBCS

NON-MAJOR ELECTIVE -

MODERN ENGLISH AND USAGE- II

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
IV	NME2	18K4EEL02	2	2	3	25	75

OBJECTIVES

- To introduce the students to basic grammar in English.
- To introduce the students to the usage of common words in English

UNIT- I

Use of Tenses- Form and Use

UNIT-II

Use of Clause- Relative (General/ Prepositions/Pronouns/ Verbs)

UNIT-III

Use of Prepositions- General

UNIT-IV

Use of Questions and Question Tags

Use of Reported/ Indirect speech

UNIT-V

Use of words - few.. a few/ for ever/ hardly/ hence/ if only / in spite of/ kind of / likely / look forward to/ most/ much/ nearly/ need / needless to say/ neither.. nor/ nevertheless/ nobody.. no one/ no sooner/ not only/ nowadays/ o'clock/ off/ often/ once/ ought/ phone.. telephone/ please.. pleased/ rarely/ rather/ recent... recently/ so.. so far/ some/ somebody.. someone/ sometime... sometimes/ so that/ such that/ therefore/ thus/ too/ too many/ too much/ unless/ unlikely/ until.. till/ used to/ usual/ very.. very much/ whenever/ whether/ within/ without/ yesterday

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	A Book of Grammar, Usage and Composition	Krishnaswamy.N	Laxmi Publication. 2009.

References

1.Nigel D Turton. *ABC of Common Grammatical Errors: For Learners and Teachers of English.* Macmillan.1995

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B.A English Programme- Course Structure Under CBCS
NON-MAJOR ELECTIVE -
MODERN ENGLISH AND USAGE- II

QUESTION PATTERN FOR THE PAPER TITLED MODERN ENGLISH USAGE-II

Multiple Choice Questions should be chosen only from Unit-I to Unit- IV/ Correct the Sentences from Unit-I to Unit V / Essay Questions from Unit- V .

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No.1- 25	Multiple Choice Questions from <u>Unit- I to Unit IV</u>	25X1=25	25
2	B	Q No.26-50	Correct the Sentences from <u>Unit- I to Unit V</u>	25X1 =25	25
3	C	QNo.51- 55	Essay questions on <u>Unit - V</u>	5x5=25	25
				Total	75

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B.A English Programme- Course Structure Under CBCS
SELF-STUDY PAPER
MAJOR LITERARY MOVEMENTS & LITERARY TERMS

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
IV	SS2	18K4SSE2	-	5	3	-	100

UNIT-I

Affective Fallacy, Allegory, Allusion, Angry Young Man, Apostrophe, Beat Movement, Blank Verse, Burlesque, Carpe Diem, Chorus, Comic Relief, Complaint, Conceit, Concrete poetry, Catharsis

UNIT-II

Confessional Poetry, Couplet, Deus ex machine, Dystopia, Eclogue, Elegy, Epic, Epistolary Novel, Epithalamion, Exemplum, Fable, Farce, Free verse, Hamartia, Heroic Couplet

UNIT-III

Hyperbole, Imagism, In medias res, Intentional Fallacy, Lay, Masque, Melodrama, Motif, Myth, Narrative Poetry, Onomatopoeia, Pun, Simile, Soliloquy, Spensarian Stanza

UNIT-IV

Absurd Theatre, Beat Movement, Bildingsroman, Elizabethan Drama, Expressionism, Imagism, Neoclassicism.

UNIT-V

Naturalism , Realism, Renaissance Literature, Romanticism, Surrealism, Symbolism, Transcendentalism.

References

1. J.A. Cuddon. *The Penguin Dictionary of Literary Terms and Literary Theory*. Penguin Books 1998
2. M. H Abrams. *A Glossary of Literary Terms*. Wadsworth Cengage Learning, 2009

QUESTION PATTERN FOR THE ELECTIVE PAPER TITLED MAJOR LITERARY MOVEMENTS AND LITERARY TERMS

Questions pertaining to Section-A should be chosen only from Unit- I, Unit-II and Unit-III, Section –B & Section C only from Unit- IV & Unit-V.

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	Q No- 1-10	Short Questions	10x3=30	30
2	Section - B	Q. No 11-17	Five Paragraph Questions (200 words)	5x6 = 30	30
3	Section-C	Q. No. 18 to 22 4 out of 5	Four Essay Questions (300 words)	4 x 10 = 40	40
				Total	100

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LITERARY CRITICISM : ARISTOTLE TO T.S.ELIOT

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CC9	18K5E09	5	5	3	25	75

OBJECTIVES

- To introduce the students to the various theories of Literary Criticism.
- To familiarize the students with the Literary texts from the classical school of criticism to the modern.

UNIT I

Aristotle: Selections from The Poetics 1-2

Sidney : Apologie for Poetry.

UNIT II

Dryden : Essay on Dramatic Poesie.

Dr. Johnson : Preface to Shakespeare.

UNIT III

Wordsworth : Preface to the Lyrical Ballads.

Shelley : A Defense of Poetry.

UNIT IV

Mathew Arnold Study of Poetry.

T. S. Eliot : Tradition and Individual Talent.

UNIT V

Elaine Showalter - Towards a Feminist Poetics.

Northrop Frye The Archetypes of Literature.

References

1.David.H.Richter. *The Critical Tradition: Classics Texts and Contemporary Trends*. City University of New York, 2007.

2.Enright.D.J. and Ernest De Chickera : *The English Critical Texts*. 16th to 20th Century. Oxford University Press. 1962.

3.David Lodge : *Twentieth Century Literary Criticism* in 2 vols. Longman. 1988.

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QUESTION PATTERN FOR THE ELECTIVE PAPER TITLED LITERARY CRITICISM :

ARISTOTLE TO T.S.ELIOT

Questions should be equally chosen from all the constituents of the five units

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS

NATIONAL LITERATURE IN TRANSLATION

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CCI0	18K5E10	5	5	3	25	75

OBJECTIVES

- To introduce the students to the literary genres of writers of National Origin.
- To enable the students to develop appreciation of National Literature and to understand the translation skills.

UNIT- I - POETRY – (DETAILED)

1.Umashankar JoshiFragmented (Gujarati).

2.Gopalakrishna AdigaDo Something Brother (Kannada).

3.A.JayaprabhaStares (Telugu).

POETRY –(NON-DETAILED)

4.Subramania Bharathi Kannamma – Enethu Kulatheivam (Tamil).

5.Sugatha Kumari Pathirappookal (Midnight Flowers 1967) (Malayalam).

UNIT- II- PROSE

1.M. K. Gandhi ...Stealing and Atonement (The Story of My Experiment with Truth).

2.Buddhadev Bose An Extract from An Acre of Green Grass (A Review of Modern Bengali Literature).

3.Kumud Pawde The Story of My Sanskrit.

UNIT- III- DRAMA (- DETAILED)

1.Chandrasekara Kambar -Jokumaraswami.

UNIT- IV- SHORT STORIES

1.Arjun Dangle - Promotion.

2.Vaikom Muhammed Basheer- Birthday.

3.Mahasweta Devi - Breast-Giver.

UNIT- V- FICTION (NON-DETAILED)

1.P. Sivakami - The Grip of Change.

References

1. Anna Kurien.*Texts and Their worlds- I. Ed. – Foundation Books.2005*

2.Modern Indian Literature, An Anthology –VI Surveys and Poems SahityaAkademi, 1992.

3M.K.Gandhi.*The Story of My Experiment with Truth* .Dover Publication 1983 reprint of 1948.

4 Arjun Dangle.*A Comparative Study of Promotion* Sahityasetu, Issue 36, 2016.

5.The Norton Anthology of World Literature, Second Edition Vol.2. W.W. Norton & Company, Newyork, London.

6.The Grip of Change – Published by Orient Blackswan.

7.Jokumaraswamy, ChandrasekarKambar .Seagull Books Pvt. Ltd. India 1989.

8.Pawade, Kumud 1981, Antasphot – Aurangabad :AnandPrakashan.

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NATIONAL LITERATURE IN TRANSLATION

QUESTION PATTERN FOR THE PAPER TITLED NATIONAL LITERATURE IN TRANSLATION

Questions should be equally chosen from all the five units. Questions related to annotations must be strictly chosen from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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SUBALTERN LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CC11	18K5E11	5	5	3	25	75

UNIT-I POETRY (DETAILED)

1. Daya Pawar - Blood-wave
2. Mahmoud Darwish - Cactus Forever
3. Murray Mahauriki -The Plastic Maori

POETRY(NON-DETAILED)

4. Ofelia Zepeda - Proclamation
5. K.K.S. Das – Black Dance

UNIT-II PROSE

1. José Rabasa and Javier Sanjinés C - Introduction: The Politics of Subaltern Studies
2. Gyan Prakash - Subaltern Studies as Postcolonial Criticism
3. Gayatri Chakravorty Spivak – Can the Subaltern Speak ?

UNIT-III DRAMA (DETAILED)

1. Maheswata Devi -Rudali (Translated by Usha Ganguli)

UNIT-IV SHORT STORIES

1. K.A. Gunasekaran – Scar (Translated by R. Sivapriya)
2. Imayam- - Manabaram (Translated by Thillainayagam Sankaralingam)
3. Shankarrao Kharat - A Corpse in the Well

UNIT-V FICTION

1. Buchi Emecheta – The Joys of Motherhood

Prescribed text

S.No	Title of the Book	Author	Publisher & Year
1	<i>No Alphabet in Sight: New Dalit Writing From South India</i>	K. Satyanarayana & Susie Tharu	Penguin Books, 2011
2.	<i>Rudali : From Fiction to Performance</i>	Maheswata Devi & Usha Ganguli	Seagull, 1999
3	<i>A Corpse in the Well Translations from Modern Marati Dalit Autobiographies</i>	Arjun Dangle	Orient Longman 1992

References

1. Ranajit Guha . *Subaltern Studies*. Oxford University Press, 1982.
2. Vinayak Chaturvedi. *Mapping Subaltern Studies and the Postcolonial*. Verso Books, 2000.
3. Dipesh Chakrabarty . *Habitations of Modernity: Essays in the Wake of Subaltern Studies*. University of Chicago Press, 2002.
4. D. R. Nagaraj. *The Flaming Feet and Other Essays: The Dalit Movement in India*. Seagull Books 2011.

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SUBALTERN LITERATURE

QUESTION PATTERN FOR THE ELECTIVE PAPER TITLED SUBALTERN LITERATURE

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts (poetry and drama)

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x2= 20	20
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts)	2x5 = 10	25
		Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3	Section- C	Q. No. 16 to 20	Essay Questions (300 words)	3 x 10 = 30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS

WOMEN'S WRITING IN ENGLISH

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CC 12	18K5E12	5	5	3	25	75

OBJECTIVES

- To appreciate various styles and forms used by women writers in various genres.
- To read, analyze and understand important texts written by women.

UNIT- I POETRY - DETAILED

- 1.Margaret Atwood – This is a Photograph of Me.
- 2.Emily Dickinson – After Great Pain , a formal Feeling Comes.
- 3.Audre Lorde – A Woman Speaks.

POETRY(NON –DETAILED)

- 4.Mamta Kalia – Positive Thinking.
- 5.Maya Angelou – Caged Bird.

UNIT- II PROSE

- 1.Virginia woolf – The Androgynous Vision from ‘A Room Of One’s Own’
- 2.Sarojini Naidu – The Soul of India.
- 3.Nadime Gordimer – The Essential Gesture : Writers and Responsibility..

UNIT- III -DRAMA (DETAILED)

- 1.Alice Childress – Trouble in Mind.

UNIT- IV- SHORT STORIES

- 1.Doris Lessing – Flight.
- 2.Kamala Das – A Home near the Sea.
- 3.Ambai – Squirrel.

UNIT- V- FICTION

- 1.Manju Kapur - Difficult Daughters.

Prescribed Texts

- 1.Vilas Salunke, H O Parashar *The Mystic Drums, An Anthology of Poems in English.*Orient Longman.2005
- 2.Kushwant Singh. *Best Indian Short Stories Volume I.*Harper Collins Publishers India.2017
3. Makarand R.Paranjape *Sarojini Naidu: Selected Poetry and Prose,* Rupa Publications India Pvt.Ltd.2012
- 4.ManjuKapur – *Difficult Daughters* Faber&Faber.2009

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WOMEN'S WRITING IN ENGLISH

QUESTION PATTERN FOR THE PAPER TITLED WOMEN'S WRITING IN ENGLISH

Questions should be equally chosen from all the constituents of the five units.
 Questions related to annotations must be strictly chosen only from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts).	2x5=10	25
		Q .No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either or Choice based Paragraph Questions (150words)	3x5=15	
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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MAJOR BASED ELECTIVE -COMPREHENSION SKILLS

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
V	<u>MBE1</u>	<u>18K5EELE1</u>	4	4	3	25	75

OBJECTIVES

To promote think-aloud activity (reading for meaning) among the learners.

To develop reading skills.

UNIT- I

Identifying a topic sentence in text - Using topic sentence to preview and predict content -

Identifying supporting text sentences - Interpreting supporting sentences- Using details to preview and predict content - Scanning text to predict content .

UNI-II

Identifying context clues -Analyzing context clues - Using Context Clues- Defining Vocabulary in Context- Identifying signal words- Recognizing signal words

UNI-III

Skimming - Making Inference - Patterns of organisation- Summarizing

UNIT-IV

Stories for Comprehension- Identifying main character/ setting and time/ plot/ tone – Mapping characters/ story events

UNIT-V Comprehension Passages

Determined to Go Home- Shipwrecked in Antarctica- Against All Odds- Adrift in the Pacific Ocean- Head Downhill and Follow the Water - Doomed Pioneers: The Donner Party - “Houston, We’ve Had a Problem”(Stories for Comprehension)

The Great White Hurricane- The World’s Worst Tornado- The Great Alaskan Earthquake- The Journey that Proved Earth was Round- Wild Ride Down the Colorado River- Conquering Mount Everest- Around the World in 71 Days- A Risky Sea Journey- The Race to the South Pole Anesthesia .

PRESCRIBED TEXT

S.No	Title of the Book	Author	Publisher & Year
1	<i>*Advanced Reading Power</i>	Beatrice S Mikulecky	Pearson Longman 2007
2	<i>Reading Comprehension Skills and Strategies</i>		Saddleback Educational Publishing , 2002
3	<i>Reading Comprehension Questions</i>		Learning Express, New York
4	<i>Reading Comprehension Success</i>		Learning Express, New York, 2005
5	<i>More Reading Power</i>	Beatrice S. Mikulecky & Linda Jeffries	Longman, 1996
6	<i>Stories for Reading Comprehension</i>	L A Hill	Longman, 1988
7	<i>Document- Based Questions: For Reading Comprehension and Critical Thinking</i>	Debra J Housel	Teacher Created Resources, 2009

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MAJOR BASED ELECTIVE -COMPREHENSION SKILLS

QUESTION PATTERN FOR THE PAPER TITLED COMPREHENSION SKILLS

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q1- 5	Five comprehension passages (<u>Two</u> from prescribed texts and <u>Three</u> from any nonfiction text/ passages) <u>Multiple- choice questions (3)/ True/ False questions(2)</u>	5x5= 25	25
2	B	Q 6-10	Five Comprehension passages should be based only on stories (<u>Three</u> from prescribed stories and <u>Two</u> from any fiction passages) <u>Questions should only be short answer questions</u>	5x5=25	25
3	C	Q 11- 15	Five comprehension passages should be based on nonfiction texts (<u>Two</u> passages from the prescribed text and <u>Three</u> from any other nonfiction passages) <u>Questions should only be short answer questions</u>	5x5=25	25
				Total	75

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B.A English Programme- Course Structure Under CBCS
SHAKESPEARE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	CC 13	18K6E13	6	5	3	25	75

OBJECTIVES

- To introduce the students to Shakespearean texts.
- To enable the students to develop and critically analyze the literary elements and devices.

UNIT I SHAKESPEARE’S SONNETS - (DETAILED)

- 1.Oh, that were yourself! But, love, you are
- 2.Like as the waves make towards the pebbled shore.
- 3.Cupid, laid by his brand and fell asleep.

UNIT II - POETRY (NON-DETAILED)

- 1.Venus and Adonis. (1-200)
2. Let me to the marriage of True Minds

UNIT III (DETAILED)

Othello

UNIT IV (NON-DETAILED)

Henry IV (Part -I)

UNIT V (NON-DETAILED)

Romeo and Juliet

References

- 1.Kathleenkuiper *The Comedies of William Shakespeare* Rosen education Service 2012.
- 2.Margreta de Grazia *The Cambridge Companion to Shakespeare* Cambridge University Press, 2001.
- 3.Michael Hattaway *The Cambridge Companions Shakespeare’s History plays* Cambridge University Press, 2003.
- 4.Alexander Legatt *The Cambridge Companion to Shakespearean Comedy*, Cambridge University Press, 2002.
- 5.ClaineMCEachern – *The Cambridge Companion to Shakespearean Tragedy*. Cambridge University Press ,2003.
- 6.William Shakespeare , *The Complete works of William Shakespeare*, Barnes and Noble 1994.

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SHAKESPEARE

QUESTION PATTERN FOR THE PAPER TITLED SHAKESPEARE.

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts) .	2x5=10	25
		Q No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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B.A English Programme- Course Structure Under CBCS
DIASPORIC LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	CC 14	18K6E14	6	5	3	25	75

OBJECTIVES

- To equip the students with sufficient knowledge in Diasporic Literature.
- To make the students appreciate the style of diasporic writers with different national, cultural and ethnic backgrounds.

UNIT- I - POETRY (DETAILED)

1. Michael Ondaatje – To a Sad Daughter.
2. Gwendolyn Brooks – To the Diaspora.
3. Meena Alexander – Birthplace with Buried Stones.

POETRY - (NON- DETAILED)

4. Imtiaz Dharker – Living Space.
5. Sujata Bhatt – The Peacock.

UNIT- II- PROSE

1. Avtar Brah – “Introduction” (Pg- 1-16). Extract from “Cartographies of Diaspora”.
2. Bharati Mukherjee – Two Ways to Belong in America.
3. Stuart Hall – Cultural Identity and Diaspora.

UNIT- III- DRAMA (DETAILED)

1. Uma Parameswaran – Sita’s Promise.

UNIT- IV- SHORT STORIES.

1. Bharathi Mukherjee – A Wife’s Story.
2. Paulette Poujol Oriol -- Red Flower.
3. Jhumpa Lahiri – “This Blessed House” from Interpreter of Maladies.

UNIT- V- FICTION

1. M. G. Vassanji – No New Land.

References

1. Jonathan Rutherford, Ed. *Identity, Community, Culture, Difference*. Lawrence and Wishart, 1990.
2. Avtar Brah: *Cartographies of Diaspora*. Routledge, 1996.
3. Uma Parameswaran. *Sita’s Promise* Alexander Street Press, 2002.
4. Bharathi Mukherjee. *The Middleman and Other Stories*. Grove Press, 1988.
5. Jhumpa Lahiri. *Interpreter of Maladies* Houghton Mifflin, 1999.
6. M. G. Vassanji. *No New Land*. Penguin Books India (P) Ltd., 1992.

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DIASPORIC LITERATURE
QUESTION PATTERN FOR THE PAPER TITLED DIASPORIC LITERATURE

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS
CHILDREN'S LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	CC 15	18K6E15	6	5	3	25	75

OBJECTIVE

To introduce, study and analyse literature as a pre adolescent reader.

UNIT-I POETRY

1. Phil Bowen - *The Yaffling Tree*
2. Berlie Doherty - *Quiter than Snow.*
3. Mandy Coe - *If You Could See Laughter*
4. John Foster - *The Land of the Flibbertigibbets*
5. Rabindranath Tagore - *On the Seashore*

UNIT-II PROSE

1. Barbara F. Harrison - *Why Study Children's Literature?*
2. Carl M. Tomlinson - *The International Children's Literature Movement*
3. Jill P. May - *Theory and Textual Interpretation: Children's Literature and Literary Criticism*

UNIT-III DRAMA

1. Aurand Harris - *Androcles and the Lion*

UNIT-IV SHORT STORIES

1. Roald Dahl - *Lamb to the Slaughter*
2. Katherine Mansfield - *The Doll's House*
3. Indira Ananthakrishnan - *The Maleo Birds*

UNIT-V FICTION

1. J.K.Rowling - *Harry Potter and the Philosopher's Stone*

References

1. Aurand Harris. *Six Plays for Children*. University of Texas Press Austin, 1986
2. Matthew Grenby. *Children's Literature*. Edinburgh University Press, 2008.
3. Peter Hunt. *Understanding Children's Literature*. Routledge, 2005.
4. Karín Lesnik-Oberstein. *Children's Literature: New Approaches*. Palgrave Macmillan, 2004.
5. Hans-Heino Ewers. *Fundamental Concepts of Children's Literature Research : Literary and Sociological Approaches*. Routledge, 2009.
6. Rowling J.K. *Harry Potter and the Philosopher's Stone*. Bloomsbury .UK.2010.

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CHILDREN'S LITERATURE

QUESTION PATTERN FOR THE PAPER TITLED CHILDREN'S LITERATURE.

Questions should be equally chosen from all the constituents of the five units

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x2= 20	20
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b) Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5 = 25	25
3	Section-C	Q. No. 16 to 20	Essay Questions (300 words)	3 x 10 = 30	30
				Total	75

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COMMON ERRORS IN ENGLISH

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	MBE2	18K6EELE2	5	4	3	25	75

OBJECTIVE

- To introduce the students to basic grammar in English.
- To introduce the students to the usage of common words in English

UNIT-I

Common Errors in Grammar- Apposition, Case, Clause, Complement, Correlatives, Demonstrative Adjective, Distributives, Epithets and Predicative Adjective, Finite Verb, Future in the Past, Gerund and the Participle.

UNIT-II

Common Errors in Grammar- Impersonal Verb, Infinitive: Simple and Perfect, Moods, Reflexive pronoun, Relative Pronoun, Transitive and Intransitive use of Verbs, Subordinating Conjunction - 'A' or 'An' ?- Agreement of Verb and Subject – 'Also' as Conjunction- 'Among' followed by Singular Noun

UNIT-III

Common Errors in Grammar— 'And which' – 'Any' & 'Either' – Between Each – Between among – 'Between ... or' – Comparative and Superlative – Conjunction in Wrong Sequence - Correlatives Wrongly paired- Correlatives misplaced- Double Negative- Due to and Owing to.

UNIT-IV

Common Errors in Punctuation- Rules of Punctuation – Full Stop after Incomplete Sentences – Redundant Full Stop- Omission of Full Stop - Use of Coma – Use of Semicolon – Confusion of the Main and Subordinate Divisions of Sentences – Use of Question Mark – Exclamation Mark- Use of Dash – Use of Hyphen - Use of Apostrophe - Use of Capitals

UNIT-V

Words Commonly Misused – Words Commonly misspelt - Wrong Prepositional Usage – Pairs of Words often confused – Malaprops

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	<i>English Observed : Common Errors in Written English.</i>	Lancelot Oliphant	Odhams Press Limited.

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QUESTION PATTERN FOR THE PAPER TITLED COMMON ERRORS IN ENGLISH
Multiple Choice Questions should be chosen only from Unit-I to Unit- IV/ Correct the Sentences from Unit-I to Unit V / Essay Questions from Unit- V .

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q1- 25	Multiple Choice Questions from <u>Unit- I to Unit IV</u>	25X1=25	25
2	B	Q26-50	Correct the Sentences from <u>Unit- I to Unit V</u>	25X1 =25	25
3	C	Q51- 55	Essay questions on <u>Unit -V</u>	5x5=25	25
				Total	75

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NEWS REPORTING & EDITING

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	MBE3	18K6EELE3	6	3	3	25	75

OBJECTIVE

To introduce the students to the techniques of reporting and news writing

UNIT-I

What is News- Nature of News -Writing News- News Narrative – Writing the Lead – Writing the Setting- News Language- Types of News Releases- Handling News Releases- Rewriting News Releases- Writing News for the Web – Writing News for Radio and Television

UNIT-II

Reporting Interviews- Audio or Video Interview- Setting Up the Interview- Preparing Questions- Interview Approaches- Ending the Interview- Handling Quotations and Attributions- Reporting Speeches, News Conferences and Meetings.

UNIT-III

Storytelling – Inverted Pyramid Story – Story Organisation- The One-subject story – The Memo-Structure Story – Writing a Story Across Media Platforms- Tweeting Breaking News- Types of Stories –Crime, Accident, Obituaries and Life Stories

UNIT-IV

General Principles of Editing: Qualifications, duties, responsibilities and functions of an editor- Copyediting and proofreading symbols

UNIT- V

Common Errors in Grammar and Punctuation- Incorrect Comma, Run-on sentence, Fragment, Confusion of ‘that’ and ‘which’ – Misused Semicolon – Misplaced modifier- Misused hyphen in compound modifier – Misused apostrophe - Incorrect pronoun case - Lack of agreement between pronoun and antecedent- Lack of agreement between subject and verb – biased language – Incorrect complement with linking verb – Incorrect use of subjunctive mood – In correct word form – Wrong word

Prescribed Text

S .No	Title of the Book	Author	Publisher & Year
1	News Reporting and Writing	Brian S Brooks and George Kennedy	Bedford, 2014
2	News Reporting &Editing	K.N .Shrivastava	Sterling Publishers.2015

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QUESTION PATTERN FOR THE PAPER TITLED NEWS REPORTING AND EDITING

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x2= 20	20
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b) Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5 = 25	25
3	Section-C	Q. No. 16 to 20	Essay Questions (300 words)	3 x 10 = 30	30
				Total	75

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ENGLISH MADE EASY –I

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
I	ELC1	18K1E1	6	3	3	25	75

OBJECTIVES

- To introduce the students to the productive and active skills
- To introduce the students to the nuances of prose/ poetic literary texts and style.

UNIT-I SHORT FICTION

1. James Thurber – The Curb in the Sky
2. Saki- The Open Window

UNIT- II PROSE

1. William Ralph Inge - Happy People
2. Stephen Leacock- My Lost Dollar.

UNIT- III POETRY

1. Henry Wadsworth Longfellow – A Psalm of Life
2. William Wordsworth- Daffodils

UNIT-IV DRAMA

1. Stanley Houghton – The Dear Departed

Unit-V

1. Reading Comprehension – Unit-I & Unit-II only.
2. Choose the Best Answer– Unit- I/ II/ III/ IV
3. Match the Following Words/ Phrases- Unit- I/ II/ III/ IV
4. Fill in the Blanks- Unit- I / II/ III/ IV

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	<i>English Made Easy</i>	E. Suresh Kumar Sumita Roy A. Karunakar	Orient Blackswan Private Limited, 2016

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ENGLISH MADE EASY –I

QUESTION PATTERN FOR THE PAPER TITLED ENGLISH MADE EASY-I

****Questions pertaining to Section- A must be chosen from all the Four units**
Questions pertaining to Comprehension passage Section- B must be chosen only from Unit-I and
Unit-II. Questions pertaining to Section-B must be chosen from all Four Units.
Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage _ <u>(Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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PROSE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
I	CCI	18K1E01	6	5	3	25	75

OBJECTIVES

- To introduce the students to various styles of Prose Writers.
- To make the students to improve their style of writing.

UNIT- I

- 1.Francis Bacon – Of Truth.
- 2.Joseph Addison – Sir Roger and Will Wimble.
- 3.Sir Richard Steele – Sir Roger De Coverley’s Portrait Gallery.

UNIT- II

- 1.Oliver Goldsmith – Beau Tibbs.
- 2.Charles Lamb – A Dissertation Upon Roasted Pig.
- 3.William Hazlitt – Common Sense.

UNIT- III

- 1.James Leigh Hunt – On Getting Upon Cold Mornings.
- 2.R. L. Stevenson – Walking Tours.
- 3.A. G. Gardiner – On Saying Please.

UNIT- IV

- 1.Bertrand Russell – Knowledge and Wisdom.
- 2.Max Beerbohm – Going Out for a Walk.
- 3.G. K. Chesterton – On Running After One’s Hat.

UNIT- V

- 1.Robert Lynd – On Good Resolutions.
- 2.E. M. Forster – Tolerance.
- 3.Jacob Bronowski – The Values of Science.

References

5. Robb W. Cuthbert. *A Representative Anthology Blackie Books*, 1948.
6. Francis Bacon. *Essays of Francis Bacon*. Create space Independent Publishing, 2014.
7. J. Jacob Bronowski. *The Common Sense of Science*. Harvard University Press, 1978.
8. E. M. Forster. *Two Cheers For Democracy*. Mariner Books, 1962

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PROSE

QUESTION PATTERN FOR THE PAPER TITLED PROSE

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q. No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No .15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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BRITISH POETRY - CHAUCER TO THE MODERNS

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
I	CC2	18K1E02	6	5	3	25	75

OBJECTIVES

- To introduce the students to the poetry of diverse literary periods.
- To introduce the students to the literary techniques and movements.

UNIT- I - POETRY (DETAILED)

1. Geoffrey Chaucer - "The General Prologue" (Lines 1-42 only) from The Canterbury Tales.
2. Sir Philip Sidney - "My mouth doth water and my breast do swell" from Astrophel and Stella
3. Edmund Spenser - "One day I wrote her name upon the strand"

UNIT -II – POETRY

1. John Donne - A Hymn to God the Father.
2. John Milton - Paradise Lost Book IV (1-100) lines only
3. George Herbert - Pulley

UNIT- III - POETRY (DETAILED)

1. Wordsworth – Ode on the Intimations on Immortality
2. S.T. Coleridge - Rime of the Ancient Mariner.
3. John Keats - Ode to a Nightingale.

UNIT IV – POETRY

1. Robert Browning - My Last Duchess
2. Mathew Arnold - Forsaken Merman
3. Alfred Lord Tennyson - Tithonus

UNIT- V – POETRY

1. W.B. Yeats - A Prayer to My Daughter.
2. G.M. Hopkins - Though Art Indeed Just, Lord
3. W.H. Auden - The Unknown Citizen

References

1. Charles Mahoney. *A Companion to Romantic Poetry*. Wiley – Blackwell, 2010
2. Harold Bloom. *John Donne and the Metaphysical poets*. Chelsea House Publishers, 2010.
3. Peter Brown. *A Companion to Chaucer*. Blackwell publishers, 2002.
4. Pramod K. Nayar. *English Poetry to the Elizabethans to the Restoration*. Orient Black Swan Pvt Ltd, 2012.
5. Pramod K. Nayar. *The English Romantic Poets: An Anthology*. Orient Black Swan Pvt Ltd, 2013.
6. Margaret Ferguson. *Norton Anthology of Poetry*. W.W. Norton Company, 2004.

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BRITISH POETRY - CHAUCER TO THE MODERNS

QUESTIONS PATTERN FOR THE PAPER TITLED BRITISH POETRY - CHAUCER TO THE MODERNS.

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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SOCIAL HISTORY OF ENGLAND

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
I	AC1	18K1EAE1	4	3	3	25	75

OBJECTIVES

- To introduce the historical events of all ages.
- To introduce the social, political, economical and religious status in England.

UNIT- I

Renaissance / Reformation

The Stuart Age

Puritanism

UNIT- II

The Age of Queen Anne.

Industrial Revolution.

Agrarian Revolution.

UNIT-III

The Effects of French Revolution.

The Reform Bill

The Development of Transport and Communication.

The Development of Education in 19th Century.

UNIT -IV

Effects of I and II World War.

Social Security and the Welfare State.

The Effects of Cold War.

UNIT- V

Trade Unionism.

The Origin and Growth of Political Parties.

Contemporary life in England.

Prescribed Texts

S.No	Title of the Book	Author	Publisher & Year
1	The Social History of England	Padmaja Ashok	Orient Blackswan Private Limited.2011

References

1.A.G.Xavier *An Introduction to the Social History of England*. S. Viswanathan Publishers and Pvt. Ltd 2009.

2.Simon Jenkins *A Short History of England* Profile Books Ltd. 2012.

3.G.M. Trevelyn *English Social History : A survey of six centuries character to Queen Victoria* Book Club Associates 1973

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SOCIAL HISTORY OF ENGLAND

QUESTION PATTERN FOR THE PAPER TITLED SOCIAL HISTORY OF ENGLAND

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q No. 16 to 20	Essay Questions(300 words)	3x10=30	30
Total					75

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ENGLISH MADE EASY –II

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
II	ELC2	18K2E2	6	3	3	25	75

OBJECTIVES

- To introduce the students to the productive and active skills
- To introduce the students to the nuances of prose/ poetic literary texts and style

UNIT-I- SHORT FICTION

- 1.Eudora Welty – A Visit of Charity
- 2.Rabindranath Tagore- The Home Coming.

UNIT –II- PROSE

- 1.Aldous Huxley – Benares
- 2.George Bernard Shaw – Spoken English and Broken English.

UNIT-III- POETRY

- 1.Percy Bysshe Shelley – Stanzas Written in Dejection Near Naples
- 2.Alfred Lord Tennyson-Ulysses

UNIT-IV DRAMA

1. Shakespeare Retold : Julius Caesar

UNIT-V

1. Reading Comprehension – Unit-I & Unit-II only.
- 2.Choose the Best Answer– Unit- I/ II/ III/ IV
- 3.Match the Following Words/ Phrases- Unit- I/ II/ III/ IV
4. Fill in the Blanks- Unit- I / II/ III/ IV

PRESCRIBED TEXT

S. No	Title of the Book	Author	Publisher & Year
1	English Made Easy	E. Suresh Kumar Sumita Roy A. Karunakar	Orient Blackswan Private Limited, 2016

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ENGLISH MADE EASY –II

QUESTION PATTERN FOR THE PAPER TITLED ENGLISH MADE EASY-II

****Questions pertaining to Section- A must be chosen from all the Four units**
Questions pertaining to Section- B must be chosen only from Unit-I and Unit-II
Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage_-(<u>Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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SHORT STORIES AND FICTION

Semester	Course	Sub.Code	Hour	Credits	Exam hour	Marks	
						I.A	E.A
II	CC3	18K2E03	6	5	3	25	75

OBJECTIVES

To introduce the students to Short Story and Fiction writings over centuries.

To help learners appreciate different themes, strategies, and techniques employed by the writers

UNIT -I SHORT-STORIES

1. Saki - Alice and the liberal party (British).
2. Somerset Maugham – The Verger (British).
3. Nathaniel Hawthorne – The Snow-Image (American).

UNIT II- SHORT-STORIES

1. Rabindranath Tagore - The Post Master (Indian).
2. Lakshmi Kannan - Muniyakka (Indian).
3. Leo Tolstoy - The Candle (Russian).

UNIT- III- SHORT-STORIES

1. Anton Chekhov - The Bet (Russian).
2. Katherine Mansfield - An Ideal Family (New Zealand).
3. Chinua Achebe - The Sacrificial Egg (African)

UNIT- IV- FICTION

1. Charles Dickens - David Copperfield

UNIT- V - FICTION

2. Virginia Woolf- To the Lighthouse.

References

1. A. Joseph and Balasubramanian M, eds. *Memorable Tales*. PoGo Publishing House, 2013.
2. Kannan, Lakshmi. *India Gate and Other stories*. Disha Books, 1993.
3. Dickens Charles. *David Copperfield*. Bradbury&Evans. 1849.
4. Woolf, Virginia. *To the Lighthouse*. Hogarth Press UK.1927.

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SHORT STORIES AND FICTION

QUESTION PATTERN FOR THE PAPER TITLED SHORT STORIES AND FICTION

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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LITERARY FORMS AND TERMS

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
II	CC4	18K2E04	6	5	3	25	75

OBJECTIVES

- To introduce the students to varied Literary genres.
- To inculcate the students a proper understanding of all Literary Forms and terms and their features.

UNIT- I - ELEMENTS OF POETRY

Rhyme - Meter - Stanza forms - Type of verse - Ballad - Epic and Mock - Epic - Metrical romance - Dramatic Monologue - Limerick - Lyric - Ode - Elegy - Pastoral elegy - Idyll - Sonnet - Epistle - Satire.

UNIT- II PROSE – NON-FICTION

Biography - Autobiography - Essay : Aphoristic Essay - Personal Essay - Character Sketch - Critical Essay - Periodical Essay.

UNIT- III PROSE - FICTION

Elements of Fiction - Plot - Narrative Technique - Characterization - Setting - Dialogue - Short Story - Novel - Picaresque novel - Historical Novel - Sentimental Novel - Domestic Novel - Gothic Novel - Science Fiction Novel - Regional Novel.

UNIT- IV DRAMA - FEATURES OF THEATRE AND DRAMA

Tragedy - Comedy - Dramatic design - Classical Greek tragedy - Neoclassical tragedy - Senecan or Revenge Tragedy - Origin and Growth of Drama in England - Romantic Tragedy - Romantic Comedy - Tragic comedy - Chronicle Plays - Features of Elizabethan Theatre and Drama - Masque and Anti -Masque - Comedy of Humour - Heroic tragedy - Comedy of Manners - Genteel Comedy - Sentimental Comedy.

UNIT- V FIGURES OF SPEECH

Imagery - Simile and Metaphor - Personification - Onomatopoeia - Alliteration - Apostrophe - Hyperbole - Oxymoron - Allegory - Allusion - Anticlimax - Cliche - Euphemism - Irony - Metonymy - Paradox - Synecdoche - Transferred Epithet.

Prescribed Texts

S.No	Title of the Book	Author	Publisher & Year
1	A Companion to Literary Forms	Padmaja Ashok	Orient Blackswan.2015

References

- 1.J.A Cuddon. *A Dictionary of Literary forms and Literary theory*. Wiley - Black well, 2013
- 2.Mary Klages. *Key Terms in Literary Theory*, Bloomsbury publications, 2012
- 3.Chris Baldick. *The Concise Oxford Dictionary of Literary Terms*, Oxford University Press.
- 4.Peter Childs. *The Routledge Dictionary of Literary Terms*, Routledge, 2005.

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LITERARY FORMS AND TERMS

QUESTION PATTERN FOR THE PAPER TITLED LITERARY FORMS AND TERMS

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q .No. 12(a) or 12(b) Q. No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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HISTORY OF ENGLISH LITERATURE - I

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
II	AC2	18K2EAE2	4	3	3	25	75

OBJECTIVES

- To introduce the students about the Literatures of varied literary periods.
- To introduce the students to the literary genres and the literary movements.

UNIT- I

The Age of Chaucer.

UNIT- II

The Age of Shakespeare.

UNIT- III

The Age of Milton.

UNIT- IV

The Age of Dryden.

UNIT- V

The Age of Pope

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	An Outline History of English Literature	William Henry Hudson	G. Bell & Sons Ltd, 1913.

References

1. Harry Braimers . *A Short history of English Literature*. Routledge, 1984.
2. Ronald Carter *The Routledge History of English Literature* Routledge, 1997.
- 3 Andrew Sanders. *The Short Oxford History of English Literature*. Oxford University Press, 2004.

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(Applicable to the candidates admitted from the academic year 2018 onwards)

HISTORY OF ENGLISH LITERATURE - I

QUESTION PATTERN FOR THE PAPER TITLED HISTORY OF ENGLISH LITERATURE-I

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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FLUENCY IN ENGLISH-I

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
III	ELC3	18K3E3	6	3	3	25	75

OBJECTIVES

- To introduce the students to the productive and active skills
- To introduce the students to the nuances of prose/ poetic literary texts and style

UNIT-I

1. Kadambari Murali – Inzy Lets Things Flow Over Him
2. Tarun J. Tejpal – It's only a Game. Enjoy

UNIT-II

1. Salman Rushdie – Haroun and the Sea of Stories
2. Mrinal Pande – Girls

UNIT-III- Poetry

1. Payal Kapadia – An Exchange
2. Nirendranath Chakrabarti - Amalkanti

UNIT-IV

1. Subroto Bagchi – Go Kiss the World.

UNIT-V

1. Reading Comprehension – Unit-I, Unit-II and Unit- IV only.
2. Choose the Best Answer– Unit- I/ II/ III/ IV
3. Match the Following Words/ Phrases- Unit- I/ II/ III/ IV
4. Fill in the Blanks- Unit- I / II/ III/ IV

Prescribed texts

S. No	Title of the Book	Author	Publisher & Year
1	Fluency in English – I	Promodini Varma	Orient Blackswan Private Limited, 2016

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FLUENCY IN ENGLISH-I

QUESTION PATTERN FOR THE PAPER TITLED FLUENCY IN ENGLISH -I

****Questions pertaining to Section- A must be chosen from all the Four units**
Questions pertaining to Section- B must be chosen only from Unit-I , Unit-II and Unit- IV
Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage.-(<u>Two passages each from Unit-I & II should comprise 5 questions .</u>)	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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Department of English

B.A English Programme- Course Structure Under CBCS

BRITISH DRAMA

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
III	CC5	18K3E05	6	5	3	25	75

OBJECTIVES

- To introduce the students to the dramatic genre of the Elizabethan to the Modern Period..
- To enable the students to understand and critically assess the texts in accordance with the socio - politico - cultural milieu.

UNIT- I (DETAILED)

Christopher Marlowe - Dr. Faustus

UNIT- II

Ben Jonson - The Alchemist

UNIT- III

Oliver Goldsmith - She Stoops to Conquer.

UNIT- IV(DETAILED)

George Bernard Shaw - Pygmalion

UNIT- V

Samuel Beckett - Waiting for Godot.

Prescribed Texts

1. Christopher Marlowe. Jew of Malta. Macmillan Publishers India Ltd, 1998.
2. Ben Johnson. The Alchemist. University Tutorial Press Ltd, London 1968.
3. Oliver Goldsmith. She stoops to conquer. Oxford University Press.2000
4. Shaw. Pygmalion. Mahaam Publishers. 2013
5. Samuel Beckett. Waiting for Godot. Faber's Faber London. 1956

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BRITISH DRAMA

QUESTION PATTERN FOR THE PAPER TITLED BRITISH DRAMA

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts. (Dr Faustus and Pygmalion)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b)	Annotation (Explain with reference to context from the detailed texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 26 to 30	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS
AMERICAN LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
III	CC6	18K3E06	6	5	3	25	75

OBJECTIVES

- To introduce the students to study American Literature
- To teach the students about different eras, genres and authors.

UNIT –I- POETRY(DETAILED)

- 1.Emily Dickinson - I heard a fly Buzz when I died.
- 2.Edgar Allan Poe - The Haunted Palace.
- 3.Wallace Stevens - The Snow Man.

POETRY(NON- DETAILED)

- 4.Robert Frost - The Death of the Hired Man
- 5.E..E Cummings - The Eagle

UNIT- II -PROSE

- 1.Emerson - Experience (Extract from Essays : Second Series)
- 2 Henry David Thoreau - ‘ The Battle of the Ants’ from Walden
- 3.Martin Luther King - The Trumpet of Conscience

UNIT- III – DRAMA(DETAILED)

- 1.Eugene O’ Neil - Long Day’s Journey into the Night

UNIT-IV - SHORT STORIES

- 1.Washington Irving - RipVan Winkle
- 2.Nathaniel Hawthorne - Young Goodman Brown
- 3.William Faulkner - That Evening Sun.

UNIT- V – FICTION

- 1.Zora Neale Hurston - Their Eyes were Watching God.

References

- 1.David Lehman. *The Oxford Book of American Poetry*, Oxford University Press. 2006.
- 2.Ralph Waldo Emerson. *Essay by Ralph Waldo Emerson* First second series. Read Books 2008
- 3.Edgar Allan Poe. *The Complete Poetry of Edgar Allan Poe*. Penguin USA 2008.
- 4.Wallace Stevens. *The Collected Poems of Wallace Stevens* Vintage 1990.
- 5.Tiffany K.Wayne. *Critical companion to Emerson* Cambridge University Press, 2010.
- 6.Kenin. J. Haynes. *Cambridge companion to Edgar Allan Poe*. Cambridge University Press., 2002.
- 7.Harold Bloom’s *Modern Critical Interpreters. Eugene O’ Neil’s Long Day Journey into Night* Chelsea House Publications, 2009.
- 8.Martian Scofield. *The Cambridge Introduction to American short story*. Cambridge University Press. 2006.
- 9.Harold Bloom *Modern American Drama*. Chelsea House Publications, 2005
- 10.Sharo L. Jones *Critical Insights : Zora Neale Hurston* Salem Press 2013.

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AMERICAN LITERATURE

QUESTION PATTERN FOR THE PAPER TITLED AMERICAN LITERATURE

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts(Poetry and Drama)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q.No.1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q.No.11(a) or 11(b) Q.No.12(a) or 12(b)	Annotations(Explain with reference to context from the detailed texts)	2x5=10	25
		Q.No.13(a) or 13(b) Q.No.14(a) or 14(b) Q.No.15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q.No.16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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HISTORY OF ENGLISH LITERATURE - II

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
III	AC3	18K3EAE3	4	3	3	25	75

OBJECTIVES

To introduce the students to varied Literary genres.

- To familiarize the students with the literary terms, movements and concepts.

UNIT- I

The Age of Johnson.

UNIT- II

The Age of Wordsworth.

UNIT- III

The Age of Tennyson.

UNIT -IV

The Age of Thomas Hardy.

UNIT- V

The Age of T.S.Eliot to The Present Age.

Prescribed texts

S. No	Title of the Book	Author	Publisher & Year
1.	An Outline History of English Literature	William Henry Hudson	G.Bell & Sons Ltd. 1913.

References

1.Harry Blaimiers *A Short History of English Literature* Routledge 1984.

2.Ronald Carter *The Routledge history of English Literature* Routledge 1997

3.Andrew Sanders *The Oxford history of English Literature* Oxford University press, 2004.

QUESTION PATTERN FOR THE PAPER TITLED HISTORY OF ENGLISH LITERATURE II

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b) Q. No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS
SELF-STUDY PAPER
SINGLE AUTHOR STUDY: RABINDRANATH TAGORE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks
						EA
III	SS1	18K3SSE1	-	5	3	100

UNIT-I- POETRY

Rabindranath Tagore - Gitanjali –No.1-5
 -The Little Flute
 - Song for My Lord
 - Music of Life
 -Purity
 - Moment's Indulgence

UNIT-II- POETRY

Rabindranath Tagore--- Gitanjali-No.6-10
 -The Flower
 - Song Undressed
 - The Bondage Finery
 - The Fool and the Beggar
 - The Poorest, The Lowliest, and the Lost.

UNIT-III- PROSE

Rabindranath Tagore – 1. To the Students Part –I & II (Excerpts from Talks in China).
 2. The Realisation of Beauty.

UNIT-IV SHORT STORIES-

Rabindranath Tagore
 1. Kabuliwalla
 2. The Postmaster.

UNIT-V DRAMA

Rabindranath Tagore- Chitra

References

3. William Radice. Rabindranath Tagore: Selected Short Stories. Penguin books, 1991.
4. Amiya Chakravarty. A Tagore Reader. Beacon Press, 1961.

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SELF-STUDY PAPER
SINGLE AUTHOR STUDY: RABINDRANATH TAGORE

**QUESTION PATTERN FOR THE PAPER TITLED SINGLE AUTHOR STUDY-
RABINDRANATH TAGORE.**

Questions should be equally chosen from all the constituents of the five units

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x3= 30	30
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b) Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x6 = 30	30
3	Section-C	Q. No. 16 to 20 4 Essay Questions out of 5	Essay Questions (300 words)	4 x 10 = 40	40
				Total	100

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B.A English Programme- Course Structure Under CBCS

NON-MAJOR ELECTIVE
MODERN ENGLISH AND USAGE-I

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
III	NME1	18K3EEL01	2	<u>2</u>	3	25	75

OBJECTIVES

- To introduce the students to the basic grammar in English.
- To introduce the students to the usage of common words in English.

UNIT- I

Use of Nouns/ Pronouns

Use of Adjectives- Adjective Patterns

UNIT- II

Use of Verbs- Verb patterns , Verbs with Adverbs/ Prepositions

Use of Adverbials- Position/ Sequence/ Word order

UNIT-III

Use of Agreement- Pronoun/ Determiner and Antecedent, Subject and Complement, Subject and Verb

UNIT-IV

Use of Conditionals

UNIT-V

Use of words-able/ about/ about to/ absent/ accommodation/ according to/ accustom/ advice/ advise/ afford/ afraid/ agree/ almost/ already/ although/ always / another/ any/ anybody/ answer/ apologise/ as /as if / as though/ as long as/ as soon as / as well/ as well as/ be/ because/ because of / besides/ better/ both/ both.. and/ call/ capable/ incapable/ in case/ certain / come from/ comprise/ concern- concerned/ depart-departure/ despite/ due to/ either..or/ even if / even though/ every-everybody - everyone/ everyday.. every day/ everyone.. every one.

Reference

S. No	Title of the Book	Author	Publisher & Year
1	ABC of Common Grammatical Errors : For Learners and Teachers of English	Nigel D Turton	Macmillan 1995
2	Modern English :A Book of Grammar, Usage and Composition.	Krishnaswamy .N	Laxmi Publication.2009

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B.A English Programme- Course Structure Under CBCS

NON-MAJOR ELECTIVE
MODERN ENGLISH AND USAGE-I

QUESTION PATTERN FOR THE PAPER TITLED MODERN ENGLISH AND USAGE-I

Multiple Choice Questions should be chosen only from Unit-I to Unit- IV/ Correct the Sentences from Unit-I to Unit V / Essay Questions from Unit- V .

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q.No1- 25	Multiple Choice Questions from <u>Unit-I to Unit IV</u>	25X1=25	25
2	B	Q .No 26-50	Correct the Sentences Unit I toUnit V	25X1= 25	25
3	C	Q .No 51- 55	Essay Questions from <u>Unit -V</u>	5x5=25	25
				Total	75

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B.A English Programme- Course Structure Under CBCS
FLUENCY IN ENGLISH-II

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
IV	ELC4	18K4E4	6	3	3	25	75

OBJECTIVES

- To introduce the Students to the Productive and Active Skills
- To introduce the Students to the nuances of Prose/ Poetic Literary Texts and Style

UNIT-I

- 1.Kalpna Sharma – Hitting Dowry For a Six
 2 Manju Kapur – Chocolate

UNIT-II

- 1.Chasso – Soapnut Leaves
 2 Roald Dahl – Lamb to the Slaughter

UNIT-III

1. Esther Morgan – The Lost Word
 2. Rita Ann Higgins – Some People.

UNIT-IV

1. Ramachandra Guha – A Gandhian in Garhwal : Chandi Prasad Bhatt.

UNIT-V

1. Reading Comprehension – Unit-I, Unit-II and Unit- IV only.
 2 Choose the Best Answer– Unit- I/ II/ III/ IV
 3.Match the Following Words/ Phrases - Unit- I/ II/ III/ IV
 4. Fill in the Blanks - Unit- I / II/ III/ IV

PRESCRIBED TEXT

S.No	Title of the Book	Author	Publisher & Year
1	Fluency in English	Promodini Varma	Orient Blackswan Private Limited, 2016

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FLUENCY IN ENGLISH-II

QUESTION PATTERN FOR THE PAPER TITLED FLUENCY IN ENGLISH -II

****Questions pertaining to Section- A must be chosen from all the Four units**
Questions pertaining to Section- B must be chosen only from Unit-I, Unit-II and Unit- IV
Questions pertaining to Section – C must be chosen from all the Four units.**

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No 1 to5	Choose the Best Answer	5x1=5	15
		Q No 6 to 10	Fill in the Blanks	5x1= 5	
		Q No 11to15	Match the Following	5x1= 5	
2	B	Q.No 16(a) or 16(b) Q.No17(a) or17(b)	Comprehension Passage.-(<u>Two passages each from Unit-I & II should comprise 5 questions .)</u>	2x5= 10	20
		Q No 18to-QNo.20	2 Paragraph Questions out of 3	2X5=10	
3	C	Q .No 21to 25	4 Essay Questions out of 5	4x10 = 40	40
				Total	75

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B.A English Programme- Course Structure Under CBCS

INDIAN WRITING IN ENGLISH

Semester	Course	Sub .Code	Hour	Credits	Exam hour	Marks	
						I.A	E.A
IV	CC7	18K4E07	5	5	3	25	75

OBJECTIVES

To familiarize the students with major Indian Writers in English.

To enable them to understand, appreciate and critically evaluate the texts in their socio- cultural environment

UNIT- I- POETRY (DETAILED)

- 1.Toru Dutt - The Young Captive
- 2.Sarojini Naidu – Coramandel Fishers.
- 3.Sir Aurobindo - Surreal Science.

POETRY (NON - DETAILED)

- 4.Jayantha Mahapatra - Dawn at Puri.
- 5.Arun Kolatkar - The Priest's Son.

UNIT- III -PROSE

- 1.C. Raja Gopalachari - Jail Companions.
- 2.Rabindranath Tagore – Nationalism in India
- 3.Amaranantha Jha - The Teaching of English in India.

UNIT- IV -DRAMA (DETAILED)

- 1.Mahesh Dattani - Tara.

UNIT-IV SHORT STORIES

1. Raja Rao – The Cat and Shakespeare
2. Mulk Raj Anand – Lajwanti
- 3.Kushwant Singh – The Portrait of a Lady.

UNIT -V : FICTION

- 1.Sashi Deshpande - That Long Silence

References

- 1.R.P Singh, R.P and S.K.Prasad.(eds)*Anthology Of English Poetry*. India: Orient Blacks
- 2.Srinivasa Iyengar,K.R. *Indian Writing in English*.India: Sterling Publishers Pvt.Ltd,1971.
3. Mahesh Dattani Plays: *Critical Perspectives* ed. Angelie Multani, Delhi: Pencraft,2007.
- 4.Nalini Bhusan and Jay L. Garfield. *Indian Philosophy in English : From Renaissance to Independence*. Oxford University Press, 2011

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INDIAN WRITING IN ENGLISH

QUESTION PATTERN FOR THE PAPER TITLED INDIAN WRITING IN ENGLISH

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts(Poetry and Drama)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q.No.1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q.No.11(a) or 11(b) Q.No.12(a) or 12(b)	Either/ Or Choice based Annotations from Unit I & Unit III detailed	2x5=10	25
		Q.No.13(a) or 13(b) Q.No.14(a) or 14(b) Q.No.15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q.No.16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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B.A English Programme- Course Structure Under CBCS

LITERATURE AND ENVIRONMENT

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
IV	CC8	18K4E08	5	5	3	25	75

OBJECTIVES

- To create an awareness to the students with regard to ecology and environment.
- To introduce the students to a wide array of writers who have inspired greater attention to and respect for the biophysical world.

UNIT I - POETRY (DETAILED)

- 1.Wendell Berry - Testament
- 2.James Weldon Johnson - Lift Every Voice and Sing.
- 3.Joy Harjo - A Map to the Next World

POETRY (NON-DETAILED)

4.Mary Oliver - At Black River.
5.Akananuru :Mullai - 274.
(The hero speaks to the charioteer)
My soft - miened wife, young and chaste,
Is adorned with the fragrant Mullai blossom
She is now in a lovely village
Amidst a woodland, cool and fragrant;
The rainy season sets in at mid night
The clouds rumble shaking as it were
The entire firmament
And pour a main to the great grief of serpents.
At this hour a shepherd makes fire
with his churning sticks
And lights a small torch to guard safely
His fold of sheep of quivering heads;
He stands all alone his shoulders a sling wrought of strong cords,
Which contains a pot and a piece of leather;
One side of his body is drenched
By the tiny and innumerable rain – drops
The whistling sounds
which he makes flexing his tongue
Pass rushing the air
And cause a fox that goes
In quest of frisking lambs,
To take to its heels
Into the short and thorny bushes! --- Itaikkatanar

UNIT II – PROSE

- 1.Amitav Ghosh - The Great Derangement climatic change and the Unthinkable - Part II History (page - 117 - 155)
- 2.Greg Garrard - Eco criticism - Chapter I Beginnings : Pollutions (Page No.1-15)
- 3.Henry David Thoreau - “The Ponds” from Walden; or, Life in the Woods.

UNIT III - DRAMA (DETAILED)

- 1.Doris Lessing - Play with a Tiger

UNIT IV - SHORT STORIES

- 1.Ernest Hemingway - The Big Two - Hearted River
- 2.Jayanta Mahapatra - “The Mango Tree” from the Green Gardener
- 3.Sinclair Ross - A Field of Wheat

UNIT V - FICTION

- 1.Margaret Atwood - The Year of the Flood.

References

- 1.Dr. A. Dhakshinamurthy *Akananuru. ManimitaiPavalan.* Trichy. Bharathidasan University publication, 1999.
- 2.Amitav Ghosh. *The Great Derangement. Climate Change and the Unthinkable India* Penguin Random House, 2016.
- 3.Greg Garrard. *Ecocriticism.* London :Routledge, 2004.
- 4.Doris Lessing. *Play with a Tiger.* London; Michael Joseph, 1962
- 5.JayantaMahapatra. *The Green Gardener and other stories* New Delhi : Orient Longman ltd, 1997.
- 6.Margaret Atwood. *The Year of the Flood.* Canada : Mccelland and stewart, 2009.
- 7.Thoreau.H.D. *Walden: or, Life in the Woods.* Boston, MA: Ticknor and Fields. 1854.

QUESTION PATTERN FOR THE PAPER TITLED LITERATURE AND ENVIRONMENT

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts Poetry and Drama)

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed texts)	2x5=10	25
		Q .No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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B.A English Programme- Course Structure Under CBCS

HISTORY OF ENGLISH LANGUAGE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
IV	AC4	18K4EAE4	4	3	3	25	75

OBJECTIVES

- To help the students to develop correct pronunciation and fluency in English.
- To help the learners to learn and to speak effectively in English in real life and career related situations.

UNIT I

Theories on the Origin of Language.

Place of English in the Indo - European Family.

Grimm's Law, Verner's Law, i-mutation

UNIT II

Characteristics of Old English and Middle English

Impact of Renaissance and Reformation on the Growth of the English Language.

The Rise and Growth of Standard English

UNIT III

Change of Meaning

Growth of Vocabulary

Spelling Reform

Syllable, Stress, Intonation, Strong & Weak forms, Syntax

UNIT IV

Morphology - free morphemes, bound morphemes, lexical morphemes, functional morphemes, inflectional morphemes, morphological description, morphs and allomorphs.

UNIT V

Language, Society and Culture , Socio-Linguistics, Social Dialects, Social Class, Education, Age and Gender, Ethnic Background, Idiolect , Style, Register, Jargon, Language and Culture, Language Universals.

Prescribed Texts

1.F.T.Wood : *An Outline History of English Language*.LaxmiPublications.2014.

2.George Yule : *The Study of Language* ,Cambridge University Press.2014

References

1.C.L.Wren : *The English Language*. Ajay Book House.2009.

2.Albert.C.Baugh : *History of English Language*. Allied Publishers.1997

3.Henry Bradley : *The Making of English* ,Dover Publications.2006.

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HISTORY OF ENGLISH LANGUAGE

QUESTION PATTERN FOR THE PAPER TITLED HISTORY OF ENGLISH LANGUAGE

Questions should be equally chosen from all the constituents of the five units.

<u>S. No</u>	<u>Section</u>	<u>Questions</u>	<u>Type</u>	<u>Marks</u>	<u>Total Marks</u>
1.	Section – A	Q. . 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q.No.15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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B.A English Programme- Course Structure Under CBCS
NON-MAJOR ELECTIVE -
MODERN ENGLISH AND USAGE- II

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
IV	NME2	18K4EEL02	2	2	3	25	75

OBJECTIVES

- To introduce the students to basic grammar in English.
- To introduce the students to the usage of common words in English

UNIT- I

Use of Tenses- Form and Use

UNIT-II

Use of Clause- Relative (General/ Prepositions/Pronouns/ Verbs)

UNIT-III

Use of Prepositions- General

UNIT-IV

Use of Questions and Question Tags

Use of Reported/ Indirect speech

UNIT-V

Use of words - few.. a few/ for ever/ hardly/ hence/ if only / in spite of/ kind of / likely / look forward to/ most/ much/ nearly/ need / needless to say/ neither.. nor/ nevertheless/ nobody.. no one/ no sooner/ not only/ nowadays/ o'clock/ off/ often/ once/ ought/ phone.. telephone/ please.. pleased/ rarely/ rather/ recent... recently/ so.. so far/ some/ somebody.. someone/ sometime... sometimes/ so that/ such that/ therefore/ thus/ too/ too many/ too much/ unless/ unlikely/ until.. till/ used to/ usual/ very.. very much/ whenever/ whether/ within/ without/ yesterday

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	A Book of Grammar, Usage and Composition	Krishnaswamy.N	Laxmi Publication. 2009.

References

1.Nigel D Turton. *ABC of Common Grammatical Errors: For Learners and Teachers of English.* Macmillan.1995

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NON-MAJOR ELECTIVE -
MODERN ENGLISH AND USAGE- II

QUESTION PATTERN FOR THE PAPER TITLED MODERN ENGLISH USAGE-II

Multiple Choice Questions should be chosen only from Unit-I to Unit- IV/ Correct the Sentences from Unit-I to Unit V / Essay Questions from Unit- V .

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q No.1- 25	Multiple Choice Questions from <u>Unit- I to Unit IV</u>	25X1=25	25
2	B	Q No.26-50	Correct the Sentences from <u>Unit- I to Unit V</u>	25X1 =25	25
3	C	QNo.51- 55	Essay questions on <u>Unit - V</u>	5x5=25	25
				Total	75

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SELF-STUDY PAPER
MAJOR LITERARY MOVEMENTS & LITERARY TERMS

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
IV	SS2	18K4SSE2	-	5	3	-	100

UNIT-I

Affective Fallacy, Allegory, Allusion, Angry Young Man, Apostrophe, Beat Movement, Blank Verse, Burlesque, Carpe Diem, Chorus, Comic Relief, Complaint, Conceit, Concrete poetry, Catharsis

UNIT-II

Confessional Poetry, Couplet, Deus ex machine, Dystopia, Eclogue, Elegy, Epic, Epistolary Novel, Epithalamion, Exemplum, Fable, Farce, Free verse, Hamartia, Heroic Couplet

UNIT-III

Hyperbole, Imagism, In medias res, Intentional Fallacy, Lay, Masque, Melodrama, Motif, Myth, Narrative Poetry, Onomatopoeia, Pun, Simile, Soliloquy, Spensarian Stanza

UNIT-IV

Absurd Theatre, Beat Movement, Bildingsroman, Elizabethan Drama, Expressionism, Imagism, Neoclassicism.

UNIT-V

Naturalism , Realism, Renaissance Literature, Romanticism, Surrealism, Symbolism, Transcendentalism.

References

1. J.A. Cuddon. *The Penguin Dictionary of Literary Terms and Literary Theory*. Penguin Books 1998
2. M. H Abrams. *A Glossary of Literary Terms*. Wadsworth Cengage Learning, 2009

QUESTION PATTERN FOR THE ELECTIVE PAPER TITLED MAJOR LITERARY MOVEMENTS AND LITERARY TERMS

Questions pertaining to Section-A should be chosen only from Unit- I, Unit-II and Unit-III, Section –B & Section C only from Unit- IV & Unit-V.

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	Q No- 1-10	Short Questions	10x3=30	30
2	Section - B	Q. No 11-17	Five Paragraph Questions (200 words)	5x6 = 30	30
3	Section-C	Q. No. 18 to 22 4 out of 5	Four Essay Questions (300 words)	4 x 10 = 40	40
				Total	100

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LITERARY CRITICISM : ARISTOTLE TO T.S.ELIOT

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CC9	18K5E09	5	5	3	25	75

OBJECTIVES

- To introduce the students to the various theories of Literary Criticism.
- To familiarize the students with the Literary texts from the classical school of criticism to the modern.

UNIT I

Aristotle: Selections from The Poetics 1-2

Sidney : Apologie for Poetry.

UNIT II

Dryden : Essay on Dramatic Poesie.

Dr. Johnson : Preface to Shakespeare.

UNIT III

Wordsworth : Preface to the Lyrical Ballads.

Shelley : A Defense of Poetry.

UNIT IV

Mathew Arnold Study of Poetry.

T. S. Eliot : Tradition and Individual Talent.

UNIT V

Elaine Showalter - Towards a Feminist Poetics.

Northrop Frye The Archetypes of Literature.

References

1.David.H.Richter. *The Critical Tradition: Classics Texts and Contemporary Trends*. City University of New

York, 2007.

2.Enright.D.J. and Ernest De Chickera : *The English Critical Texts*. 16th to 20th Century. Oxford University Press. 1962.

3.David Lodge : *Twentieth Century Literary Criticism* in 2 vols. Longman. 1988.

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QUESTION PATTERN FOR THE ELECTIVE PAPER TITLED LITERARY CRITICISM :
ARISTOTLE TO T.S.ELIOT

Questions should be equally chosen from all the constituents of the five units

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q. No. 12(a) or 12(b) Q .No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5=25	25
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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NATIONAL LITERATURE IN TRANSLATION

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CCI0	18K5E10	5	5	3	25	75

OBJECTIVES

- To introduce the students to the literary genres of writers of National Origin.
- To enable the students to develop appreciation of National Literature and to understand the translation skills.

UNIT- I - POETRY – (DETAILED)

- 1.Umashankar JoshiFragmented (Gujarati).
- 2.Gopalakrishna AdigaDo Something Brother (Kannada).
- 3.A.JayaprabhaStares (Telugu).

POETRY –(NON-DETAILED)

- 4.Subramania Bharathi Kannamma – Enethu Kulatheivam (Tamil).
- 5.Sugatha Kumari Pathirappookal (Midnight Flowers 1967) (Malayalam).

UNIT- II- PROSE

- 1.M. K. Gandhi ...Stealing and Atonement (The Story of My Experiment with Truth).
- 2.Buddhadev Bose An Extract from An Acre of Green Grass (A Review of Modern Bengali Literature).
- 3.Kumud Pawde The Story of My Sanskrit.

UNIT- III- DRAMA (- DETAILED)

- 1.Chandrasekara Kambar -Jokumaraswami.

UNIT- IV- SHORT STORIES

- 1.Arjun Dangle - Promotion.
- 2.Vaikom Muhammed Basheer- Birthday.
- 3.Mahasweta Devi - Breast-Giver.

UNIT- V- FICTION (NON-DETAILED)

- 1.P. Sivakami - The Grip of Change.

References

1. Anna Kurien.*Texts and Their worlds- I. Ed. – Foundation Books.2005*
- 2.Modern Indian Literature, An Anthology –VI Surveys and Poems SahityaAkademi, 1992.
- 3M.K.Gandhi.*The Story of My Experiment with Truth .Dover Publication 1983 reprint of 1948.*
- 4 Arjun Dangle.*A Comparative Study of Promotion Sahityasetu, Issue 36, 2016.*
- 5.The Norton Anthology of World Literature, Second Edition Vol.2. W.W. Norton & Company, Newyork, London.
- 6.The Grip of Change – Published by Orient Blackswan.
- 7.Jokumaraswamy, ChandrasekarKambar .Seagull Books Pvt. Ltd. India 1989.
- 8.Pawade, Kumud 1981, Antasphot – Aurangabad :AnandPrakashan.

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NATIONAL LITERATURE IN TRANSLATION

QUESTION PATTERN FOR THE PAPER TITLED NATIONAL LITERATURE IN TRANSLATION

Questions should be equally chosen from all the five units. Questions related to annotations must be strictly chosen from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

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SUBALTERN LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CC11	18K5E11	5	5	3	25	75

UNIT-I POETRY (DETAILED)

1. Daya Pawar - Blood-wave
2. Mahmoud Darwish - Cactus Forever
3. Murray Mahauriki -The Plastic Maori

POETRY(NON-DETAILED)

4. Ofelia Zepeda - Proclamation
5. K.K.S. Das – Black Dance

UNIT-II PROSE

1. José Rabasa and Javier Sanjinés C - Introduction: The Politics of Subaltern Studies
2. Gyan Prakash - Subaltern Studies as Postcolonial Criticism
3. Gayatri Chakravorty Spivak – Can the Subaltern Speak ?

UNIT-III DRAMA (DETAILED)

1. Maheswata Devi -Rudali (Translated by Usha Ganguli)

UNIT-IV SHORT STORIES

1. K.A. Gunasekaran – Scar (Translated by R. Sivapriya)
2. Imayam- - Manabaram (Translated by Thillainayagam Sankaralingam)
3. Shankarrao Kharat - A Corpse in the Well

UNIT-V FICTION

1. Buchi Emecheta – The Joys of Motherhood

Prescribed text

S.No	Title of the Book	Author	Publisher & Year
1	<i>No Alphabet in Sight: New Dalit Writing From South India</i>	K. Satyanarayana & Susie Tharu	Penguin Books, 2011
2.	<i>Rudali : From Fiction to Performance</i>	Maheswata Devi & Usha Ganguli	Seagull, 1999
3	<i>A Corpse in the Well Translations from Modern Marati Dalit Autobiographies</i>	Arjun Dangle	Orient Longman 1992

References

1. Ranajit Guha . *Subaltern Studies*. Oxford University Press, 1982.
2. Vinayak Chaturvedi. *Mapping Subaltern Studies and the Postcolonial*. Verso Books, 2000.
3. Dipesh Chakrabarty . *Habitations of Modernity: Essays in the Wake of Subaltern Studies*. University of Chicago Press, 2002.
4. D. R. Nagaraj. *The Flaming Feet and Other Essays: The Dalit Movement in India*. Seagull Books 2011.

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SUBALTERN LITERATURE

QUESTION PATTERN FOR THE ELECTIVE PAPER TITLED SUBALTERN LITERATURE

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from the detailed texts (poetry and drama)

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x2= 20	20
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts)	2x5 = 10	25
		Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3	Section- C	Q. No. 16 to 20	Essay Questions (300 words)	3 x 10 = 30	30
				Total	75

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WOMEN'S WRITING IN ENGLISH

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
V	CC 12	18K5E12	5	5	3	25	75

OBJECTIVES

- To appreciate various styles and forms used by women writers in various genres.
- To read, analyze and understand important texts written by women.

UNIT- I POETRY - DETAILED

- 1.Margaret Atwood – This is a Photograph of Me.
- 2.Emily Dickinson – After Great Pain , a formal Feeling Comes.
- 3.Audre Lorde – A Woman Speaks.

POETRY(NON –DETAILED)

- 4.Mamta Kalia – Positive Thinking.
- 5.Maya Angelou – Caged Bird.

UNIT- II PROSE

- 1.Virginia woolf – The Androgynous Vision from ‘A Room Of One’s Own’
- 2.Sarojini Naidu – The Soul of India.
- 3.Nadime Gordimer – The Essential Gesture : Writers and Responsibility..

UNIT- III -DRAMA (DETAILED)

- 1.Alice Childress – Trouble in Mind.

UNIT- IV- SHORT STORIES

- 1.Doris Lessing – Flight.
- 2.Kamala Das – A Home near the Sea.
- 3.Ambai – Squirrel.

UNIT- V- FICTION

- 1.Manju Kapur - Difficult Daughters.

Prescribed Texts

- 1.Vilas Salunke, H O Parashar *The Mystic Drums, An Anthology of Poems in English.* Orient Longman.2005
- 2.Kushwant Singh. *Best Indian Short Stories Volume I.*Harper Collins Publishers India.2017
3. Makarand R.Paranjape *Sarojini Naidu: Selected Poetry and Prose,* Rupa Publications India Pvt.Ltd.2012
- 4.ManjuKapur – *Difficult Daughters* Faber&Faber.2009

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WOMEN'S WRITING IN ENGLISH

QUESTION PATTERN FOR THE PAPER TITLED WOMEN'S WRITING IN ENGLISH

Questions should be equally chosen from all the constituents of the five units.
 Questions related to annotations must be strictly chosen only from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q. No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q .No. 11(a) or 11(b) Q. No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts).	2x5=10	25
		Q .No. 13(a) or 13(b) Q. No. 14(a) or 14(b) Q. No. 15(a) or 15(b)	Either or Choice based Paragraph Questions (150words)	3x5=15	
3.	Section – C	Q. No. 16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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MAJOR BASED ELECTIVE -COMPREHENSION SKILLS

Semester	Course	Sub Code	Hours	Credits	Examinations	Marks	
						IA	EA
V	MBE1	18K5EELE1	4	4	3	25	75

OBJECTIVES

To promote think-aloud activity (reading for meaning) among the learners.

To develop reading skills.

UNIT- I

Identifying a topic sentence in text - Using topic sentence to preview and predict content -

Identifying supporting text sentences - Interpreting supporting sentences- Using details to preview and predict content - Scanning text to predict content .

UNI-II

Identifying context clues -Analyzing context clues - Using Context Clues- Defining Vocabulary in Context- Identifying signal words- Recognizing signal words

UNI-III

Skimming - Making Inference - Patterns of organisation- Summarizing

UNIT-IV

Stories for Comprehension- Identifying main character/ setting and time/ plot/ tone – Mapping characters/ story events

UNIT-V Comprehension Passages

Determined to Go Home- Shipwrecked in Antarctica- Against All Odds- Adrift in the Pacific Ocean- Head Downhill and Follow the Water - Doomed Pioneers: The Donner Party - “Houston, We’ve Had a Problem”(Stories for Comprehension)

The Great White Hurricane- The World’s Worst Tornado- The Great Alaskan Earthquake- The Journey that Proved Earth was Round- Wild Ride Down the Colorado River- Conquering Mount Everest- Around the World in 71 Days- A Risky Sea Journey- The Race to the South Pole Anesthesia .

PRESCRIBED TEXT

S.No	Title of the Book	Author	Publisher & Year
1	<i>*Advanced Reading Power</i>	Beatrice S Mikulecky	Pearson Longman 2007
2	<i>Reading Comprehension Skills and Strategies</i>		Saddleback Educational Publishing , 2002
3	<i>Reading Comprehension Questions</i>		Learning Express, New York
4	<i>Reading Comprehension Success</i>		Learning Express, New York, 2005
5	<i>More Reading Power</i>	Beatrice S. Mikulecky & Linda Jeffries	Longman, 1996
6	<i>Stories for Reading Comprehension</i>	L A Hill	Longman, 1988
7	<i>Document- Based Questions: For Reading Comprehension and Critical Thinking</i>	Debra J Housel	Teacher Created Resources, 2009

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MAJOR BASED ELECTIVE -COMPREHENSION SKILLS

QUESTION PATTERN FOR THE PAPER TITLED COMPREHENSION SKILLS

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q1- 5	Five comprehension passages (<u>Two</u> from prescribed texts and <u>Three</u> from any nonfiction text/ passages) <u>Multiple- choice questions (3)/ True/ False questions(2)</u>	5x5= 25	25
2	B	Q 6-10	Five Comprehension passages should be based only on stories (<u>Three</u> from prescribed stories and <u>Two</u> from any fiction passages) <u>Questions should only be short answer questions</u>	5x5=25	25
3	C	Q 11- 15	Five comprehension passages should be based on nonfiction texts (<u>Two</u> passages from the prescribed text and <u>Three</u> from any other nonfiction passages) <u>Questions should only be short answer questions</u>	5x5=25	25
				Total	75

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SHAKESPEARE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	CC 13	18K6E13	6	5	3	25	75

OBJECTIVES

- To introduce the students to Shakespearean texts.
- To enable the students to develop and critically analyze the literary elements and devices.

UNIT I SHAKESPEARE'S SONNETS - (DETAILED)

1. Oh, that were yourself! But, love, you are
2. Like as the waves make towards the pebbled shore.
3. Cupid, laid by his brand and fell asleep.

UNIT II - POETRY (NON-DETAILED)

1. Venus and Adonis. (1-200)
2. Let me to the marriage of True Minds

UNIT III (DETAILED)

Othello

UNIT IV (NON-DETAILED)

Henry IV (Part -I)

UNIT V (NON-DETAILED)

Romeo and Juliet

References

1. Kathleenkuiper *The Comedies of William Shakespeare* Rosen education Service 2012.
2. Margreta de Grazia *The Cambridge Companion to Shakespeare* Cambridge University Press, 2001.
3. Michael Hattaway *The Cambridge Companions Shakespeare's History plays* Cambridge University Press, 2003.
4. Alexander Legatt *The Cambridge Companion to Shakespearean Comedy*, Cambridge University Press, 2002.
5. ClaineMCEachern – *The Cambridge Companion to Shakespearean Tragedy*. Cambridge University Press ,2003.
6. William Shakespeare , *The Complete works of William Shakespeare*, Barnes and Noble 1994.

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B.A English Programme- Course Structure Under CBCS
SHAKESPEARE

QUESTION PATTERN FOR THE PAPER TITLED SHAKESPEARE.

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q. No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts) .	2x5=10	25
		Q No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
Total					75

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DIASPORIC LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	CC 14	18K6E14	6	5	3	25	75

OBJECTIVES

- To equip the students with sufficient knowledge in Diasporic Literature.
- To make the students appreciate the style of diasporic writers with different national, cultural and ethnic backgrounds.

UNIT- I - POETRY (DETAILED)

1. Michael Ondaatje – To a Sad Daughter.
2. Gwendolyn Brooks – To the Diaspora.
3. Meena Alexander – Birthplace with Buried Stones.

POETRY - (NON- DETAILED)

4. Imtiaz Dharker – Living Space.
5. Sujata Bhatt – The Peacock.

UNIT- II- PROSE

1. Avtar Brah – “Introduction” (Pg- 1-16). Extract from “Cartographies of Diaspora”.
2. Bharati Mukherjee – Two Ways to Belong in America.
3. Stuart Hall – Cultural Identity and Diaspora.

UNIT- III- DRAMA (DETAILED)

1. Uma Parameswaran – Sita’s Promise.

UNIT- IV- SHORT STORIES.

1. Bharathi Mukherjee – A Wife’s Story.
2. Paulette Poujol Oriol -- Red Flower.
3. Jhumpa Lahiri – “This Blessed House” from Interpreter of Maladies.

UNIT- V- FICTION

1. M. G. Vassanji – No New Land.

References

1. Jonathan Rutherford, Ed. *Identity, Community, Culture, Difference*. Lawrence and Wishart, 1990.
2. Avtar Brah: *Cartographies of Diaspora*. Routledge, 1996.
3. Uma Parameswaran. *Sita’s Promise* Alexander Street Press, 2002.
4. Bharathi Mukherjee. *The Middleman and Other Stories*. Grove Press, 1988.
5. Jhumpa Lahiri. *Interpreter of Maladies* Houghton Mifflin, 1999.
6. M. G. Vassanji. *No New Land*. Penguin Books India (P) Ltd., 1992.

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DIASPORIC LITERATURE
QUESTION PATTERN FOR THE PAPER TITLED DIASPORIC LITERATURE

Questions should be equally chosen from all the constituents of the five units. Questions related to annotations must be strictly chosen only from detailed texts (Poetry and Drama).

S. No	Section	Questions	Type	Marks	Total Marks
1.	Section – A	Q .No. 1 to 10	Short Questions	10x2=20	20
2.	Section – B	Q No. 11(a) or 11(b) Q .No. 12(a) or 12(b)	Annotations (Explain with reference to context from the detailed Texts)	2x5=10	25
		Q. No. 13(a) or 13(b) Q .No. 14(a) or 14(b) Q .No. 15(a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	3x5=15	
3.	Section – C	Q .No. 16 to 20	Essay Questions (300 words)	3x10=30	30
				Total	75

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)
Thanjavur-613007
Department of English
B.A English Programme- Course Structure Under CBCS
CHILDREN'S LITERATURE

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	CC 15	18K6E15	6	5	3	25	75

OBJECTIVE

To introduce, study and analyse literature as a pre adolescent reader.

UNIT-I POETRY

1. Phil Bowen - *The Yaffling Tree*
2. Berlie Doherty - *Quiter than Snow.*
3. Mandy Coe - *If You Could See Laughter*
4. John Foster - *The Land of the Flibbertigibbets*
5. Rabindranath Tagore - *On the Seashore*

UNIT-II PROSE

1. Barbara F. Harrison - *Why Study Children's Literature?*
2. Carl M. Tomlinson - *The International Children's Literature Movement*
3. Jill P. May - *Theory and Textual Interpretation: Children's Literature and Literary Criticism*

UNIT-III DRAMA

1. Aurand Harris - *Androcles and the Lion*

UNIT-IV SHORT STORIES

1. Roald Dahl - *Lamb to the Slaughter*
2. Katherine Mansfield - *The Doll's House*
3. Indira Ananthakrishnan - *The Maleo Birds*

UNIT-V FICTION

1. J.K.Rowling - *Harry Potter and the Philosopher's Stone*

References

1. Aurand Harris. *Six Plays for Children*. University of Texas Press Austin, 1986
2. Matthew Grenby. *Children's Literature*. Edinburgh University Press, 2008.
3. Peter Hunt. *Understanding Children's Literature*. Routledge, 2005.
4. Karín Lesnik-Oberstein. *Children's Literature: New Approaches*. Palgrave Macmillan, 2004.
5. Hans-Heino Ewers. *Fundamental Concepts of Children's Literature Research : Literary and Sociological Approaches*. Routledge, 2009.
6. Rowling J.K. *Harry Potter and the Philosopher's Stone*. Bloomsbury .UK.2010.

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)
Thanjavur-613007
Department of English
B.A English Programme- Course Structure Under CBCS
CHILDREN'S LITERATURE

QUESTION PATTERN FOR THE PAPER TITLED CHILDREN'S LITERATURE.

Questions should be equally chosen from all the constituents of the five units

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x2= 20	20
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b) Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5 = 25	25
3	Section-C	Q. No. 16 to 20	Essay Questions (300 words)	3 x 10 = 30	30
				Total	75

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)
Thanjavur-613007
Department of English
B.A English Programme- Course Structure Under CBCS
COMMON ERRORS IN ENGLISH

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	MBE2	18K6EELE2	5	4	3	25	75

OBJECTIVE

- To introduce the students to basic grammar in English.
- To introduce the students to the usage of common words in English

UNIT-I

Common Errors in Grammar- Apposition, Case, Clause, Complement, Correlatives, Demonstrative Adjective, Distributives, Epithets and Predicative Adjective, Finite Verb, Future in the Past, Gerund and the Participle.

UNIT-II

Common Errors in Grammar- Impersonal Verb, Infinitive: Simple and Perfect, Moods, Reflexive pronoun, Relative Pronoun, Transitive and Intransitive use of Verbs, Subordinating Conjunction - 'A' or 'An' ?- Agreement of Verb and Subject – 'Also' as Conjunction- 'Among' followed by Singular Noun

UNIT-III

Common Errors in Grammar— 'And which' – 'Any' & 'Either' – Between Each – Between among – 'Between ... or' – Comparative and Superlative – Conjunction in Wrong Sequence - Correlatives Wrongly paired- Correlatives misplaced- Double Negative- Due to and Owing to.

UNIT-IV

Common Errors in Punctuation- Rules of Punctuation – Full Stop after Incomplete Sentences – Redundant Full Stop- Omission of Full Stop - Use of Coma – Use of Semicolon – Confusion of the Main and Subordinate Divisions of Sentences – Use of Question Mark – Exclamation Mark- Use of Dash – Use of Hyphen - Use of Apostrophe - Use of Capitals

UNIT-V

Words Commonly Misused – Words Commonly misspelt - Wrong Prepositional Usage – Pairs of Words often confused – Malaprops

Prescribed Text

S .No	Title of the Book	Author	Publisher & Year
1	<i>English Observed : Common Errors in Written English.</i>	Lancelot Oliphant	Odhams Press Limited.

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Thanjavur-613007

Department of English

B.A English Programme- Course Structure Under CBCS

QUESTION PATTERN FOR THE PAPER TITLED COMMON ERRORS IN ENGLISH

Multiple Choice Questions should be chosen only from Unit-I to Unit- IV/ Correct the Sentences from Unit-I to Unit V / Essay Questions from Unit- V .

S. No	Section	Questions	Type	Marks	Total Marks
1	A	Q1- 25	Multiple Choice Questions from <u>Unit- I to Unit IV</u>	25X1=25	25
2	B	Q26-50	Correct the Sentences from <u>Unit- I to Unit V</u>	25X1 =25	25
3	C	Q51- 55	Essay questions on <u>Unit -V</u>	5x5=25	25
				Total	75

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)
Thanjavur-613007
Department of English
B.A English Programme- Course Structure Under CBCS
NEWS REPORTING & EDITING

Semester	Course	Sub Code	Hours	Credits	Exam Hours	Marks	
						IA	EA
VI	MBE3	18K6EELE3	6	3	3	25	75

OBJECTIVE

To introduce the students to the techniques of reporting and news writing

UNIT-I

What is News- Nature of News -Writing News- News Narrative – Writing the Lead – Writing the Setting- News Language- Types of News Releases- Handling News Releases- Rewriting News Releases- Writing News for the Web – Writing News for Radio and Television

UNIT-II

Reporting Interviews- Audio or Video Interview- Setting Up the Interview- Preparing Questions- Interview Approaches- Ending the Interview- Handling Quotations and Attributions- Reporting Speeches, News Conferences and Meetings.

UNIT-III

Storytelling – Inverted Pyramid Story – Story Organisation- The One-subject story – The Memo-Structure Story – Writing a Story Across Media Platforms- Tweeting Breaking News- Types of Stories –Crime, Accident, Obituaries and Life Stories

UNIT-IV

General Principles of Editing: Qualifications, duties, responsibilities and functions of an editor- Copyediting and proofreading symbols

UNIT- V

Common Errors in Grammar and Punctuation- Incorrect Comma, Run-on sentence, Fragment, Confusion of ‘that’ and ‘which’ – Misused Semicolon – Misplaced modifier- Misused hyphen in compound modifier – Misused apostrophe - Incorrect pronoun case - Lack of agreement between pronoun and antecedent- Lack of agreement between subject and verb – biased language – Incorrect complement with linking verb – Incorrect use of subjunctive mood – In correct word form – Wrong word

Prescribed Text

S.No	Title of the Book	Author	Publisher & Year
1	News Reporting and Writing	Brian S Brooks and George Kennedy	Bedford, 2014
2	News Reporting &Editing	K.N .Shrivastava	Sterling Publishers.2015

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)

Thanjavur-613007

Department of English

B.A English Programme- Course Structure Under CBCS

QUESTION PATTERN FOR THE PAPER TITLED NEWS REPORTING AND EDITING

Questions should be equally chosen from all the constituents of the five units.

S. No	Section	Questions	Type	Marks	Total Marks
1	Section- A	1-10	Short Questions	10x2= 20	20
2	Section - B	Q. No. 11 (a) or 11(b) Q. No. 12 (a) or 12(b) Q. No. 13 (a) or 13(b) Q. No. 14 (a) or 14(b) Q. No. 15 (a) or 15(b)	Either/ Or Choice based Paragraph Questions (150 words)	5x5 = 25	25
3	Section-C	Q. No. 16 to 20	Essay Questions (300 words)	3 x 10 = 30	30
				Total	75

INDIAN ECONOMIC DEVELOPMENT

COURSE CODE: 18K1EC01

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT -I

Concept of economic Development and growth – basic characteristics of under Developed economy – Economic and Non-economic factors inhibiting economic development.

UNIT – II

Human resources – population – age – occupational distribution – population policy – National income – poverty analysis.

UNIT-III

Agriculture- Productivity- Land Reforms- Green Revolution- Agricultural finance- Food policy- Public distribution system- Agricultural development in Five year plans.

UNIT-IV

Industry, Industrial policy- Problems of Industries- Large scale Industries- Industrial sickness- New Economic policy- Privatization , Liberalization Globalization .

UNIT-V

Transport- Labour policy and Labour welfare- Social security measures- Economic planning.

REFERENCE BOOKS

1. A. W.Agarwal : Indian Economy
2. Ruddar Dutt and KPM Sundaram : Indian Economy
3. I.C.Dhingra : Indian Economy
4. K.K.Dewett : Indian Economy
5. S.Sankaran : Indian Economy
- 6.V.Loganathan : Indian Economic Development.

MICRO ECONOMICS - I

COURSE CODE: 18K1EC02

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT-I

Definition and scope of Economics: Definition of Adamsmith, Marshall, Lionel Robbins, Paul Samuelson- Normative and Positive Approaches- Static and Dynamics Analysis- Inductive and Deductive methods- Scope, importance and Limitations of Micro economics.

UNIT-II

Consumer behaviour- Cardinal analysis: Law of diminishing marginal utility, Law of equi-marginal utility- Law of demand and supply- elasticity of demand- elasticity of supply- Consumer surplus.

UNIT-III

Consumer behaviour- ordinal analysis: Indifference curve analysis- properties, consumer equilibrium- price, income and substitution effects- Giffen's paradox.

UNIT-IV

Theory of production: Production function- Laws of production- Law of variable proportions- Laws of Returns to scale- Producers equilibrium- Least cost combinations with iso- quant and iso-cost curves.

UNIT-V

Theory of product pricing- concept of costs- short- run and long run costs- total cost, fixed cost- variable cost- marginal cost, average cost- derivation of long run cost curve- opportunity cost- revenue concepts- total , marginal and average revenue relation between AR and MR.

REFERENCE BOOKS

- | | |
|----------------------|------------------|
| 1. Agrwal. H.S | -Micro Economics |
| 2. Jhingan M.L | -Micro Economics |
| 3. Stonier And Hague | -Micro Economics |
| 4. Ahujha H.I | |
| 5. Sundaram K.P.M | -Micro Economics |

MARKETING

COURSE CODE: 18K1ECAEC1

CREDIT: 3

HOURS WEEK: 4

Medium of instruction: Tamil/English/Both

UNIT-I

Marketing: Definition and Meaning – Marketing Concepts, Marketing Research – Scope of marketing research – Procedure for conducting marketing research – Marketing and economic development.

UNIT- II

Functions of marketing – Concentrations – Dispersion buying and assembling – Selling – Transportations – Storage – Standardization and grading – AGMARK – ISI- Financing – Risk bearing

UNIT- III

Channels of Distribution: Definition, Types of channels – Factors affecting the choice of distribution channels – Wholesales and Retailer – Elimination of middleman.

UNIT – IV

Pricing Policies – Importance, Types, and Objectives - Factors influencing price – Procedure for price determination.

UNIT – V

State and marketing in India – State trading objectives, scopes, benefits and organization – State trading in India.

REFERENCE BOOKS

1. **Amarchand, D and Varadharajan B** : **An Introduction to marketing**
2. **Dr. Rajan Nair** : **Marketing**
3. **Manooria, L.B and Satish Manoria** : **Marketing Management**
4. **Vasudevan** : **Marketing**
5. **Philip Kotlar** : **Marketing Management**

VALUE EDUCATION

COURSE CODE: 18K1VE

Credit : 2

Total Hours : 30

Medium of Instruction: Tamil / English / Both

UNIT: I

1. Introduction :Definition Of Value Education –Need For Value Education- Teachings Of Values By Various religions Like Hinduism, Buddhism, Christianity,Jainism,Islam Etc.

UNIT: II

2. Living & Social Values

2.1 Living Values : Peace, Respect, Co-Operation ,Freedom Happiness, Honesty Humility, Love, Responsibility, Simplicity, Tolerance, Optimism And Positive Thinking.

2.2 Social Values : Love And Compassion Sharing And Generosity, Politeness And Courtesy, Gratitude ,Duty And Responsibility Towards Society, Tolerance And Unity.

UNIT: III

3.1 Role Of Visionaries And Leaders In Social Reforms : Rajaram Mohan Roy, Mahatma Gandhi, Swami Vivekananda,Evr Periyar,Mother Theresa.

3.2 Value Crisis: Religious Fundamentalism And Terrorism – Corruption In Society –Commerce Without Ethics – Education Without character –Wealth Without Efforts.

3.3 Time Management

UNIT: IV

4. Yoga: Teaching Yoga – Manavalakkalai-By Qualified Yoga Teachers – The Aim To Acquire Physical Health – Mental Acuteness – Strength Of Life Forces And Wisdom – To Achieve A Holistic Way Of Life –To Take Up And Get Involved In Social Welfare Activities –To Learn Their Commitment To Society.

UNIT: V

5.1 Human Right : Child Labour – Women’s rights –Bonded Labour –Problems of Refuges

5.2 Role of State Public Service Commission: Constitution provisions and formation –methods of recruitment – rules and notification, syllabi for different exams –written and oral –Placement.

REFERENCE BOOKS

1. Radhakrishnan, "Religion and Culture" (1968), Orient paperbacks, New Delhi.
2. Das, M.S. & Gupta, V.K. (1995), "Social Values among Youth Adults: A Changing Scenario", New Delhi.
3. Venkataih, M(ed.), (1998), "Value Education" New Delhi, A PH Publishing Corporation.
4. Sharma, O.P., (1997), "Value Education in Action" New Delhi, University Book House.
5. Chakraborti, Mohit., (1997)"value Education: Changing perspectives", New Delhi, kanishka publishers, Distributors.
6. C.S.Devnoth(1996) "Adipodai Manitha Urimaigal" Narmada Publishers.
7. D.Kulanthaiyaya "Evai Manitha Urimaigal" ,Narmada Publishers

MICRO ECONOMICS - II

COURSE CODE: 18K2EC03

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT-I

Market structure: Meaning and forms of Market- Objectives of the firm- Equilibrium of firm & Industry- Marshall's Theory of value- Time Element.

UNIT-II

Perfect competition, monopoly- price discrimination- monopolistic competition –selling cost.

UNIT-III

Duopoly- Oligopoly- Cournot's Model- Edgeworth's Model- Kinked demand curve- price leadership- collusion.

UNIT-IV

Theory of factor pricing- theories of rent- modern theory of rent- theories of wage - theories of profit- , Theories of interest.

UNIT-V

Welfare Economics- Basic ideas of Pigou and Pareto economics & General Welfare- Marshallian Welfare economics.

REFERENCE BOOKS

- | | |
|----------------------|----------------------------------|
| 1. Sundaram K.P.M | -Micro Economics |
| 2. Jhingan. M.L. | - Micro Economics |
| 3. Agarwal.H.S. | -Micro Economics |
| 4. Ahuja.H.L. | - Principles Of Economics. |
| 5. Stonier And Hague | - A Text Book Of Economic Theory |

TAMILNADU ECONOMY

COURSE CODE: 18K2EC04

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT-I

Features of Tamilnadu- Area- Population- Land- forest- Infrastructure- Education- Health- Transport and communication.

UNIT-II

Agriculture- Land uses- Cropping pattern- Principal commodities- Irrigation- Green Revolution- Blue and White Revolution- Agricultural Marketing and Finance- Animal Husbandry and Fisheries- Self Help Groups.

UNIT-III

Industries- Major industries- Automobile- Leather- Textile- Sugar- Cement- Small Scale, Cottage, Ancillary Industry- Government Role in Industrial Development- EPZ, SPZ (Export processing zone, special processing zone)- TIDCO, SIDCO, ELCOT.

UNIT-IV

State finance- Revenue and expenditure- Tamil nadu current Budget- Poverty analysis, Anti poverty strategies and Employment promotional schemes, women Development scheme.

UNIT-V

Ports- Trade- Banking- Commerce and Trade- Role of local bodies- Development of Science and Technology.

REFERENCE BOOKS

1. Perumalsamy : Tamil nadu Economy
2. Rajalakshmi : Tamilnadu Economy
3. Velappan : Tamilnadu Economy
4. Nagarajan.M.R& Verasakaran.R : Tamilnadu Economy
5. Kurian.C.T : Economic Changes In Tamilnadu
6. Mids : Tamilnadu Economy, Performance And Issues Manorama Year Book.
7. A G Leonard SJ : Tamil Nadu Economy

ADVERTISING MANAGEMENT

COURSE CODE: 18K2ECAEC2

Credit: 3

Hours/Week: 4

Medium of Instruction: Tamil/English/Both

UNIT-I

Definition- Nature and scope of Advertising – Advertising and personal selling- Functions of Advertising- Primary function- Secondary function – Importance of Advertising.

UNIT-II

Types of Advertising – Service Advertising – Industrial Advertising- Global Advertising – Push and Pull Strategies of Advertising – Advertisement based on Demand influence.

UNIT-III

Various advertising media – Print media – Radio and T.V – Film Advertising – Factors influencing selection of media – media planning.

UNIT – IV

Advertising budget – Steps in Advertising budget making process – Items of expenses included in the advertisement budget - Advertising budget procedures.

UNIT-V

Public relation and advertising – Need, Place and functions of public relations – Legal frame work and Restrictions on Advertising.

REFERENCDE BOOKS:

- 1, Foundations of Advertising Theory and practice- S.A.Chunawalla,K.C.sethia,-Himalaya Publishing house, Bombay.**
- 2, Advertising Management, B.S.Rathor, - Himalayal publishing house, Bombay,**
- 3, Advertising Management, Dr.M.M.Varma and R.K.Agarwal, - Kings publishing house, Delhi.**
- 4, Advertising ,C.N.Sontakki, - Kalyani Publishers, Ludhiyanna.**

ENVIRONMENTAL STUDIES

COURSE CODE: 18K2ES

Credit : 2

Hours / Week : 2

Medium of Instruction : Tamil / English / Both

UNIT-I

Definition Scope And Important - Need For Public Awareness

UNIT-II

Natural Resources -Forest Resources- Water Resources- Mineral Resources- Food Resources – Energy Resources – Land Resources

UNIT -III

Eco System remaining - Forest Eco System, -Grass Land Eco System- Desert Eco System- Aquatic System- Bio Geographical Classification Of India- Hot Spots Of Bio Diversity.

UNIT -IV

Environmental Pollution- Air Pollution - Creating Awareness on Reducing the Usage of Fireworks -Water Pollution – Soil Pollution – Noise Pollution- Thermal Pollution- Nuclear Hazards- Pollution Case Studies.

UNIT -V

Human Population And Environment – Population Explosion – Family Welfare Programme- Environment And Human Health – Human Rights –HIV/ AIDS – Women And Child Welfare.

REFERENCE BOOKS

1. N. Arumugham : Concepts of Ecology
2. N. Arumugham : Environmental Studies
3. N. Arumugham : Survey of the Environmental
4. B.Chandrasekaran :Environmental Studies
5. V.Kumaresan :PlanEcology and Phytogeography
6. Purohit :A Text Book Of Environmental Science
7. D.Tharmaraj :Environmental Science
8. M.P.Mishra : Our Environmental Pollution Control And Future Strategies.
9. Bharathidasan University Publication:Environmental Studies (Tamil and English)
10. WWW.redcross.org.in

MACRO ECONOMICS

COURSE CODE: 18K3EC05

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT: I

Nature and scope of Macro economics - Macro and Micro economics - static and comparative statics - Circular flow of income - Four sector model - Concepts of National income - methods, difficulties and importance of National income-social accounting.

UNIT: II

Classical Theory of employment and Income - Say's Laws of market - Pigou's wage cut - concept of full employment – Keynesian criticism -Keynesian Theory of employment – Effective demand – Aggregate demand, aggregate supply.

UNIT: III

Consumption function – Meaning – Keynes's psychological law of consumption theories of consumption function- Absolute Income, Relative Income, Permanent income and life - cycle hypotheses.

UNIT: IV

Investment function – Meaning – Types - Determinants of investment – MEC - theories-Multiplier-Theories–static and dynamic multipliers-Accelerator Super multiplier.

UNIT: V

General equilibrium –Real sector , Money sector equilibrium – ISLM Analysis – Classical and Keynesian Range-Basic Objectives of Macroeconomic policy.

REFERENCE BOOKS

- 1.Sankaran.B. - Macro Economics
- 2.Jhingan.M.L - Macro Economics
- 3.Mithani.D.M - Macro Economics
- 4.Shapiro.E. - Macro Economics

AGRICULTURAL ECONOMICS

COURSE CODE: 18K3EC06

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT: I

Nature and scope of Agricultural economics - relation between agriculture and industry - Role of Agriculture in economic development - Agriculture Productivity - causes for low productivity.

UNIT: II

Agricultural finance and Agencies - Magnitude and causes of rural indebtedness - Debt relief and regulation of money lending acts - Role of rural Credit institutions - co - operative and commercial banks.

UNIT: III

Land reforms - Nature and significance of Land reforms - Progress of land reforms in India- Suggestions for improvement.

UNIT: IV

Agricultural markets - Agricultural Price Policy - Procurement and Public distribution- Subsidies component.

UNIT: V

Agricultural Labour - Caused and growth of Agricultural Labour under poor economic conditions - problems of Unemployment - Government measures for assistance.

REFERENCE BOOKS

1. T.W. Schultz - Economic growth and Agriculture (MC Graw Hill Book Company)
2. C.B. Memoria - Agricultural Problems of India (Kitab Mahal)
3. Sadhu and Singh - Fundamentals of Agricultural Economics
4. Karl A. Rox and D. Gate Johnson - Globalisation and Economics References
5. E.O. Heady - Economics of Agricultural Production and Resource use.

RISK MANAGEMENT

COURSE CODE: 18K3ECEL01

Credit : 2

Hours / Week : 2

Medium of Instruction : Tamil / English / Both

UNIT-I

Fundamentals of uncertainty and Risk: pure risk and speculative risk.

UNIT-II

Concept of Risk Management- essentials of risk management- elements of risk management.

UNIT-III

Risk assessment : risk control and risk financing.

UNIT-IV

Risk prevention- Definition of Insurance- social Vs private insurance, Life Vs non life insurance.

UNIT-V

Functions of Life and Health Insurance. Challenging role of risk management.

REFERENCE BOOKS:

- 1. Bhole. L.M. 1990- The Indian financial system- TATA Mcgraw Hill, New Delhi.**
- 2. Blac. Jr and Skipper. Jr.H.D.- Life and Health insurance- Pretice Hall Upper saddle river, New Jeressey.**

ECONOMICS OF TRANSPORTATION

COURSE CODE: 18K3SSEC1

Credit : 5

Hours / Week :

Medium of Instruction : Tamil / English / Both

UNIT: I

Transport- Introduction – Transport and Economic growth – Types of transport Importance.

UNIT: II

Rail transport – Importance –Financial Results of Indian Railways – Modernisation.

UNIT: III

Road transport – Road transport and economic development – advantages of roadways over railways – problems and obstacles to road transport in India.

UNIT: IV

Water transport- nature & significance of water transport – Limitation of water transport – Inland water transport canal transport – problems of Indian shipping.

UNIT: V

Air transport – Nationalisation of Airways in India – Progress under plans – present aviation policy – problems.

REFERENCE BOOKS

- 1. S. Sankaran - Indian Economy**
- 2. Rejguru Agarkar - Regional Transport Development**

MONETARY ECONOMICS

COURSE CODE: 18K4EC07

Credit : 5

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Meaning –Definition –Barter system Evolution –significance and functions of money-
Classification Money and Near money-paper currency.

UNIT: II

Quantity theory _Fisher’s transaction approaches – Cash balance approach- Real balance
approach- Income and Saving- Superiority of Keynes’s approach over classical theory .

UNIT: III

Inflation- Deflation –Meaning , causes and effects- Disinflation- inflationary and deflationary gap-
Philip’s curve- Stagflation – Trade Cycle – Meaning – phase –Causes.

UNIT: IV

Monetary policy – Objectives- Instruments – Limitations of Monetary policy- Recent trends in
India.

UNIT:V

Banking Role of banks in economic development- Definitions-Commercial banking-
Central bank- functions- RBI.

REFERENCE BOOKS

1. Hajela.Tn - Monetary Economics
2. Sundarm.K.P.M - Money Banking And Trade
3. Sankaran.S. - Monetary Economics
4. Mithani.Dm - Monetary Economics
5. Jhingan.M.L. - Monetary Economics

ENTREPRENEURSHIP DEVELOPMENT

COURSE CODE: 18K4EC08

Credit : 5

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Concept of Entrepreneurship - Importance of Entrepreneurship-Entrepreneurship Intrapreneur-types-Features of successful Entrepreneurship.

UNIT: II

Project Appraisal- formulation - Appraisal factory design and layout.

UNIT: III

Entrepreneurial development Programme- Motivation - Objectives-limitations- Types of EDPs- Technical EDPs.

UNIT: IV

Institutions supporting Entrepreneurship And sources of finance – Role of DIC- TIIIC - SIDBI- IDBI –SIDOC -SIPCOT- Commercial banks & Co- operative banks.

UNIT: V

Features of Women Entrepreneurship- prospects- Factors- Constraints- Women EDPs.

REFERENCE BOOKS

- 1.Guptha-C.B.& Srinivasan . N.P. – Entrepreneurship Development in India.**
- 2.Khanaka.S.S. – Entrepreneurship Development.**
- 3.Saravanavel – Entrepreneurship Development.**
- 4.Bhattacharjee.H. – Entrepreneurship Development.**

ENERGY ECONOMICS

COURSE CODE: 18K4ECEL02

Credit : 2

Hours / Week : 2

Medium of Instruction : Tamil / English / Both

UNIT: I

Meaning Definition and scope of energy. Types of energy – Importance of energy.

UNIT: II

Modern classification of energy Renewable and Nonrenewable Energy. Recycling of Energy.

UNIT: III

Energy and Environmental pollution , Factors leading to shortage of energy, Economic Use of Modern energy.

UNIT: IV

Energy use in developed and developing economy.

UNIT: V

Solution to energy problems in modern world with reference to population, Urbanizations, Transport.

REFERENCE BOOKS

Dhulasi Birundha Varadarajan – Energy Economics

S. Sankaran - Indian Economy

SKILL- BASED ELECTIVE COURSE – I

LIFE SKILLS

Maximum Marks :100

Code :18K4SBEC1

Instruction Hours : 2

No. of Credits : 2

UNIT-I : ACCOUNTING, BANKING AND MARKETING

Accounting: Meaning – Process – Users – Branches. **Accounts:** Kinds – Rules – Final Accounts. **Banking:** Meaning – Deposits – Opening an account – Cheque – Demand Draft – Internet Banking. **Marketing:** Consumer Rights and Duties.

UNIT-II : ECONOMICS

National Income: Per capita Income – National Income Accounting – Methods of calculating National Income. **Indian Money Market:** Functions – Capital Market – Sensex. **Planning:** Long-term objectives – Employment Generation Programmes.

UNIT-III : VITAL STATISTICS AND COMPUTER

Vital Statistics: Meaning – Uses – Rate of vital events. **Measurement of fertility – Crude Birth Rate – General Fertility Rate – Specific Fertility Rate – Total Fertility Rate – Gross Reproduction Rate – Net Reproduction Rate.** **Measurement of Mortality:** General/Crude Death Rate – Age Specific Death Rate. **Measures of Central Tendency:** Objectives of Averaging – Types: Arithmetic Mean – Weighted Arithmetic Mean. **Interest:** Simple Interest – Compound Interest. **Computer:** Introduction – Components – Communication Systems – Internet – World Wide Web – E-mail – E-Commerce.

UNIT-IV : HOME REPAIRS AND SAFETY TIPS

Working of Electricity – Static Electricity – Electric Circuit – Electrical Grounding – Uses of Electricity – Commercial Electrical Building – Electrical Safety – Dangers from Electricity – Electric Fire – First Aid for Electric injury – Prevention tips. **Acid in Eye – Alkali in Eye – Acid Burns – Alkali Burns – Poisoning – Inhalation of Gases – Cut by glasses – Heat Burns. LPG Safety Measures at home.**

UNIT-V : HEALTH, HOUSE PLANTS AND DISASTER

Health Care System: Safety Education – Definition – Need – Safety at Home – Fire Safety in Living Room, Dining room, Kitchen and Bed Room. **House Plants as Hygenics:** Introduction – Need – House Plants, Hydroponics – Health reasons such as Air Purification. **Plants:** *ACALYPA HISPIDA*, *AGAVE AMERICANA*, *BOUGAINVILLE GLABRA*, *BAMBUSA AURINDINACEA*, *EUPHORBIA SPLENDENSIS* and *SANSIVIERA TRIFASCIATA*. **Disaster:** Flood and Deforestation – Cause Effect and Controlling Measures.

Books for Reference:

Unit I

1. Vinayagam.N, Mani.P.L, Nagarajan.K, *Principles of Accountancy*, S.Chand & Co., New Delhi.
2. Gordon & Natarajan, *Banking Theory Law and Practice*, Himalaya Publishing House, New Delhi.

Unit II

1. Dutt & Sundaram, *Indian Economy*, S.Chand & Company, New Delhi.
2. Dr.S.Sankaran, *Indian Economy*, Margham Publications, Chennai.

Unit III

1. Pillai.R.S.N, Bagavathi, *Statistics*, S.Chand & Company, New Delhi.
2. Vital.P.R, *Business Mathematics*, Margham Publications, Chennai.
3. Alexis Leon, Mathews Leon, *Information Technology*, Vikas Publishing House, New Delhi.

Unit IV

1. Gopalan.R, Subramanian.P.S and Rengarajan.K, *Elements of Analytical Chemistry*, Sultan Chand and Sons, New Delhi.
2. Theraja.B.L, *Basic Electronics Solid State*, S.Chand & Co., New Delhi.

Unit V

1. Periyaya, *Safety Education and First Aid*, Sri Susee Data Processing Centre, Coimbatore.
2. Day. S.C, *Indoor Gardening*, Agrobios Publications, India.
3. Savindra Singh. 2009, *Environmental Geography*, Arti Printers, Allahabad.

REGIONAL ECONOMICS

COURSE CODE: 18K4SSEC2

Credit : 5

Hours / Week :

Medium of Instruction : Tamil / English / Both

UNIT: I

Region – Evaluation of Regional Economics – Scope – Definition – Regional planning – Strategies of Development.

UNIT: II

Location of Industries – Localization planned location – Factors determining location – Changes – Deglomeration.

UNIT: III

Regional Growth – Definition – Factors – Methods – Factors of Regional Inequality in India – Reasons – Policy measures for developing backward regions.

UNIT: IV

Migration – Determination of migration Factors discouraging migration – consequences of migration – Types of migration.

UNIT: V

Population – population Growth in Development and Developing countries – causes of population – Demographic Transition – Effects of population- population Distribution – Urbanisation.

REFERENCE BOOKS

1. K.P.M. Sundaram - Indian Economy
2. S. Sankaran - Indian Economy
3. Rajguru Agarkar Regional Transport Development

FISCAL ECONOMICS

COURSE CODE: 18K5EC09

Credit : 5

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Nature and scope of fiscal economics – Principle of maximum social advantage – Principle of taxation – Theories of taxation - Benefit and cost of service – ability to pay – Taxable capacity - Progressive, proportional and Regressive taxation – Direct and Indirect taxes-shifting and incidence of tax burden.

UNIT: II

Public revenue – Meaning – Classification – Canons - Objectives – Types – Taxes and Revenues of centre and States – Non-tax revenue – Income – Expenditure tax – Capital gains tax – Wealth tax – Gift tax - Commodity taxes - VAT - agricultural income tax.

UNIT: III

Public expenditure – Meaning – Nature – Scope – Classification – Canons -Theories of public expenditure – Growth - Effects and control of public expenditure – public debt – Meaning - Causes - Classification - Effects - Repayment of public debt.

UNIT: IV

Federal finance - Meaning – Problem - Federal finance in India - Central state relationship-Role of Finance Commission–12th Finance Commission report.

UNIT: V

Budgets - Performance budget - Zero Based Budget - Fiscal deficit - Surplus budget - Deficit finance methods – Effects – Limits - Fiscal policy - Meaning- Objectives- Instruments-Fiscal policy in Recent Budget.

REFERENCE BOOKS

- | | | |
|----------------------|---|------------------|
| 1.Sundaram K.P.M | : | Fiscal Economics |
| 2. Loganathan.V. | : | Public Finance |
| 3. Sankaran.K | : | Public Finance |
| 4.Cauvery and Others | : | Fiscal Economics |
| 5. Dalton | : | Public Finance |
| 6. Hicks | : | Public Finance |

ECONOMIC GROWTH AND DEVELOPMENT

COURSE CODE: 18K5EC10

Credit : 5

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Definition of Growth and Development – meaning of underdevelopment – Factors influencing economic development - economic and non economic factors.

UNIT: II

Rostow's Stages of economic growth - Nurkse – Balanced growth – Hirschman – unbalanced growth.

UNIT: III

Approaches to development – classical and neo- classical - Adamsmith, Ricardo, Marx and Meade – Schumpeter and Keynes.

UNIT: IV

Role of Savings & Investment – Human Resources – Technology – Foreign trade – Foreign capital – Role of Govt.

UNIT: V

Contemporary world economy – transnational corporations – capital flows and transfer of technology – globalization.

REFERENCE BOOKS

- 1. D.Bright Singh : “Economic growth ;Problems and policies” Centre of research on new international economic order, first street Haddows road, Madras.**
- 2. M.L.Jhingan : “Economic of development and planning”, Vikas Publishing house, New Delhi.**
- 3. A.K.Dasgupta : “Epochs of economic theory” – Oxford university Press, New Delhi.**
- 4. C.T.Kurian : “The economy”, Safe publications, New Delhi.**
- 5. Usha Saxana : “Role of multinational in India’s foreign trade” Asish publishing house, New Delhi.**

INTERNATIONAL ECONOMICS

COURSE CODE: 18K5EC11

Credit : 5

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Salient feature of international economics – Differences between domestic and international trade – Advantage and disadvantages of international trade – Smith absolute theory – Ricardo's Comparative cost theory - Haberler's theory of opportunity cost.

UNIT: II

Free trade Vs protection - Case for and against free trade – case for and against protection - Tariffs - Meaning and types – Effects – Quotas - Meaning – Types and effects – Dumping –Anti-Dumping measures – Export subsidies.

UNIT: III

Balance of payment – Meaning – Importance – Distinction between balance of trade and balance of payment – Disequilibrium – Short run and long run disequilibrium – Causes –Measures for removal of disequilibrium in balance of payment.

UNIT: IV

Foreign exchange – Importance – Demand and supply – Functions of foreign Exchange market – Determination of equilibrium exchange rate – purchasing power parity theory- stable and flexible exchange rate.

UNIT: V

International monetary system – IMF - World Bank – WTO – SAARC

REFERENCE BOOKS

- | | | |
|--------------------------------|---|-------------------------|
| 1. Cheruilam.F | : | International Economics |
| 2. Mithani | : | International Economics |
| 3. Gupta.K.R. | : | International Trade |
| 4. Mannor | : | International Trade |
| 5. Jhingan M.L | : | International Economics |
| 6. Chandra.R & Suriya kumar SM | : | International Economics |

HISTORY OF ECONOMIC THOUGHT

COURSE CODE: 18K5EC12

Credit : 5

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Nature and signature of history of economic thought – Mercantilism - physiocracy -classical - Adam Smith – Malthus-Ricardo-J.B.Say - J.S.Mill.

UNIT: II

Historical school-Schmoller-Socialist Thought - Robert Owen – Simon - Sismondi - Karl Mark

UNIT: III

Marginal School – Austrian School-A.Marshall _Schumpeter – Veblen – Institutional School – Keynes-Keynesian Revolution.

UNIT: IV

Welfare Economics-Pigou-Hick-Pareto social optimum Theory – Indian economic Thinkers – Dadabhai Naoroji – Drain theory – Drain theory – M.G. Ranade-Dutt- Gokhale- Gandhiji- Nehru-Thiruvalluvar –Rajaji -Periyar and Annadurai.

UNIT: V

Contribution of Nobel Laureates in Economics-Samuelson-Friedman-J Tobin -A.K.Sen

REFERENCE BOOKS

1. Srinivastha.S.K. : History of Economic Thought
2. Mukherjee R.K. : Economic History of India
3. Rao, V.K.R.V : Essays in Economic Development
- 4 .MIDS : Publications
5. Tamilnadu Legislative Assembly Reports.

TOURISM ECONOMICS

COURSE CODE: 18K5ECELEC1

Credit : 3

Hours / Week : 4

Medium of Instruction : Tamil / English / Both

UNIT: I - Importance of Tourism

Definitions and – Scope – importance of tourism in the global context Forex realisation - emerging trends –challenges .

UNIT: II - Types and Instruments of Tourism

Individual , group and mass tourism – motivations – Travel documents – Passport, Visa and foreign exchange.

UNIT: III - Tourism Management

Safe and Rapid Transport system – quality restaurants – Travel agencies – Tourist guides – Tourism Industry and employment opportunities need for private entrepreneurship.

UNIT: IV - Tourism Promotion

Government measures –Tourism in five year plans - Ministry of tourism – festivals of India and cultural displays-use of internet.

UNIT: V - Local tourism

Tourist of Tamil Nadu : Chennai – Vandalur, Merina, Mahapalipuram- Important places – Report on Big Temple, Palace, Park in Thanjavur.

REFERENCE BOOKS

- | | | |
|--|----------|---|
| 1. Bhatia.K (2001) | - | International Tourism Management |
| 2. Bishwanath Ghosh (2000) | - | Tourism and Travel Management |
| 3. Micheal Peters (1969) | - | International Tourism |
| 4. John M.Bryder (1973) | - | Tourism & Development |
| 5. Rajasekara Thangamani (2003) | - | Tourism Development |
| 6. Swaminathan (2002) | - | Tourism |

OFFICE MANAGEMENT

Core Course : SBE2

Maximum Marks : 100

Instruction Hours : 2

Code : 18K5SBEC2

Credit : 2

OBJECTIVE : To gain Knowledge about Office Management and Records Management.

UNIT I – INTRODUCTION

Meaning – Definition – Elements – Function – Importance – Qualities and Functions of Office Manager.

UNIT II – OFFICE ORGANISATION

Techniques – Basic Principles – Types of office organization

UNIT III – OFFICE ACCOMMODATION

Office Location – Factors affecting location –Office building – Factors in selection of office premises

UNIT IV – OFFICE ENVIRONMENT

Elements – lighting – Ventilation Temperature – Noise & Dust – Cleanliness – Safety and Security – Secrecy

UNIT V – RECORDS MANAGEMENT

Records classification – Meaning – Significance – Principles – Filing – Importance – steps – Methods – Indexing – Meaning – Objectives – Essentials of Good indexing system .

Text Book

C.B. Gupta – Office organization & Management, Sultan Chand & Sons, New Delhi

Books for Reference

- 1. R.C.Bhatia – Principles of office Management, Lotus Press, New Delhi.**
- 2. V.Balachandran – office Management, Tata McGraw Hill Education (P) Ltd., New Delhi.**
- 3. T.S.Devanarayanan & N.S. Raghunathan – Office Management, Margham Publications, Chennai.**
- 4. S.P.Arora – Office Oranisation and Management, Vikas Publishing House, New Delhi.**

Question Paper Pattern

Part – A : 5x5 = 25 (Eight Questions from Five Units)

Part - B : 5x10=50 (Eight Questions from Five Units)

போட்டித் தேர்வுத் தமிழ்

பருவம் - V SBE3 கற்பித்தல் : 2 தரப்புள்ளி : 2

பாடக்குறியீட்டு எண் : 18K5SBEC3

நோக்கம் : பொதுத் தேர்வு எழுதுவதற்குப் பயிற்சி அளித்தல்

பயன் : வேலைவாய்ப்புப் பெறுதல்

அலகு: 1

மொழி - விளக்கம் - மொழிகளின் தோற்றம் வளர்ச்சி - திருத்திய திருத்தாத மொழிகள் தமிழில் பிற மொழிக்கலப்பு - தொல்காப்பியர் - எழுத்துஇ சொல்லி பொருள்இ எழுத்தியல்இ சொல்லியல் இ பெயர் வகைகள்இ வினையியல் இ இடையியல் இ உரியியல் இ பொதுவியல்.

அலகு: 2

வாக்கிய வகைகளும் அமைப்பு முறைகளும்: வாக்கியம் என்றால் என்ன? வாக்கிய வகைகள் - செய்தி வாக்கியம் இ வினா வாக்கியம் இ விழைவு வாக்கியம்இ உணர்ச்சி வாக்கியம் இ தனி வாக்கியம் இ தொடர் வாக்கியம்இ வலிமிகுதல் - வலிமிகுதலும் மிகாமையும் - வலிமிகும் விதிகளின் தொகுப்புஇ வலிமிகாமைக்குரிய விதிகள் இ எளிய சந்தி விதிகள்.

அலகு: 3

யாபிலக்கணம் - ஆசிரியப்பாஇ வெண்பாஇ கலிப்பாஇ வஞ்சிப்பாஇ மருப்பாஇ பொருளணிகள் - தன்மை நவீர்சி அணிஇ உவமை அணிஇ எடுத்துக்காட்டு உவமை அணிஇ இல்பொருள் உவமை அணிஇ தற்குறிப்பேற்ற அணிஇ ஐய அணிஇ வஞ்சப் புகழ்ச்சி அணி - பொருளிலக்கணம் (அகப்பொருள் இ றுப்பொருள்).

அலகு : 4

பண்டைய இலக்கியம் - சங்க இலக்கியம் - சங்கம் மருவிய இலக்கியம் - காப்பியங்கள் இ பக்தி இலக்கியம் இ சமய இலக்கியம் இ சிற்றிலக்கியங்கள். தூதுஇ உலாஇ கலம்பகம் இ பிள்ளைத்தமிழ் இ அந்தாதிஇ குறவஞ்சிஇ பரணிஇ கோவை நூல்கள்.

அலகு : 5

இக்கால இலக்கியம்: புனைகதைஇ சிறுகதைஇ நாடகம் - கவிதை: மரபுக்கவிதைஇ புதுக்கவிதை (தமிழக அரசு மற்றும் சாகித்திய அகாதாமிப் பரிசு பெற்ற நூல்கள்) உலகம் தழுவிய பொதுச் செய்திகளும் நிகழ்வுகளும் - மக்கள் தகவல் தொடர்பு சாதனங்கள் -இதழ்கள் இ செய்தித்தாள்கள் இ கணிப்பொறி.

குறிப்பு: போட்டித் தேர்விற்கு மாணவிகளை தயார் செய்யும் விதமாக ஐந்து அலகுகளில் உள்ள பொது அறிமுகச் செய்திகள் மட்டும்.

பார்வை நூல்கள்:

1. தமிழண்ணல்இ புதிய நோக்கில் தமிழ் இலக்கிய வரலாறுஇ மீனாட்சி பதிப்பகம்.
2. சோம. இளவரசுஇ இலக்கிய வரலாறுஇ மணிவாசகர் பதிப்பகம்.
3. அ.கி. பரந்தாமனார்இ நல்ல தமிழ் எழுத வேண்டுமா? பாரிநிலையம்.

SOFT SKILLS DEVELOPMENT

Instruction Hours : 2
Credit : 2

Code : 18K5SSD

Learning Objectives

Today's world is all about relationship, communication and presenting oneself, one's ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

Unit I

Know Thyself/Understanding Self

Introduction to Soft skills – Self discovery –Developing positive attitude –Improving perceptions-Forming values.

Unit II

Interpersonal Skills/Understanding Others

Developing interpersonal relationship –Term building. Groups –Definition, Characteristics, Why are groups formed? Types of group, Stages of group development, Group cohesiveness-Definition, factors influencing group cohesiveness.

Unit III

Communication Skills/Communication with others

Art of listening – Art of reading – Art of speaking – Art of writing –Art of writing e-mails –Email etiquette.

Unit IV

Corporate Skills /Working with Others

Developing body language – Practicing etiquette and mannerism – Stress Management.

Unit V

Selling Self

Writing resume /CV – interview skills – Group discussion.

TEXT BOOKS

Alex K.(2012) Soft Skills –Know Yourself & Know the World, S.Chand & Company LTD,Ram Nagar, New Delhi-110055.Mobile No: 9442514814(Dr.K.Alex)

REFERENCE BOOKS:

- 1. Developing the leader within you John c Maxwell**
- 2. Good to Great by Jim Collins**
- 3. The seven habits of highly effective people Stephen Covey**
- 4. Emotional Intelligence Daniel Goleman**
- 5. You can win Shiv Khera**
- 6. Principle centred leadership Stephen Covey.**

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English/ Both

UNIT:I Nature and Scope of Economics

Managerial Economics – Introduction, Meaning, Scope of Managerial Economics, Uses of Managerial Economics-Economic Theory and Managerial Role and Responsibilities of Managerial Economics.

UNIT :II Demand Forecasting

Demand Forecasting –Introduction –Meaning –Types of Forecasting-Objectives and Purpose of Forecasting-Methods or Techniques of Demand Forecasting-Survey Methods –Experts opinion Survey Method –Consumer’s interview Method ,Structural Methods –Trend Projections Method or Time Series Analysis – Forecasting Demand for New Products –Features of a Good Forecasting Method.

UNIT :III Pricing Method

Cost Plus or Full Cost Pricing Method (Advantages and Limitations)-Target Pricing (Advantages and Limitations) –Marginal Cost Pricing –Going rate Pricing –Customary Pricing –Differential Pricing –Pricing a New Product –Skimming Pricing Strategy –Penetration Price Strategy –Pricing over the Life Cycle of a Product.

UNIT: IV Capital Budgeting –Meaning

Capital Budgeting –Meaning –Need for Capital Budgeting-Steps involved in the investment decision making process –Forms of Capital Budgeting-Nature of Capital Budgeting problem – Demand for Capital –Supply of Capital - Capital Rationing –Meaning.

UNIT: V Cost of Capital

Cost of Capital –Definitions –Cost of Debt Capital –Cost of Preference Share Capital –Cost Of Equity Capital –Cost Of Retained Earnings –Weighted Cost Of Capital.

REFERENCES:

1. Managerial Economics : R.L.Varshney & K.L.Maheshwari.
2. Managerial Economics :S.Sankaran.
3. Micro Economics : Jhingan M.L
4. Fiscal Economics -Sangaran

CAPITAL MARKET

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT: I

Capital market- Definition-Concepts-Structure –Growth

UNIT: II

Long term finance - Sources – Financial institutions - LIC - UTI - IDBI – ICICI - public deposit – Mutual funds.

UNIT: III

Corporate Securities –Equity shares – preference shares-Debentures and bonds Convertible and Non-Convertible debentures – Full and partly convertible debentures - Global depositary receipts.

UNIT: IV

Public issue of shares – primary market - secondary market - issue of shares - issue of bonus shares – underwriting of shares- merchant banks –Foreign institutional investors

UNIT: V

Stock exchanges – Functions - listing of certificates - Dealers in stock exchange –Role of securities and stock exchange board of India (SEBI) in the regulation of share market operations- Trends in stock market of Indian share 1991.

REFERENCE BOOKS

- 1.Kuchal.S.C. : Corporate Finance
2. Kuchal.S.C. : Finance Management
- 3.Chandru : Finance Management
- 4.Verma and Agarwal : Corporate Finance
- 5.Khan and Jain : Corporate Finance

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

Unit: I

Nature , scope and Importance of study of Economic systems - Definitions ,Functions, Kinds of Economic System

Unit: II

Capitalism - types of capitalism – capitalism and technological progress - merits and demerits of capitalism.

Unit: III

Socialism – Kinds of socialism – Decentralisation - central economic planning-Board features of India's socialist pattern-merits and demerits.

Unit: IV

Communism – characteristics of communism-similarities and difference between communism and socialism – A critical appraisal of communism.

Unit: V

Mixed Economy and their problems – characteristics of mixed economic systems - Merits and demerits.

References:

- 1. Economic Systems-S.S.M.Desai**
- 2. Gandhian Alternative to Western Socialism -V.K.R.V.Rao**
- 3. History of Economic Thought : Loganathan**
- 4. History of Economic Thought : Srivastava**

Credit : 4

Hours / Week : 5

Medium of Instruction : Tamil / English / Both

UNIT: I

Definition of Insurance - Role of Insurance – economic & legal perspectives - life Vs. non-life insurance- classification of insurance policies.

UNIT: II

Concept of Risk Management – essentials/elements of risk management- Selection & Classification of Risk Management.

UNIT: III

Fundamentals of life and health insurance- functions of life and health insurance - legal aspects of life insurance - basics of premium constructions - Individuals health insurance

UNIT: IV

Definition of Group Insurance – Features – Planning of group insurance – premiums payable under group insurance – Limitations.

UNIT: V

Life Insurance Corporation of India Act 1956 – insurance regulation in India-Insurance Regulation and Development Authority of India –FDI in Insurance Sector in India.

REFERENCE BOOKS

- 1. Bhole.L.M. (1990) : The Indian financial system- Tata Mcgra Hill, New Delhi**
- 2. Bicklhaupt.D.L (1992) : General insurance Irwin Inc,**
- 3. Black,K.Jr.and H.D.Skipper .Jr : Life and Health insurance-prentice Hall Upper**

COURSE CODE: 18K6ECELEC3

Credit : 4

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT: I

Human resources – its importance – role of human resource development – demographic features of : India’s populations, fertility and mortality – human development index.

UNIT: II

Investment in human capital – education - cost of education – investment in education - rate of return.

UNIT: III

HRD and health –migration -investment in public health - nutrition - housing

UNIT: IV

Man power planning –Objectives and methods of man power planning – forecasting of man power planning in India-Role of HRD Ministry in India.

UNIT: V

Human resources prospects for the future – globalization, diversity and the environmental context – the challenging role of human resources management.

REFERENCE BOOKS

- 1. Rao V.K.R.V : Education and human resource development**
- 2. Mark blaug : Human capital theory**
- 3. Harlison : Education, Manpower and economic growth**
- 4. Gary becka : Human capital**
- 5. Kenneth lee & annemill : Economics of health in developing countries**

பருவம்-VIGS கற்பித்தல் :1தரப்புள்ளி :1

பாடக்குறியீட்டு எண்: 18K6GS

அலகு 1

பாலினம் தொடர்பான கோட்பாடுகள் : பாலியல் - பாலினம் - உடற்கூறுரீதியாக நிர்ணயித்தல் - ஆணாதிக்கம் - பெண்ணியம் - பாலினப் பாகுபாடு - பாலின வேலை பாகுபாடு - பாலின ஒருபடித்தானவைகள் - பாலின உணர்வூட்டல் - பாலின சமவாய்ப்பு - பாலின சமத்துவம் - பாலின மையநீரோட்டமாக்கல் - அதிகாரப்படுத்துதல்

அலகு 2

மகளிரியல் என பாலின சமத்துவக் கல்வி -பல்கலைக்கழக மானியக்குழுவின் வழிகாட்டுதல்கள் - 7 வது 5 ஆண்டு திட்டம் முதல் 11 வது 5 ஆண்டு திட்டம் - பாலின சமத்துவகல்வி : பெய்ஜிங் மாநாடு மற்றும் பெண்களுக்கு எதிரான அனைத்து வன்முறைகளையும் ஒழிப்பதற்கான சர்வதேச உடன்படிக்கை - இணைத்தல். உட்படுத்துதல் - ஒதுக்கல்.

அலகு 3

பாலியல் பாகுபாட்டிற்கான தளங்கள் : குடும்பம் - பாலின விகிதாச்சாரம் - கல்வி - ஆரோக்கியம் - ஆளுமை மதம் - வேலை என வேலைவாய்ப்பு - சந்தை ஊடகங்கள் - அரசியல் - சட்டம் - குடும்ப வன்முறை - பாலியல் துன்புறுத்தல் - அரசு கொள்கைகள் மற்றும் திட்டங்கள்.

அலகு 4

பெண்களின் மேம்பாடு மற்றும் பாலின சமத்துவ மேம்பாடு முயற்சிகள் - சர்வதேச பெண்களுக்கான சகாப்தம் - சர்வதேச பெண்கள் ஆண்டு - பெண்களின் மேம்பாட்டிற்கான தேசிய கொள்கை - பெண்கள் அதிகார ஆண்டு 2001 - சர்வதேச கொள்கைகளை மையநீரோட்டமாக்கல்.

அலகு 5

பெண்கள் இயக்கங்கள் மற்றும் பாதுகாப்பு நிறுவன ஏற்பாடுகள் : தேசிய மற்றும் மாநில மகளிர் ஆணையம் - அனைத்து மகளிர் காவல் நிலையங்கள் - குடும்ப நீதிமன்றங்கள் - குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும் சட்டம் 2005 - பணியிடங்களில் பெண்கள் மீதான பாலியல் துன்புறுத்தல்களை தடுப்பதற்கான உச்சநீதிமன்ற வழிகாட்டுதல்கள் - தாய் சேய் சேம நல திட்டம் - பெண்சிசுவை கருவிலேயே கண்டறியும் தொழில் நுட்பம் (முறைப்படுத்துதல் மற்றும் தவறாக பயன்படுத்துதலை தடைசெய்திடும் சட்டம்) - ஈவ்ஷிங் (பெண்களை தொல்லை செய்தல்) தடுப்பு சட்டம் - சுயஉதவிகுழுக்கள் - பஞ்சாயத்து அமைப்புகளுக்கான 73 வது மற்றும் 74 வது சட்டதிருத்தம்.

பார்வை நூல்கள்:

1. பாலியலைப் புரிந்து கொள்வோம் ஏக்தா மதுரை.
2. O.P.Mishra, Law Relating to women and child, Central Law Agency, 2001.

3. Chari Leclavathi, Know Your Rights, Tamil Nadu Social Welfare Board, Madras 1987.
4. Bhattacharya Malini, Sexual Violence and Law, West Bengal Commission for women, Kolkata 2002.
5. Sexual Harassment at the workplace –A Guide, Sakshi, 1991, New Delhi,
6. அஜிதா குடும்ப வன்முறையிலிருந்து பெண்களை பாதுகாக்கும் சட்டம் ஏக்தா மதுரை 2005.
7. பொன்.கிருஷ்ணசுவாமி ஜே .பால்பாஸ்கர் ஆ.ஜான்வின்சென்ட் பெண்களும் உச்ச நீதிமன்றமும் சோக்கோ வாசகர் வட்டம். மதுரை 2004.
8. வனஜா சியாமா சுந்தரி பெண்களுக்கான சட்டங்கள்இ உலகத் தோழமை மையம்இ செகந்திராபாத்.
9. குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும் சட்டம் - 2005இ ருமுஅநெ'ள ஐவெநபசயவநன யேவழையெட னுநளநடழிஅநவெ வுசரளவஇ வுசடைல.
10. ஜி.ஆர். ரவீந்திரநாத்இ ராகிங் ஒழிப்போம்இ ஈவடிசிங் ஒழிப்போம்இ ஐ.ஹீ.ஹி.இ வெளியீடுஇ சென்னை.

M.A ECONOMICS SYLLABUS

MICRO ECONOMICS - I

COURSE CODE: 18KP1EC01

Credit : 4
Hours / Week : 6
Medium of Instruction : English

UNIT: I Demand Analysis

Indifference curve - superiority of ordinal approach - derivation of demand curve from indifference curve. Revealed preferences Approach- N - M- utility function - Friedman savage Hypothesis.

UNIT: II Theory of Production and Cost

Technical programme and Production function - Cobb- Douglas, traditional and Modern theories of cost functions from Production functions.

UNIT: III Monopolistic Competition

Individual and Group Equilibrium - excess capacity - Chamberlin's view selling cost - Monopolistic Competition Vs Imperfect Competition - Monopsony and bilateral monopoly

UNIT: IV Duopoly and Oligopoly Models

Oligopoly -Non collusive - kinked demand models of Sweezy - Collusive Oligopoly - Price leadership - Duopoly Models - Cournot, Bertrand and Chamberlin.

UNIT: V Alternatives theories of firm

Classical theory of firm - full cost pricing - Average cost pricing - Mark - up rule - Bain's limit pricing - Managerial theory

REFERENCE BOOKS

1. **Kreps, David. M (1990) A Course In Micro Economic Theory, Prince University.**
2. **Koutsoyiannis.A (1979) Modern Economics (Second Edition) Macmillan Press London.**
3. **Layard, P.R.G. And Walters (1978) Micro Economic Theory, Mc Graw Hill; Newyork.**
4. **Sen. A (1999) Micro Economic Theory And Applications, Oxford University.**
5. **Stigler.G (1996) Theory Of Price (Fourth Edition) Prentice Hall Of India New Delhi.**
6. **Varian, H (2000) Micro Economic Analysis, W-W Norton Newyork.**
7. **Baumols.J (1982) Economic Theory And Operation Analysis, Prentice Hall Of India, New Delhi.**
8. **Hirshleifer, Janda. Glazer (1997) Price Theory And Applications, Prentice Hall Of India. New Delhi.**
9. **Da Costa G.C (1980) ,L Production, Prices And Distribution Tata McGraw Hill New Delhi.**
10. **Salvatore, Dominick (1991) Micro Economic Theory 3rd Edition M.C Graw Hill. New Delhi.**

MACRO ECONOMICS – I

COURSE CODE: 18KP1EC02

Credit : 4

Hours / Week : 6

Medium of Instruction : English

UNIT – I National Income and Accounts

Circular flow of income in two, three and four Sector Economy : Different forms of National Income Accounting - Input - output Accounting - Social Accounting - Flow of Funds Accounting and Balance of payments Accounting

UNIT – II Theory of Consumption Function

Keyne's Psychological law of consumption- Absolute Income Hypothesis- Relative income Hypothesis – Life cycle Hypothesis-Permanent Income Hypothesis.

UNIT – III Investment Function

Types of Investment, Marginal efficiency of investment the Multiplier. Accelerator, Super Multiplier

UNIT – IV Theories of Inflation

Inflation - Inflationary Gap - causes of inflation - Monetary theory of Demand pull inflation – Cost push Inflation – Causes of Inflation –Effects of Inflation-Measures to control Inflation.

UNIT – V General Equilibrium of Product and Money Markets

IS - LM Model - Goods market equilibrium - shift in the IS curve- Money Market equilibrium - shift in the LM curve - Intersection of IS - LM curve.

REFERENCE BOOKS

1. AC KleyG. (1978) - Macro Economics Theory and Policy - Macmillan, Newyork.
2. Blackhouse - R & A Salansi (Eds) (2000) Macro Economics and The Real world (2 vols) Press London.
3. Branson. W.A (1989) Macro Economics Theory and policy (3rd Edition) Harper and Row, Newyork.
4. Bornburch, R & F Stanley (1997), Macro Economics, M.C. Graw Hill, Inc. Newyork.
5. Hall. R.E. & J.B. Taylor (1986) macro Economics, W.W Norton, Newyork
6. Heijdra,B.J. and V.P.Frederieck (2001),Foundations of Modern Macroeconomics, Oxford University Press,New Delhi.
7. Jha.R.(1991),Contemporary Macro economic Theory and Policy,Wiley Eastern Ltd.,New Delhi.
8. Romer.D.I.(1996),Advanced Macroeconomics, M.C. Graw Hill, Inc. Newyork.
9. Scarfe.B.L.(1977),Cycles,Growth and Inflation, M.C. Graw Hill, Inc. Newyork.
10. Shapiro.E.(1996),Macro Economic Analysis,Gallgotia Publications,New Delhi.
11. Surrey.M.J.C.(Ed)(1976),Macro Economic Themes, Oxford University Press,New Delhi.

**METHODS FOR ECONOMIC ANALYSIS – I
(Mathematical methods)**

COURSE CODE: 18KP1EC03

Credit : 4

Hours / Week : 6

Medium of Instruction : English

UNIT - I Terminology, concepts and tools :

Constants, variables, parameters, intercepts co-efficient - functions - inverse, general and specific functions - equations - applications – Economic functions.

UNIT - II Differential calculus:

Rules of differentiation - partial differentiation – Total differentiation – Maxima and Minima - Uses of derivatives in Economics – maximization – Consumer behaviour – Elasticity of demand - cost and revenue functions (simple problems.)

UNIT - III Integration

Concepts - simple rules of integration - application to consumer's surplus and producer's surplus - costs and revenues.

UNIT - IV Matrices

Matrix – Types of Matrix - Transpose of Matrix – Determinants – Rank of Matrix - solving equations - Cramer's rule - uses - input output analysis.

UNIT - V Linear Programming

Basic concepts, formulation of an LP problem - feasible, basic and optimal solution - graphic and simplex methods.

REFERENCE BOOKS

1. Allen, R.G.D. (1974, **Mathematical analysis of economists**, Macmillan press and ELBS, London.
2. Chiang, A.C. (1986) **Fundamental methods of mathematical economics**, McGraw Hill, Newyork.
3. Yamane, Taro (1975) **mathematics for economists**, prentice hall of India, New Delhi.
4. Baumol, W.J. (1984) **Economic theory and operation analysis**, prentice hall, Engle wood Cliffs, New Jersey
5. Monga, G.S. (1972) **Mathematics and statistics for economists**, Vikas publishing house, New Delhi.
6. Salvatore, Dominick (1992) **Mathematics for economists**, Schaum series.

INDIAN ECONOMIC DEVELOPMENT

COURSE CODE: 18KP1EC04

Credit : 4

Hours / Week : 6

Medium of Instruction : English

UNIT - I Demographic Features, Resource Base and Infrastructure :

Broad demographic features of Indian population : rural - urban migration; urbanization - energy; social infrastructure - education and health; environment; regional imbalance; issues and policies in financing infrastructure development

UNIT - II The Agricultural Sector:

Institutional structure - technological change in agriculture - pricing of agricultural inputs and output; terms of trade between agriculture and industry; agricultural finance policy; Public Distribution system-issues in food security - policies for sustainable agriculture.

UNIT - III The Industrial Sector:

Industrial policy; public sector enterprises and their performance; problem of sick units in India; privatization and disinvestment debate; growth and pattern of industrialisation; small - scale sector; productivity in industrial sector; exit policy - issues in labour market reforms; approaches for employment generation.

UNIT - IV Planning in India

Planning in India- objectives and strategies of 12th five year plan - achievements and short comings agriculture, industry and social sectors - plan initiatives to tackle poverty, inequality and unemployment –NITI AYOOG functions.

UNIT - V Economic Reforms

Globalization and Indian economy;- impact on the different sectors of the economy, Impact of economic reforms on Indian economy-Second generation economic reforms.

REFERENCE BOOKS

- 1. Ahluwalia., J.J. And I.M.D Little (Eds) (1999), India's Economic Reforms And Development (Essays In Honour Of Manmohan Singh), Oxford University Press, New Delhi.**
- 2. Bardhan,P.K.(9th Edition) (1999), The Political Economy Of Development In India, Oxford University Press, New Delhi.**
- 3. Bawa, R.S.And P.S.Raikhy (Ed) (1997) Structural Changes In India Economy, Guru Nanak Dev University Press Amiritsar.**
- 4. Brahmananda, P.R. Andv. R.Panchmukhi (Eds) (2001) Development Experience In The Indian Economy, Inter - State Perspectives Book Well, Delhi.**
- 5. Chakravarty, S.(1987), Development Planning; The Indian Experience Oxford University Press, New Delhi.**

6. Dantwala, M.L., (1996), Dilemma Of Growth; The Indian Experience Saga Publications. New Delhi.
7. Government Of India, Economic Survery, Annual, Ministry Of Finance, New Delhi.
8. Jalan, B. (1992) India Development Report(Annual) Oxford University Press, New Delhi.
9. Parikh, K.S (1999) India Development Report (Annual) Oxford University Press, New Delhi.
10. Peserve Bank Of India, Report Of Currency And Finance, (Annual)
11. Dreze, Jean And Amarta Sen, (1999) Economic Development And Social Opportunity, Oup, New Delhi.
12. Datt, Ruddar And K.P.M. Sundaram (2001), Indian Economy, S.Chand&Co., New Delhi.
13. Alagh, Y.K.(1995) Indian Development Planning And Policy, Vikas Newdelhi.

ENVIRONMENTAL ECONOMICS

COURSE CODE: 18KP1ECELEC1

Credit : 4
Hours / Week : 6
Medium of Instruction : English

UNIT - I : Nexus Between Economics and Environment

Material Balance Principle - Resilience And Carrying Capacity - Externalities and Market Inefficiency - Externalities As Missing Market; Property Rights and Externalities, Non- Convexities and Externalities, Pareto Optimal Provision of Public Goods.

UNIT - II : The Theory of Environmental Policy

Environmental Externalities - Pigouvian Taxes And Subsidies, Marketable Pollution Permits and Mixed Instruments (The Charge and Standards Approach), Coase's Bargaining Solution and Collective Action : Informal Regulation and The New Model of Pollution Control, Monitoring and Enforcement of Environmental Regulation, Externalities and Climate Change - Tradable Pollution Permits And International Carbon Tax And Environmental In WTO Regime.

UNIT - III Economics of Natural Resource Management and Sustainable Development

Theories of Optimal use of Exhaustible And Renewable Resources - Environmental And Development Trade off And The Concept of Sustainable Development; Integrated Environmental And Economic Accounting And The Measurement of Environmentally Corrected GDP.

UNIT - IV Measurement of Environmental Values

User Values; Option Values And Non - Use Values; Valuation Methods Based On Observe Market Behaviour, and Household Production Models (Travel Cost Methods And Household Health Production Function).

UNIT - V Environmental and Natural Resource Problems in India

Mechanism for Environment Regulation In India; Environmental laws And Their Implementation; Policy Instrument for Controlling Water And Air Pollution And Forestry Policy; People's Participation in the Management of Common And Forest Lands; The Intuitions of Joint Forest Management And The joint Protected Area Management; Social Forestry - Rationale And Benefits.

REFERENCE BOOKS

- 1. Baumol, W.J. And W.E. Oates (1988). The Theory Of Environmental Policy. (2nd Edition) Cambridge University Press, Cambridge.**

2. Bromely, D.W. (Ed) (1995) **Handbook Of Environmental Economics**.
Cambridge University Cambridge.
3. Fisher, A.C. (1981), **Resource And Environmental Economics** Cambridge University Press,
Cambridge.
4. Hanley, N.J.F. Shogern And B White (1997) **Environmental Economics In Theory Practicie**
Macmillan.
5. Hussen, A.M. (1999), **Principles Of Environmental Economics** Route\Ledge, London.
6. Jeroen, C.J.M. Van Den Bergh (1999), **Handbook Of Environmental And Resource**
Economics Edward Elegg Publication Ltd., U.K.
7. Kolstad, C.D. (1999) **Environmental Economics** Oxford University Pearch D.W. And
R. Turner (1991), **Economics Of Natural Resource Use And Environment** Join Hopkinns
University Press, Baitimori.
8. Perman, R. Ma And J. McMivary (1996), **Natural Resource And Environmental Economics**,
Longman, London,.
9. Sankar, U. (Ed) (2001), **Environmental Economics** Oxford University Press New Delhi.
10. Adieshalah, Maccolm.S (Ed) (1987) **Economics Of Environment** Lancer International New
Delhi.

MICRO ECONOMICS – II

COURSE CODE: 18KP2EC05

Credit : 5

Hours / Week : 6

Medium of Instruction : English

Unit - I : Theories of Distribution

Marginal productivity Theory. Micro theories of distribution - Ricardian, Marxian, Kalecki and Kaldor's.

Unit - II : General Equilibrium

Partial and general equilibrium - one sector model - homogenous functions, income distribution, production without consumption - two sector model, 2*2*2 model.

Unit - III : Welfare Economics

Old Welfare Economics - Adam Smith, Marshall, Pigouvian Welfare Economics.

Unit - IV : New Welfare Economics

Kaldor - Hicks - Scitovsky - Arrow - Social welfare Function - Rawls - Sen's Theory of Social choice- Pareto's optimality criterion.

Unit - V : Economics of Uncertainty

Individual behaviour towards risk, expected utility and certainty equivalence approaches, risk and risk aversion.

REFERENCE BOOKS

1. **Kreps, David. M. (1990) A course in micro economic theory, Princeton University press Princeton.**
2. **Koutsoyiannis.A (1979) Modern micro economics (second edition) Macmillan press London.**
3. **Layard P.R.and A.W Walters (1978) micro economic theory McGraw Hill, New york.**
4. **Sen. A (1999) Micro economics theory and application, oxford university press New Delhi.**

MACRO ECONOMICS – II

COURSE CODE: 18KP2EC06

Credit : 5

Hours / Week : 6

Medium of Instruction : English

UNIT - I : Classical and Keynesian Synthesis

Relative effectiveness of Monetary and fiscal policies; Monetarism versus Keynesianism

UNIT - II Post Keynesian Demand for Money

Post - Keynesian approaches to demand for money – Patinkin’s Real Balance Effect, Approaches of Baumol; and Tobin: Friedman and the modern quantity theory.

UNIT - III Macroeconomics in an Open economy

Mundell - Fleming model – Expenditure switching policies Monetary approach to balance of payments.

UNIT – IV Theories of Business Cycles

Types of cycles-Phases of a Business cycle –Hawtrey’s Monetary Theory of the Trade cycle-Schumpeter’s Theory of Innovations-Keynes Theory of the Trade cycle.

.UNIT - V New classical macro economics

The new classical critique of micro foundations, the new classical approach; Policy implications of new classical approach - empirical evidence.

REFERENCE BOOKS

1. Ackley, G. (1978), *Macroeconomics: Theory and Policy*; Macmillan, New York.
 2. Blackhouse, R. and A. Salanasi (Eds). (2000) *Macroeconomics and the Real World (2 Vols.)*, Oxford University Press, London.
 3. Brason, W.A (1989), *Macroeconomic Theory and Policy*, (3rd Edition), Harper and Row, New york.
 4. Bornbusch, R and F. Stanley (1997). *Macroeconomics*, McGraw Hill, Inc., New York.
 5. Hall, R. E. and J.B. Taylor (1986), *Macroeconomics*, W.W Norton, New york.
 6. Heijdra, B.J. and V.P. Frederieck (2001). *Foundations of Modern Macroeconomics*, Oxford University Press, New Delhi.
 7. Jha, R. (1991), *Contemporary Macroeconomic Theory and Policy*, Wiley Eastern Ltd., New Delhi.
 8. Romer, D.L. (1996) *Advanced macroeconomics*, McGraw Hill Company Ltd., New york.
 9. Scarfe, B.L. (1977), *Cycles, Growth and Inflation*, McGraw Hill, New york.
 10. Shapiro, E. (1996), *Macroeconomic Analysis*, Gallgotia Publications, New Delhi.
- Surrey, M.J.C.(Ed) (1976), *Macroeconomic Themes*, Oxford University Press, Oxford.

METHODS FOR ECONOMIC ANALYSIS – II
(Statistical Methods)

COURSE CODE: 18KP2EC07

Credit : 5
Hours / Week : 6
Medium of Instruction : English

UNIT - I Univariate Analysis

Measures of Central tendency (Mean , Median, Mode), Methods of Measuring dispersion - Co-efficient of Variation , Skewness (simple Problems).

UNIT - II Bivariate Analysis correlation and Regression

Correlation, Karl Pearson , Spearman's Rank Correlation , Regression, Regression equations – Partial , Multiple Correlation and Regression (Theory).

UNIT - III Probability and distributions

Elementary Probability theory, Laws of Probability binomial, Poisson and normal distribution.

UNIT - IV Sampling Distributions

Sampling distribution, standard error- testing of hypothesis - t, F & Chi-square tests ANOVA – Simple problems .

UNIT - V Index Numbers and Time Series

Index number - Fisher's ideal index, Laspayre's index and Paasche;s index - Time reversal test - Factor reversal test - Components of time series - Moving average Method , – Method of Least Squares .

NOTE : 50 % Theory and 50 % problem

REFERENCE BOOKS

1. Gupta, S.C. (1993), Fundamentals of Applied Statistics S. Chand & Sons, New Delhi.
2. Speigal, M.R. (1992), Theory and Problems of Statistics, Mc Graw Hill Book Co., London.
3. Chou, Y. (1975), Statistics Analysis, Holt, Reinhart and Winston, New York.
4. Croxton, Crowden and Klein (1971), Applied General Statistics, Prentice Hall of India, New Delhi.
5. Nagar, A.L. and R.K Das (1993), Basic Statistics Oxford University Press, New Delhi.
6. Salvatore, Dominick (1982), Statistics and Econometrics, McGraw Hill, New Delhi

INTERNATIONAL ECONOMICS

COURSE CODE: 18KP2EC08

Credit : 5
Hours / Week : 6

Medium of Instruction : English

UNIT - I : Theory of International Trade

The pure theory of International Trade - Theories of Absolute - Advantage, Comparative Advantage and Opportunity Costs, Modern Theory of International Trade.

UNIT - II : Measurement of Gains and Theory of Intervention

Measurement of gains from trade, factors determining the gains from trade. Gain from trade and income distribution, gains from trade in the case of large and small country – free trade superior to no trade - static and dynamic gains from trade.

UNIT - III : Balance of Payments

Meaning and components of balance payment; Equilibrium and disequilibrium in the balance of payments, Measures to correct disequilibrium; fixed exchange rates and flexible exchange rates – Merits and Demerits.

UNIT - IV : Globalisation; Trends and Implications

IMF & World Bank –WTO- TRIPS-TRIMS, UNCATAD, ADB, critique on NIEO.

UNIT –V:Foreign trade policy in India

Foreign trade policy in India – India’s Bilateral and multilateral trade agreement. Impact of foreign capital on India’s economic development.

REFERENCE BOOKS

- 1. Dunn, R.M. J.H. Mutti (200 International Economics, Routledge, London.**
- 2. Kindleberger, C.P. (1973) International Economics, R.D.Irwin, Home wood.**
- 3. King, P.g. (1995), International Economics, And International Economic policy, A Reader, McGraw Hill International, Singapore.**
- 4. M.L,Jingan. International economics**

AGRICULTURAL ECONOMICS

COURSE CODE: 18KP2ECELEC2

Credit : 4

Hours / Week : 6

Medium of Instruction : English

UNIT - I

Nature and scope of Agricultural economics - relation between agriculture and industry - Role of Agriculture in economic development - Agriculture Productivity - causes for low productivity.

UNIT - II

Agricultural finance and Agencies - Magnitude and causes of rural indebtedness - Debt relief and regulation of money lending acts - Role of rural Credit institutions –NABARD- co - operative and commercial banks.

UNIT - III

Land reforms - Nature and significance of Land reforms - Progress of land reforms in India- Suggestions for improvement.

UNIT - IV

Agricultural markets - Agricultural Price Policy - Procurement and Public distribution- Subsidies component-Online agricultural Marketing (National Agricultural Marketing).

UNIT - V

Agricultural Labour - Causes and growth of Agricultural Labour under poor economic conditions - problems of Unemployment - Government measures.

REFERENCE BOOKS

- | | | |
|---|----------|--|
| 1.T.W. Schultz | - | Economic growth and Agriculture
(MC Graw Hill Book Company) |
| 2.C.B. Memorial | - | Agricultural Problems of India
(Kitab Mahal) |
| 3.Sadhu and Singh | - | Fundamentals of Agricultural Economics |
| 4. Karl A. Rox and D. Gate Johnson | - | Globalisation and Economics References |
| 5.E.O. Heady | - | Economics of Agricultural Production
and Resource use. |

PERSONNEL MANAGEMENT

COURSE CODE: 18KP2SSEC1

Credit : 5
Hours / Week :
Medium of Instruction : English

UNIT: I

Personnel management –meaning-scope-importance –characteristics.

UNIT: II

Human resource planning-Importance-levels of manpower planning - Steps in manpower planning-Limitation of Human resource planning.

UNIT: III

Recruitment-sources of recruitment-Internal sources- Advantages -Disadvantages –External sources - Advantages –Disadvantages-Selection process.

UNIT: IV

Communication –Communication Skill– Barriers to communication- Methods to overcome Barriers.

UNIT: V

Industrial dispute – Causes-settlement-Industrial Relations-Objectives-Trade unions-objectives.

REFERENCE BOOKS

- | | |
|--------------------------------------|---|
| 1. Matoria.C.B.Andudai Pareek | - Personnel Management |
| 2. Dale | - Personnel Management |
| 3. Bavan | - Personnel Management |
| 4. Bhushan | -Business Management |
| 5. Agarwal.R.D | -Dynamics Of Personnel Management In India |

FISCAL ECONOMICS

COURSE CODE: 18KP3EC09

Credit : 5
Hours / Week : 6

Medium of Instruction : English

UNIT – I Theory of Public Goods and Public Choice:

The Economic Role of Government allocation of Resources- Private goods, public and merit goods – Market failure –Causes and Measures.

UNIT – II Public Expenditure:

Wagner's law of increasing state activities, Musgrave's views on public Expenditure - principles of public expenditure.

UNIT – III Taxation and Public Debt:

Characteristics of a Good Tax system. Principles of Taxation. Factors determining Taxable capacity- Definition and classification of public Debt. Causes for the Growth of public Debt.

UNIT – IV Fiscal Policy

Definition of Fiscal Policy - Objectives of Fiscal policy-Techniques of fiscal policy – Deficit financing, Fiscal policy in India.

UNIT – V Fiscal Federalism

Meaning of Federal finance – principles of federal finance. Evolution of federal finance in India. Balancing factors in federal finance .

REFERENCE BOOKS

1. S. Sankaran - Fiscal Economics
2. B.P.Tyage - Public Finance
3. A. Koutsoyiannis - Modern Economics

RESEARCH METHODOLOGY

COURSE CODE: 18KP3EC10

Credit : 5
Hours / Week : 6
Medium of Instruction : English

UNIT - I

Science - its meaning and characteristics - The meaning of 'research' - Specific features of research in social sciences as opposed to physical and natural sciences - objectivity in research - Basic in scientific method facts - concepts

UNIT - II

Methods of Research - Falsification, and verification criterion (Karl Popper)- Paradigm Shift (Kuhn) - Deductive and inductive Reasoning - Steps of Scientific Method - Historical Method- Case study - Scaling Techniques - Sample surveys - various Sampling methods - Importance of proper sampling design.

UNIT - III

Steps in Research - Formulation of a Research Problem - Guiding principles in the choice of a research topic - Role of Review of Literature - Formulation of Research Design - Model building - hypothesis; concept, definition formulation and testing.

UNIT - IV

Primary data collection - Tools - Construction of a questionnaire, - Preparation of master table - Secondary data - Some important sources: NSSO, CSO, Economic Survey, Season and crop report, Agricultural Census, Livestock census, Annual survey of industries, RBI reports, WDR, HDR, IDR - Data processing – Analysis of tables.

UNIT - V

Report writing - Structure and General format- style - use of footnotes - citations - presentation of tables, diagrams, charts and maps - Bibliography.

REFERENCE BOOKS

1. Ghose, B.N., Scientific Method and social research, New Delhi, Sterling Publishers 1982.
2. Goode, W.J. & Hatt, P.K., Methods in social Research, New York, McGraw Hill, 1952.
3. Kate Turabina, Manual of style for writing dissertations thesis and reports, University of Chicago press, Chicago.
4. Myrdal, G. Objectivity in social research
5. C.T.Kurien (Ed.) A Guide to Research in Economics (Sangam Publishers)
6. Wilson Gee, Social Science Research methods, (N.Y. Appleton Century croft, (1950).
7. Pauline V. Young, Scientific social and research
8. Parson, C.J. Thesis and project work
9. Karl Popper, The logic of scientific discovery (Lond. Hutchinson, 1934)
10. T.S. Kuhn, The structure of scientific revolutions, (chicago, 1962).

ECONOMETRICS

COURSE CODE: 18KP3EC11

Credit : 5
Hours / Week : 6
Medium of Instruction : English

UNIT -I Introduction

Econometrics definition objectives, characteristics and scope of econometrics limitation - tools and methods of study - economic and econometric models - time series and cross section models.

UNIT - II Statistical Inferences

Properties of estimators, - methods of estimation - least squares estimation - maximum likelihood estimation - testing of hypothesis.

UNIT - III Single Linear Regression Model & Multiple Linear Regression Model

Meaning – Specification of model –Assumptions of SLRM – Stochastic and non-Stochastic – OLS –Specification- Estimation, Evaluation, and Application-Gaws Markov Theorem – Problems - Multiple Linear Regression Model -Meaning.

UNIT - IV Specification in OLS Estimation

Autocorrelation - multicollinearity - heteroscedasticity –Causes and Consequences

UNIT –V Problems in OLS Estimation

Specification problem and bias - errors in variables - dummy variables - lag models.

REFERENCE BOOKS

- 1. Damodar Gujarati, Basic Econometrics, McGraw Hill, New Delhi, 1984.**
- 2. Singh, S.P. Parasher, K and Singh, H.P. Econometrics, S. Chand & Co. New Delhi, 1981.**
- 3. William H. Greene, Econometric Analysis, Analysis Prentice, Hall, New Hersey, 1993.**
- 4. Koutsiyannis, A (1989), Theory of Econometrics Macmillan, New Delhi.**
- 5. Salvatore, Dominik, Statistics and Econometrics, Schaum Series.**

COMPUTER APPLICATIONS IN ECONOMICS

COURSE CODE:18KP4ECELEC5

Credit : 4
Hours / Week : 6
Medium of Instruction : English

UNIT - I Introduction to Computers

Evolution, Generations and classification of Computers - Hardware and Software - CPU and its functions - Input and Output devices - Application of Computer in Economics and Business.

UNIT - II Operating Systems

Simple DOS commands - Features and Fundamentals of Windows-Windows 10.

UNIT - III Word Processing

Word basics - formatting text and document - working with headers, footers and footnotes - Tabs, tables and sorting - working with graphics - Templates and wizards - creating macros and menus - mail merge.

UNIT - IV Spreadsheets and Power Point

Excel Basic - Arranging worksheets - function - chart and its features - graphics - worksheet as database -Power Point -introduction-Tool Bars-Standard -Formatting - Drawing -Navigating in Power Point. SPSS Package-Introduction.

UNIT - V World wide WEB

Internet basics - Browsing internet - using search engines - opening - E-mail ID sending and checking E-mail - downloading text from internet.

REFERENCE BOOKS

1. Sanders, H.H. (1988), Computers, Today McGraw McGraw Hill (3 rd Edition), New york.
2. Sinha, (1992) Computer Fundamentals, BPB publications, New Delhi.
3. Rajaraman, V. (1996), Fundamentals of Comupters, (prentice Hall of India, New Delhi).
4. Lipschutz, M.M. and S, Lipschultx (1982) Theory and problems of Data Processing Schaum's Outline Series, McGraw Hill, New Delhi.
5. Alexis Leon and Mathew Leon (1997)l, Internet For Every one, Vikas, New Delhi.

ECONOMICS FOR COMPETITIVE EXAMINATIONS

COURSE CODE: 18KP3ECELEC3

Credit : 4
Hours / Week : 6
Medium of Instruction : English

UNIT - I

Economic growth and development - Concepts - Definition - Basic indicators to economic developments - Characteristics of Indian Economy.

UNIT - II

National income - Percapita income, GDP, NNP - Social Accounting - National income estimates in India - Limitations of National income estimation in India.

UNIT - III

Human resources - size and growth rate of population problems in India (causes and effects) and Population policy in India.

UNIT - IV

Planning - Long - term objectives of planning – Twelfth five year plan-New initiatives in India's Planning.

UNIT - V

Foreign Trade of India - composition of India's foreign trade - Globalization.

REFERENCE BOOKS

- 1. Rudder Datt & K.P.M.Sundharam - Indiran Economy**
- 2. S.K. Misra & V.K. Puri - Economic Developments Planning.**

Credit : 5

Hours / Week :

Medium of Instruction : English

UNIT: I

Rural Economics-Rural Problems-Agricultural problems , Economic problems and Social problems- Measures to solve these problems.

UNIT: II

Rural poverty – causes of rural poverty – Eradication of poverty.

UNIT: III

Rural unemployment – Forms of unemployment – Schemes for rural employment.

UNIT: IV

Rural Indebtedness – Source of rural debt causes of indebtedness – Evils of indebtedness –Debt Relief measures.

UNIT: V

Rural Development – Importance of rural development – Nature and scope of rural development – Objectives of rural development –IRDP.

REFERENCE BOOKS

- 1. Dr. Mittal Dr. Agarwal : Rural Economics**
- 2. I.Satya sundaram : Rural Development**
- 3. S. Sankaran : Indian Economy**

INDUSTRIAL ECONOMICS

COURSE CODE: 18KP4EC13

Credit : 5
Hours / Week : 6
Medium of Instruction : English

UNIT I :

Role of industrialization – Pattern & Development-during planning period-Effects.

UNIT II :

Define market structure –market power-Market performance – concept of workable competition conceptual Frame work for the study of Industrial Economics.

UNIT III :

Industrial location – General determinants. Approaches of Industrial Location analysis Geographical contribution –central place theory, weber’s theory – Losch central place theory.

UNIT IV :

Industrial policy – New Industrial policy – globalization – liberalization- Privatization.

UNIT V

Industrial Finance – Need for finance -Types – Source- IFCI, IDBI, SFC.

REFERENCE BOOKS

- 1. S. Sankaran : Indian Economy**
- 2. S.Chand-Datt & Sundharam : Indian Economy**
- 3. V.K. Puri, S.K. Misra : Indian Economy**
- 4. R.R.Barthwal : Industrial Economics**
- 5. S.C. Kusal : Industrial Economics of India**

BANKING

COURSE CODE: 18KP4EC14

Credit : 5

Hours / Week : 6

Medium of Instruction : English

UNIT - I

Definition of a bank - kinds of bank - functions of a commercial bank - credit creation - process of credit creation - balance sheet of a commercial bank - Investment policy of a commercial bank - Banking sector reforms in India.

UNIT - II

Nature & Principles of central banking - functions of central bank - functions of RBI - credit control measures - objectives of monetary policy.

UNIT - III

Relationship between banker and customer - statutory obligation to honor the cheques of customers - cheque crossing & endorsement - payment and collection of cheques. Letter of credit - ATM - credit card & debit cards Latest development in Introduction of computerization in Banking.

UNIT - IV

Money market - Bill market - Discount market - Acceptance houses - clearing houses - London money market - New York money - market difference between Gilt .

UNIT - V

Agricultural Refinance Development Corporation (ARDC) - National Bank for Agriculture & Rural Development (NABARD) Regional Rural Banks (RRB) Co - operative Banking in India - Rural Banking and Micro finance.

REFERENCE BOOKS

- 1. Sayers, R.S - Modern Banking**
- 2. Srinivasan. N.P & Saravanavel. P - Development Banking in India**
- 3. Saravanavel.P - Modern Banking**
- 4. Sankaran.S - Money, Banking & INL Trade.**

HUMAN RESOURCE MANAGEMENT

COURSE CODE: 18KP3ECELEC4

Credit : 4

Hours / Week : 6

Medium of Instruction : English

UNIT: I Concepts and Perspective on Human Resource Management

Human Resources - Human Resource Management concept of Human Resource Management – Features of HRM –Objectives and Significance of HRM, Role of HRM in corporate strategic management- Qualities of HR Manager - Human Resource Management functions.

UNIT: II Development of Human Resource Management

Development of Human Resource Management –systems and Contingency Approach in HRM- Implications of systems and Contingency approach Models for managing Human Resources – Rational Model –Social Systems Model - Human Resource Development Model –Development of HRM in India.

UNIT – III Environmental influences on Human Resource Management

Environmental factors –Economic Environment –Legal Environment –Technological Environment – Socio cultural Environment, Organisational factors –Organisation’s strategy – Organisational culture- Organisation’s financial Positions –Changing Indian Business Environment and HRM – Role and Responsibility of Professionals in changing Environment.

UNIT – IV Human Resource Philosophy and Policy

Organisational Philosophy and Vision – Human Resource Philosophy –Human Resource Policy – Objectives of HR Policies –Characteristics of sound HR Policies –Sources of HR Policies – Formulation of HR Policies –Areas of Human Resource Policies.

UNIT – V : Human Resource Planning

Concept of HR Planning-Importance of Human Resource Planning Process –Techniques for Forecasting Human Resource needs. Barriers to effective Human Resource Planning

REFERENCES

- 1.Human Resource Management -L.M.Prasad**
- 2.Human Resource Management-Gupta**
- 3. Educational and Human Resource Development – V.K.R.V.Rao**

ENTREPRENEURSHIP DEVELOPMENT

COURSE CODE:18KP4EC12

Credit : 5

Hours / Week : 6

Medium of Instruction : Tamil / English / Both

UNIT: I Entrepreneur and Entrepreneurship

Meaning and definition of entrepreneur and entrepreneurship – Types of entrepreneur – Features of an entrepreneur – Characteristics of entrepreneurship – Intrapreneurship – Relationship between entrepreneur and entrepreneurship - Causes of slow growth of entrepreneurship in India.

UNIT: II Project Appraisal

Meaning and definition of project – stages in the process of project – Classification of the project-project appraisal – Meaning of project report- purposes of a project Reports- Formulation of a business plan – Characteristics of a successful business plan.

UNIT: III Institutional Finance to entrepreneurs

Expansion SIDBI - SFC – SIDCO – SIPCOT –TIIC –Commercial Banks.

UNIT: IV Role of Entrepreneur in Economic Development

Role of entrepreneurs in Generating Employment opportunities – Role of entrepreneur in increasing economic growth.

UNIT: V Women Entrepreneurs

Concept of women entrepreneurs – Functions of women entrepreneurs – Challenges Faced by women entrepreneurs – solutions for solving the problems – Developing women entrepreneur – Schemes for Women Entrepreneur – DWCRA – MUN – MVN.

REFERENCE BOOKS

- 1.Guptha-C.B.& Srinivasan . N.P. – Entrepreneurship Development in India.**
- 2.Khanaka.S.S. – Entrepreneurship Development.**
- 3.Saravanavel – Entrepreneurship Development.**
- 4.Bhattacharjee.H. – Entrepreneurship Development.**
- 5. Dr. Radha - Entrepreneurial Development.**

M.Phil Syllabus

RESEARCH METHODOLOGY

COURSE CODE: 18KM1EC1

Credit : 4

Hours / Week : 4

Medium of Instruction : English

Part - A - Research in social science

UNIT: I Introduction to Social Science Research

Definition of research – Definition of Social Research – usefulness of social research – Objectives of Research – criteria of good researching – Research process: Problem formulation – Identifying research problem – Extensive literature Survey.

UNIT: II - Research Design

Meaning of research design – contents of research design – hypothesis I Definition Hypothesis – Formulation of Hypothesis – Characteristics of Hypothesis – Test of Hypothesis – Methods of Data Collection Primary data – secondary data – Techniques of data collection – mailed Questionnaire – Interview Schedule – census method

UNIT : III Mechanics of Report Writing

Processing of data – Editing – Loading – Tabulation – Interpretation - Thesis writing – Note on footnote – Preliminary section – Body of Thesis.

Part – B - Statistical Method

Unit: IV

Theoretical distribution of Poisson Binomial and normal - Testing of hypothesis - t.F. and Chi square test.

Unit: V

Correlation and Regression - Problem in linear regression model - Auto correlation, Simple exposition - Analysis of variation (Variance) n- Measures of in equality - Lorenz Curve - Gini - Sen Index - Xo linearity hetro hedosticity - SPSS Package

REFERENCE BOOKS

- | | |
|---|---------------------------|
| 1. A Guide to Research in Economics | - C.T. Kurien(Ed) |
| 2. Social Science Research methods | - Wilson Gee |
| 3. Scientific Social surveys and research | - Pauline V. Young |
| 4. Thesis and project work | - C.J.Parson |
| 5. The logic of scientific discovery | - Karl Popper |
| 6. The structure of scientific revolutions | - T.S.Kuhn |

INDIAN ECONOMY

Credit:4

COURSE CODE: 18KM1EC2

Hours:4

Medium of Instruction : English

UNIT I: Resource Base of Indian Economy:

Economic Geography of India –Basic Features –Human Resource: Demographic features, extent of unemployment, poverty and inequality – HDI of India-Trend in National Income and Per capita Income.

UNIT II: Structure of Indian Economy:

Growth and structural changes in Indian Economy –Growth in GDP –Sectoral contribution to GDP –employment –factor payments –public and private sector –service sector as the biggest contributor to regional disparity in India.

UNIT III: Agriculture :

Trends and Composition of Output of major crops –Trends in Investment, Credit and Agricultural Subsidy- Second Green Revolution –Food Security and PDS in India, Agricultural Policy in the context of liberalization.

UNIT IV: Industry:

Industrial Structure in India :Traditional, SSI, Village, Cottage and Modern industries –Industrial Policy Resolution in India – New Industrial Policy and its impacts.

UNIT V: Trade and Practices:

Issues of Trade, Finance and BOP Changing Fortex –Impact of Demonitisation in Indian Economy.

REFERENCE:

1. Uma. Kapila,(2008), 'Indian Economy : Performance & Policies', 8th Ed. Academic Foundation, New Delhi.
2. Prakash, B.A.(Ed.)(2009), 'Indian Economy Since 1991: Economic Reforms and Performance. Sage Publications New Delhi.
3. Bhalla,G.S.(2008)'Indian Agriculture since Independence(2008),NBT. New Delhi.
4. Amit Bhaduri, Development with Dignity.(2005) NBT New Delhi Additional Reading:
5. IC.Dhingra :Indian Economy Environment and policy –Sultan Chant and sons.

MODERN ECONOMIC THEORY

Credit: 4

COURSE CODE: 18KM1EC3

Hours: 4

Medium of Instruction: English

UNIT I : Neoclassical Theory

Assumptions of neoclassical economics - Fundamental theorems of welfare economics -Arrow – Debreu equilibrium model -Mechanism design theory.

UNIT II: Public Choice Theory

Theory of rent seeking - Social choice theory: individual choice in political voting and the market process, strategic voting.

UNIT III : Welfare Economic Theory

Utilitarianism - Rawlsian theory of welfare - Amartya Sen's capability theory.

UNIT IV : Gender Economics

Becker's theory of family and human capital - Feminist economic theory: methodology and basic principles - capability approach and gender : Nussbaum's basic capabilities frame work.

UNIT V : Economic Development and Growth

Development as expansion of capabilities - New growth theory - Multiple equilibrium and development policy.

REFERENCES

1.Big Ideas in Macro economics by Kartik Athreya (Cambridge, Massachusetts, MIT Press,2012), chapter 1 and 2.

Economic concepts for the Social Sciences by Todd Sandler (Cambridge; Cambridge University Press,2004),chapter 8

1.'General Equilibrium Theory' by Frank Hahn, in Daniel Bell and Irving Kristol ,eds The Crisis in Economic Theory (New York: Basic BOOKS,1984).

Post Keynesian Economics

2. A New Guide to Post Keynesian Economics by Richard Holt and Steven Pressman (London :Routledge,2001),chapters 4,9,10

3.The Elgar Companion to Post Keynesian Economics Edited by J.E.Kind (Cheltenham, UK: Edward Elgar,2002)

4.'Post Keynesian Economics' by Paul Davidson in Daniel Bell and Irving Kristol , eds The Crisis in Economic Theory (New York :Basic Books,1984).

TEACHING METHODOLOGY

COURSE CODE : 18KM1EC4

Credit : 4
Hours / Week : 4

Medium of Instruction : English

UNIT: I

Aims Objectives of Teaching Economics – Assumptions of Teaching Economics – Objectives of Teaching Economics – Aims of Teaching Economics in India – Models of Instruction – Theoretical and Conceptual Values – Practical Approaches on Values of Economics.

UNIT: II

Micro- Teaching in Economics – Figures and Plan of Micro – Teaching – Various Skills of Micro Teaching – Skill of Reinforcement – Skill of Stimulus Variation – Skill of Explaining – Skill of Probing questing – Components of Various Skills.

UNIT: III

Methods and Techniques of Teaching Economics : Meaning and methods of teaching – teaching methods: A philosophical view – objectives of right methods of teaching - methods of teaching economics: Lecture method – text book method – project method – problem solving method – Discussion method – Inductive and deductive method – supervised study method – their merits and demerits – various teaching economics: Questioning – illustration – assignment – case study – Symposium – Debate – Role play – core teaching – team teaching – programmed instruction.

UNIT: IV

Computer Application Skill in Teaching Economics Internet – meaning – importance – types of networking – www.website and webpage s Internet connectivity – Browsing the internet – search engines – E – mail – sending, receiving and storing mail and chatting – popular websites for data collection – Ms – Word, Ms – Excel – Different types of chart – power point – creating power point presentation Slide Preparation.

UNIT: V 1.

Usage of Verbs and Tenses 2. Situational Dialogues – Railway Enquiry, looking for Accommodations, At the Doctor’s, At the market. 3. Personality Skills: Welcome Speech, introducing the guest, vote of Thanks. 4. Dissertation Format, Seminars & Conference, evaluating oral presentation. 5. Occupational skills – resume, Group Discussion, Interview, Telephonic Interviews.

TEXT BOOKS:

- 1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi.**
- 2. Pandey S.K. (2005) Teaching Communication, Commonwealth**

Publishers, New Delhi

3. **Don Skinner (2005), Teacher Training, Edinburgh University Press Ltd., Edinburgh.**
4. **Kumar K.I (2008) Educational Technology, New Age International Publishers, New Delhi.**
5. **Sharma R. A. (2006) Fundamentals of Educational Technology, Surya Publications, Meerut.**

REFERENCE BOOKS:

1. **Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Tom Van Weert, UNESCO, 2002.**
2. **Mangal, S.K. (2002) Essential of Teaching – Learning and Information Technology, Tandon Publications, Ludhiana.**
3. **Michael D. and William (2000), Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, New York.**
4. **Ram Babu A. and Dandapani S (2006) Microteaching (Vol.1&2)Neelakamal Publications, Hyderabad.**

SOFT SKILLS

COURSE CODE: 18K5SBEC2

Credit : 2

Hours / Week : 2

Medium of Instruction : Tamil / English / Both

Objective:

To enable students to achieve excellence in both personal and personal life.

UNIT: I

Knowing Self

Introducing Self – how to shake hands small tank skills - Benefits of Etiquette – Forming values.

UNIT: II

Verbal Communication

Communication process- types of communication –verbal communication how to improve verbal communication - listening skills.

Non- verbal Communication

Classification – function – positive gesture cluster – body language in detail – final thought. E-mails – email etiquette.

UNIT: III

Assertive Communication

What is assertion? – how assertive are you? – four types of assertion – how to be assertive?

UNIT: IV

Assert Neutralization

Introduction – articulation – types of articulation –basic exercises – articulation and voice exercises – deep voice exercises – diction exercises – seven secrets to be accent.

UNIT: V

Goal, Time and Stress Management

Smart goals – put your smart goal in writing – question to set smart goals – steps to accomplish goals time – management tools - difference between urgent and important – know how your spend your time – known and respect your priorities –stress management.

TEXT BOOKS

1. **Meena. K. and V. Ayothi: A book on development of soft skills (soft skills: A Road Map to Success) P.R. Publishers & Distributors, No. B-20&21. V.M.M. Complex, Chatriman Bus Stand, Tiruchirappalli. 620002.**

Alex. K Soft skills – know yourself & know the World, S. Chand & Co.Ltd.Ram Nag.

Credit : 4
Hours / Week : 2
Medium of Instruction : Tamil / English / Both

UNIT:I - LISTENING

The teacher reads the passage aloud and poses questions at the end. The students ought to listen carefully focusing their attention on the reader and make notes mentally or in their note books.
PASSAGES:

1. Poems (Benet-86-88) , 2. Prose passages (Usha Chandrasekaran Unit I, II, III)

UNIT:II - READING

The teacher makes the students read the passages and corrects the students in pronunciation and punctuation. The teacher is expected to test the student's ability to read with clarity and comprehend the passage.

(Benet- Page 1-20), (Usha Chandrasekaran Unit IV, V, VI)

UNIT:III - CONVERSATION-DIALOGUE

1. Students and Principal
2. Doctor and patient
3. Train-Enquiry.
4. Opening & bank account
5. Phone talk
6. At the watch service center
7. At the restaurant
8. Between two friends
9. In the Library
10. At an interview hall (Benet – page 75-85)

UNIT:IV - WRITING

1. Developing hints. Students are at liberty to make use of their imagination.
2. Describe yourself.
3. Paraphrasing the poem. (Benet –Page-89-93)

UNIT:V - MISH MASH

1. Note Making - (Usha Chandrasekaran Unit-IX)
2. Write the good word (Benet –Page 104-106)
3. Filling up forms (Benet –Page 120-123)
4. Find the equivalent in mother tongue (Benet – Page 124).
- 5.

REFERENCE BOOKS

1. Bridge course for fresher : D.E.Benet and Garnet fernandey.
2. English for classroom interaction : Usha Chandrasekaran.

B.A. HISTORY

**SEMESTER III
CORE COURSE V**

HISTORY OF INDIA FROM 1707 TO 1857 C.E.

Code No: 18K3HO5

Hours: 6

Credit: 5

UNIT - I:

The Later Mughals - Decline of Mughals and Peshwas - Third Battle of Panipat.

UNIT - II:

Advent of Europeans in India - The Carnatic Wars – Battle of Plassey and Buxar – Robert Clive – Warren Hastings – Cornwallis and Lord Wellsley – Anglo Mysore Relations.

UNIT - III:

Society in the 18th Century – Economic condition – Spread of Western Education – Industrial Growth.

UNIT - IV:

Reforms of William Bentinck - Amherst to Dalhousie – Maharaja Ranjit Singh – Anglo Sikh Relations — Dalhousie’s Imperial Policy and Reforms – The Great Revolt of 1857.

UNIT - V:

Constitutional Developments – Regulating Act of 1773 – Pitts India Act – Charter Acts 1793, 1813, 1833 and 1853.

Books for Reference:

- 1. R.Sathyathier – A political and cultural History of India, Vols.II, III.**
- 2. P.E.Roberts – History of British India**
- 3. R.C.Majumdar and Others – An Advanced History of India**
- 4. J.N.Sarkar – Fall of the Mughal Empire**
- 5. Chabra – Advanced History of India**

**B.A. HISTORY
SEMESTER III
CORE COURSE VI**

HISTORY OF EUROPE FROM 1453 TO 1789 C.E.

Code No.18K3H06

Hours:6

Credit:5

Unit I:

Condition of Europe at end of the Middle Ages – Rise of National Monarchies – Rise of Bourgeoisie - The Geographical Discoveries and Colonisation.

Unit II:

Age of Reason –Renaissance in Italy and Other European countries –Scientific Inventions – Humanists Movement –Reformation –Causes –Reformation in Germany, France, Switzerland Scotland and England –Counter Reformation.

Unit III:

The Emergence of Nationalism and Rise of Nation States–Absolute Monarchy–Commercial Revolution and Mercantilism – Ascendancy of France –Cardinal Richelieu and Mazarin.

Unit IV:

The Age of Enlightened Despotism in Europe. (a) Louis XIV of France - (b) Frederick the Great of Prussia - (c) Peter the Great of Russia.

Unit V:

Growth of Parliamentary Institutions in England – Glorious Revolution.

Books for Reference:

- | | | |
|--------------------------|---|--|
| 1. Hallam | - | Europe during the Middle ages |
| 2. Emerton | - | Medieval Europe |
| 3. Symonds J.A | - | Short History of Renaissance in Italy |
| 4. Lunsay T.M. | - | A History of the Reformation 3 volumes |
| 5. Thomson J.W. brothers | - | The civilization of the Renaissance |
| 6. Philp Hughes | - | The Reformation in England |
| 7. Bertran Lee Walt E.T | - | Reformation writing of Martin Luther |

**B.A. HISTORY
SEMESTER III
ALLIED COURSE III**

PUBLIC ADMINISTRATION I

Code No: 18K3HAH3

Hours:4

Credit:3

UNIT- I:

Concepts of Public Administration – Meaning – Nature –Scope – Philosophy – Public and Private Administration – Art or Science

UNIT- II:

Organization; Meaning – Various Theories – Bureaucratic – Classic - Scientific Management – Principles – Hierarchy – Span of Control – Unity of Command - Human Relations.

UNIT- III:

Chief Executive in India – President – Prime Minister –Cabinet - Functions – Prime Minister’s Office - Central Secretariat – Ministries – Ministry of Home affairs – Ministry of External Affairs - Ministry of Defense – Departments - White House Office (U.S.A).

UNIT -IV:

Public Undertakings and Commissions – Finance Commission – UPSC – TNPSC - Backward Class Commission, Official Language Commission – Significance of Public Undertakings – Public Corporations – Their Problems – Ministerial Control and Corporations Accountability to Parliament – Board – Railway Board.

UNIT- V:

Field Administration: Importance of Field Organization – Area Head Quarters and Field Agencies Relationship – Examples of Foreign Relationship – Territorial and Functions – Dictionary – Line and Staff Agencies in U.S.A - England and India.

Books for Reference:

- 1. Herbert A Simon, Donald W. Smithburg and Victor Thombson – A Public Administration.**
- 2. Fisty, Mustein Mark – Elements of Public Administration.**

**B.A. HISTORY
SEMESTER III
NME1
HISTORY OF FREEDOM MOVEMENT IN INDIA
FROM 1885 TO 1947 C.E.**

Code No.18K3HEL01

Hours:2
Credit:

Unit I:

Rise of Nationalism in India – Foundation of Indian National Congress – Surat Split -Moderates and Extremists.

Unit II:

Partition of Bengal – Swadeshi Movement – Foundation of Muslim League and Communal Politics – Home Rule Movement – Tilak and Annie Besant – Rowlat Act – Jalianwala Bagh Tragedy – Khilafat Movement.

Unit III:

Gandhian Era – Non - Co-operation Movement – Swarajist Party –C.R.Das and Motilal Nehru – Simon Commission – Nehru Report – Civil Disobedience Movement – Round table Conferences - Communal Award – B.R.Ambedkhar – Poona Pact.

Unit IV:

Second World War and Resignation of Congress Ministry – Cripp’s Mission – Quit India Movement – Subash Chandra Bose and I.N.A. – Cabinet Mission Plan – Mountbatten Plan – Redcliff Award - Partition of India.

Unit V:

Role of Tamil Nadu in Freedom Movement: Swadeshi Movement – Extremist Politics: V.O.Chidambaram , Subramania Bharathi and Subramania Siva – Swarajist Experiment and Sathiyamoorthy – Salt Satyagraha and Rajaji, E.V.R – Quit India Movement – K.Kamaraj.

Books for Reference:

- 1. A.R.Desai – Social Background of Indian Nationalism.**
- 2. Bipin Chandra – The Rise and Growth of Economic Nationalism in India.**
- 3. Pattabi Sitaramaiya – History of Indian National Congress.**
- 4. Tara Chand – History of Freedom Movement in India Vol. I to IV.**
- 5. Abdulkalam Azad – India Wins Freedom.**
- 6. Ahluwalia – Freedom Struggle in India (1858 – 1909).**
- 7. Venkatesan G – History of Freedom Movement in India.**

**B.A. HISTORY
SEMESTER III
SELF STUDY I
PRINCIPLES AND METHODS OF MUSEOLOGY**

**Code No.18K3SSH1
Credit:5**

UNIT I

Definition - Aim and Scope of Museology.

UNIT II

Different Kinds of Museums – Archaeological Natural History - Industrial, Technological.

UNIT III

Indian Legislative Measures Relating to Museum Objects – Treasure Tro Act – Ancient Monuments and Sites Preservation Act – Antiquities Export Control Act - Antiquities Registration Act.

UNIT IV

Acquisition an Display of Objects – Preparations of Pots, Register and Other Documents.

UNIT V

Museum Organizations and Management – Security Measures and Upkeeps – Preservation and Conservation of Museum Objects.

BOOK OF REFERENCES

- 1. Basu J.N: Indian Museums Movement.**
- 2. Gilman, B.I.: Museum Ideals, Purpose and Method.**
- 3. Markham, S.F. and Hargreaves: Museum of India.**
- 4. Murray, D.:Museums, Their History and Use (3 Vols).**
- 5. Satya Prakash: Museum and Society.**
- 6. Grace Morley: Museum To-day.**
- 7. Sircar, H.: Museums in India.**
- 8. Zahir, M.: Museums Management.**
- 9. Journal of Indian Museum – Vol.71 and relevant volumes.**
- 10. Anil Roy Choudhry: Art, Museum Documentation and Practical Training.**

**B.A. HISTORY
SEMESTER IV
CORE COURSE V
HISTORY OF INDIA FROM 1858 TO 1947 C.E.**

Code No: 18K4H07

**Credit:5
Hours:5**

UNIT - I:

India under the Crown – Lord Canning to Curzon – policy towards Afghanistan and Burma - Afghan Wars – Third Burmese War.

UNIT- II:

India under British Rule – Social and Religious Reform Movements –Foundation of INC Moderates - Extremists - Swadeshi Movement – Famine Policy – Education Policy.

UNIT - III:

Non Co-Operation Movement – Civil Disobedience Movement - Quit India Movement - Moutbatten plan – Partition of India.

UNIT - IV:

Constitutional Development – Govt of India Act 1858 – Indian Council Acts of 1861 and 1892 – Minto Morley Reforms 1909 – Montague – Chelmsford Act 1919 - Govt of India Act of 1935 – India Independence Act of 1947.

UNIT - V:

Growth of Local - Self Govt Lord Rippon – Growth of Trade and Commerce – Industry and Agriculture – Famine Policy and Education Policy.

Books for Reference:

- 1. R.Sathyannathier – Political and Cultural History of India ,Vol .III**
- 2. R.C.Agarwal – Constitutional History of India and National Movement**
- 3. R.C.Majumdar – An Advanced History of India**
- 4. S.R.Sharma - Constitutional History of India**
- 5. P.E.Roberts – History of British India**
- 6. Hiren Mukerjes – Indian Struggle for Freedom**

**B.A. HISTORY
SEMESTER V
CORE COURSE X
HISTORY OF U.S.A. FROM COLONISATION TO 1865 C.E.**

Code No: 18K5H10

Hours:5

Credit:5

UNIT- I:

The Geographical Discoveries – Colonisation - 13 Colonies of England – American war of Independence – The treaty of Paris, 1783.

UNIT - II:

The Making of the Constitution – George Washington’s Presidency – John Adams.

UNIT - III:

Jefferson’s Administration – Madison and the war of 1812 – James Monroe and the era of Good feelings – Monroe’s Doctrine.

UNIT- IV:

Andrew Jackson’s Presidency – Jackson and his Democracy - Westward movement –Purchase of Louisiana – Acquisition of Florida - The issue of Slavery in American Politics.

Unit - V:

The Civil War – 1860 to 1865 – Causes, Course and the Results of Civil War – Abraham Lincoln – Post war Reconstruction.

Books for Reference:

1. C.P.Hill - A History of the United States
2. H.B.Parkes - A History of the U.S.A.
3. S.E.Norrison – Oxford History of the American People
4. Nerins and Commager - Short History of American People
5. W.Miller - A History of the United States
6. K.nambi Arroran - A History of the U.S.A.(Tamil)
7. Dr.J.Thiyagarajan - A History of the U.S.A.(Tamil)
8. N.Subramanian - A History of the U.S.A.

**B.A. HISTORY
SEMESTER V
CORE COURSE IX
HISTORY OF INDIA FROM 1947 TO 1997 C.E.**

Code No: 18K5H09

Hours:5

Credit:5

UNIT - I:

Partition of India – Integration of the Indian States – Kashmir Problem.

UNIT - II:

Nehru Era – Reorganization of States – Planning Commission – Industrialization – Development of Science and Technology – Green Revolution – Foreign Policy.

UNIT - III:

Lal Bahadur Shastri – Indira Gandhi – J.P. Movement – Emergency – Janatha Party and Moraji Deasi – Rolling Plan – Reemergency of Indira Gandhi- Nationalization of Bank – Blue Star Operation.

UNIT - IV:

Rajiv Gandhi- New Economic Policy - New Education Policy – 64th Amendment – Foreign Policy - India Sri Lanka Accord – IPKF.

UNIT - V:

National Front Government – V.P.Singh – Mandal Commission – P.V.Narasihma Rao- Internal Reforms – Cauvery Water Issues – 73rd Amendment – Foreign Policy – United Front Government – Gujral Doctrine - Common Minimum Programme.

Books for Reference:

1. A.Appadurai – India Studies in Social and Political Development, 1917- 1967.
2. CD.Deshmukh –Economic Development of India 1946-56, Bombay Asia Publishing House, 1957
3. Drier berg and Sarala Jagan Mohan – Emergency in India,Delhi,1975
4. Kuldip Nayar – India After Nehru, Vikas Publishing House, New Delhi
5. Bipan Chandra et .A.I., - India Since Independence Viking, New Delhi
6. Manisha – Profiles of Indian Prime Ministers, A Mittal Publication, New Delhi, June 2004.
- 7.Venkatesan – Contemporary India, VC publications, Rajapalayam, March 2005.

**B.A. HISTORY
SEMESTER IV
CORE COURSE VIII**

HISTORY OF MODERN EUROPE FROM 1789 TO 1945 C.E.

Code No: 18K4H08

**Hourse:5
Credit: 5**

UNIT I:

French Revolution Causes – Course – Results - Emergence of Napoleon Bonaparte – Expansion – Consolidation and Downfall.

UNIT - II:

Vienna Congress - Metternich – Revolution of 1830 and 1848 – Industrial Revolution.

UNIT - III:

France under Second Republic and Second Empire - The Third Republic - Napoleon III - Domestic and Foreign Policy.

UNIT - IV:

Europe between (1871-1914) – Unification of Italy and Unification of Germany – Bismarck diplomacy and System of Alliances – Eastern Question – Greek War of Independence, Russian Revolution.

UNIT - V:

The First world War –Causes & Results – League of Nations – Hitler – Mussolini – Second World War - U.N.O.

Books for Reference:

1. G.B.Geoch – History of Modern Europe(1879 – 1919)
2. V.D.Mahajan – History of Modern Europe(Since1879)
3. C.D.Hazen – Modern Europe upto 1945
4. H.A.L.Fisher – History of Europe
5. V.M.Krishnamoorthy – A Text Book of History of Modern Europe
6. A.J.Grant & Herlad & Temporally – Europe in the 19'th Century (1789 – 1950)
7. B.V.Rao - History of Modern Europe(1779 – 1992)
8. N.Jayabalan - History of Europe
9. C.D.Ketelby – History of Modern Time From 1789.
10. Thilagavathi Jegadesan - History of Europe Since 1789
11. Rajagopal - History of Europe Since 1500

**B.A. HISTORY
SEMESTER IV
ALLIED COURSE IV
PUBLIC ADMINISTRATION II**

Code No:18K4HAH4

**Hours:4
Credit:3**

UNIT - I:

Management and Leadership, Meaning, Importance of Management, its Function - Authoritarian and Democratic Leadership – Qualities and Functions of the Leadership.

UNIT - II:

Policy- Formation and Decision Making: Significance – Policy Formation in India – Decision Making – Meaning – Nature – Processes and Problems.

UNIT - III:

Bureaucracy and Civil service: Bureaucracy – Meaning and Types – Merits and Demerits – Civil Service: Meaning - Functions – Civil Service in India – Central and States.

UNIT - IV:

Recruitment and Training – Recruitment Qualifications – Civil Service Examinations –TNPSC – Training Objectives - TNPSC Training Institutions in India.

UNIT - V:

Conduct rules – Conduct and Discipline – Disciplinary rules – Action.

Books for Reference:

- 1. Herbert A,Simon, Donald W.Smithburg and Victor**
- 2. Fitzz, Mustier Marx – Elements of Public Administration.**

**B.A. HISTORY
SEMESTER IV
NME2
PANCHYAT RAJ WITH SPECIAL REFERENCE
TO TAMIL NADU**

Code No: 18K4HELO2

**Hours: 2
Credit:2**

UNIT - I:

Concept of Panchayat Raj – Self – Governing Villages in Tamilnadu –Local Self Government During the Chola Period– Local Self – Government Under the British

UNIT- II:

Mahatma Gandhi’s concept of Panchayat Raj – Vinopahji’s Views on Panchayat Raj Gramadhan and Boomidhan Movement –Balwantra Ray Metha’s Committee, Asok Matha’s Committee – Madras Panchayat Act (1958).

UNIT- III:

Panchayat Administration:BDO and Extension Officials Grama Seva - Panchayat Development Under Five Year Plans.

UNIT - IV:

Provisions of Tamil Nadu Panchayat Raj Act,1994 – Panchayat Raj Election’s (1996-2001) Performance

UNIT- V:

Women and Panchayat System in Tamil Nadu - Role of Women in Panchayat Raj –SHG Empowerment of Women.

Books for Reference:

1. Sachdheva and Durga – Simple Study of Local Self Government in India
2. S.R.Maheswari and SriRam Maheswari - Local Government in India
3. States of Panchayat Raj in the states and Union Terractories of India ,2000,
4. New Delhi, Institute of Social Sciences, 2000.
5. New Panchayat RajAct-1994 – Pass it in TamilNadu Govt Three System – Powers of President Council members – Power of Panchayat Union Chairman – Dist Panchayat - Panchayat election in 1996 at 2001 – and its implication.

**B.A. HISTORY
SEMESTER IV
SELF STUDY II
INDIAN HISTORY FOR COMPETITIVE EXMINATIONS**

Code No: 18K4SSH2

Credit:5

Unit – I

Ancient Indian History: Geographical Features of India – Indus valley Civilization – Vedic Age – Jainism and Buddhism – Alexander the Great – Mauryan Empire – Harsha – Kingdoms of the South

Unit – II

Medieval Indian History: The Delhi Sultanate – Slave Dynasty – Khijis – Tughluqs – Mughals

Unit – III

Modern Indian History: East India Company – Governor Generals of India – Viceroys and their Policies.

Unit- IV

The Indian National Movement: South Indian Rebellion – Vellore Mutiny – Sepoy Multiny of 1857 – Emergence of Indian National Congress – Gandhian Era – Non-cooperation Movement – Salt Satyagraha – Civil Disobedience Movement – Quit India Movement – Independence.

Unit – V

National leaders Gandhi – Jawaharial Nehru – Rabindranath Tagore – Ambedkar – Their Ideas and Their Contributions to Nation.

TEXT BOOK(S):

1. Agni Hotri. V.K., 'Indian History', Allied Publishers Ltd., New Delhi. 2000.

BOOK(S) FOR REFERENCE:

1. Bipan Chandra, '*India's Struggle for Independence*', New Delhi, 1998.
2. Elphinstone Mount Stuart, '*A History of India*', Oxford Publishers,, London, 1911
3. Haig, Sir Woolsey, '*Cambridge Histroy of India*', I 7 II Vol, Cambridge, 1928.
4. Majumdar, R.C., '*Advanced History of India*', Calcutta, 1978.
5. Thappar, Romila, '*Ancient History of India*', Penguin, New Delhi.
6. CSPE Review Book of History, New Delhi, 1997.
7. Man Mohan Nanda (Publishers), '*National Movement in India*', New Delhi, 1995.

**B.A. HISOTRY
SEMESTER V
CORE COURSE XI
HISTORY OF CHINA AND JAPAN FROM 1894 TO 1970 C.E.**

Code No.18K5H11

**Hours:5
Credit:5**

UNIT –I

First Sino-Japanese War - Hundred Days Reforms- Open Door Policy— Boxer Rebellion – Manchu Reform Movement - The Revolution of 1911-Yuan-Shi-Kai’s Presidency - Dr. Sun-Yat-Sen.

UNIT-II

China and World War I - Paris Peace Conference - May 4th Movement-Komintang Party and Chinese National Government – Chiang –Kai – Shek –Civil War.

UNIT-III

Rise of Mao - Tse-Tung - His Early Life - Long March - New Democracy- Cultural Revolution – Administration of Mao- Peoples Republic of China - Chou-En-Lai- Foreign Policy of Communists China (1949-1970).

UNIT-IV

Japanese Imperialism - Anglo-Japanese Alliance - Russo - Japanese War 1904-1905 -Japan and First World War - Twenty One Demands – Washington Conference - Manchurian Crisis.

UNIT-V

Rise of Militarism in Japan – The RBT Axis - Second Sino – Japanese War-Japan and Second World War - Post War Japan – Japanese New Constitution - Industrial - Agricultural - Socio-Economic and Cultural Developments -Foreign Policy of Japan (1945-1970).

References

1. Clyde and Beers, The Far East, Prentice Hall In, New Jercey, 1960.
2. K.M.Panikar, Asia and Western dominance; a survey of Vasco Da Gama Epoch of Asian History, 1498-1945, New York, 1969.
3. D.G.E.Hall, The History of South East Asia, Palgrave Macmillan, Sydney, 1981.
4. R.P.Sinha & Dandekar, South East Asia and people struggle and political identify, Kanishka Publishers, New Delhi, 1998.
5. B.V.Rao, History of Asia from early time to the present, New Dawn press, Delhi, 2006.

Text Book -1

R.Velayuhtam, West ASIA 1800-1970 (Tamil).

**B.A. HISTORY
SEMESTER V
CORE COURSE XII
HISTORY OF RUSSIA UPTO 1991 C.E**

**Hours:5
Credit:5**

Code No.18K5H12

UNIT-I

Rise of Russia-Peter the Great – Catherine II-Alexander I – Reforms and Foreign Policy – Nicholas I – His Reforms – Crimean War.

UNIT –II

Alexander II - Reforms - Growth of Literature - External Policy- Revolutionary Movements – Poland Crisis – Russo - Turkish War – Alexander II – Internal and External Policy.

UNIT –III

Nicholas II-The decline of Monarchy – Russo-Japanese War-The Revolution of 1905-Formation and Functions of Duma.

UNIT-IV

Russia and the First World War – Russian Revolution of 1917-Nicholai Lenin – Civil War in Russia – War Communism – New Economic Policy.

UNIT-V

Formation of Soviet Union- Joseph Stalin – Five Year Plan-Foreign Policy-The Constitution of 1936 – USSR and the Second World War – Cold War-Khrushchev –Brezhnev – Michail Gorbacheve – Disintegration of USSR.

References:

- 1.Wadhvani, Rise of Soviet Union to World Power.**
- 2. Mackancei & Caren, History of Russia.**
- 3.N.Subramanian, History of Russia, ENNES Publications, Madurai.**
- 4.R.C.Majumdar & A.N.Srivastava- History of Russia and USSR, Surjeet Book Depot, New Delhi, 1996.**

**B.A. HISTORY
SEMESTER V
MBE1
ARCHAEOLOGY**

Code No: 18K5HELH1

**Hours: 4
Credit: 3**

UNIT - I:

Archaeology: Its Meaning and Importance – Archaeology as a Source of History – Purpose of Archaeology - Kinds of Archaeology.

UNIT - II:

Dating Methods: Exploration and Excavation - Radio Carbon – Thermoluminescence dating – Archaeomagnetism – Potassium – Argon Dating – Pollen Analysis or Polynology – Dendrochronology.

UNIT - III:

Palaeolithic – Megalithic and Mesolithic Cultures in India.

UNIT - IV:

Chalcolithic Culture in India – Excavations of Harappa – Iron Age Culture – Ware Cultures of India – Archaeological Survey of India.

UNIT - V:

Epigraphy: Its Meaning and importance – Tamil Brahmi - Importance of Numismatics – Coins of the Maurya, Guptas, Chola, Foreign Coins - Greek Coins - Roman Coins.

Books for Reference:

1. G.Childe – Introduction to Archaeology
2. H.D.Sankalia – Indian Archaeology Today
3. Mortimer Wheeler – Early India & Pakistan
4. D.C.Sirear – Indian Epigraphy
5. R.Venkataraman & N.Subramanian – Tamil Epigraphy-A Survey
6. T.V.Mahalingam – Early South Indian Palaeography
7. C.Brown – Indian Coins
8. A.Cunningham – Coins of Ancient India from Earliest times to the 7th Century A.D.

**B.A. HISTORY
SEMESTER VI
CORE COURSE XIII
HISTORY OF SCIENCE AND TECHNOLOGY**

Code No: 18K6H13

Hours: 6
Credit: 5

UNIT - I:

Meaning, Science and Technology in Ancient Greece: Pythagoras, Hippocrates, Archimedes - Rome: Galen and Ptolemy-Arab Science: Avicenna.

UNIT- II:

Renaissance and Birth of Modern Science: Astronomy: Copernicus - Kepler - Galileo - Medical Science: Andreas Vesalius - William Harvey - Joseph Lister - Progress in Technology: Gutenberg - Leonardo da Vinci - Physics: Issac Newton - Biological Sciences: Charles Darwin.

UNIT -III:

Foundation of Scientific Academies: Royal Society in London – French Royal Academy of Sciences. Inventions and Technological Revolutions: Textile Industry – Transportation: Communication - Telegraph: Thomas Alva Edison.

UNIT- IV:

Science and Technology in the 20th Century: Albert Einstein – Radio – Television – Computer.

UNIT - V:

Progress of Science and Technology in India: Aryabhata, Varahamihira, Charaka and Sushrudha – J.C.Bose – Ramanujam - C.V.Raman – Hargobind Khorana – S.Chandrasekar-Abdul Kalam.

Books for Reference:

- | | | |
|---------------------|---|--|
| 1. J.D.Barnal | – | Science in History Vols.1-4.Chennai: Earthworm Publications, 1990 rept. |
| 2. J.Dharmaraj | – | History of Science and Techonology. Sivagasi: Tensi Publication,1997(Tamil). |
| 3. Jeyaraj Varghees | - | History of Science and Technology. Uthamapalayam:Anns Publications,1998. |
| 4. Rajaram,Kalpana | – | Science and Technology in India, New Delhi: Spectrum India,1993. |
| 5.R.Venkatraman | - | History of Science and Technology. Madurai: N.S. Publications, 1999. |

**B.A. HISTORY
SEMESTER VI
CORE COURSE XIV
INTRODUCTION TO HISTORIOGRAPHY**

**Hours:6
Credit:5**

Code No.18K6H14

UNIT-I

Definition of History and Historiography – History: Nature, Scope and Value- History as Science- History as Art.

UNIT-II

Kinds of History – History and other Social Science: History and Geography – History and Political Science – History and Economic etc.

UNIT-III

Practitioner of History: Greece – Rome- Herodotus – Theological Interpretation: St.Augustin- Medieval Arab Historian : Ibn Kaldun-Modern Western Historian: Leopold Von Ranke - G.M.Travellion-A.J.Toynbee.

UNIT-IV

Historiography and Historians of India: Puranas and History and Buddhist and Jain Historiography- Kalhana- Alberuni-Amir Khusru-Barani - Ibn Batuta - Abdul Fazl-Modern Indian Historian: Jadunath Sarkar-J.S.Mill-V.A.Smith -D.D.Kosambi - South Indian Historians - K.A.Neelakanda Sastri - K.K.Pillai.

UNIT-V

Historian at work: Selection of Topic-Review of Literature – collection of Data: Primary and Secondary-Internal and External Criticism – Chapterisation – Bibliography – Foot Notes , Chart, Table and Appendices- Computation and Quantitative analysis –presentation.

References:

1. Ali Sheik – History its Theory and Methods, Macmillan, New Delhi, 1980.
2. E.H.Carr-What is History, Harmonids worth, 1977.
3. S.Clark, The Annales Historian in Q.Skinner E.D., The return of Grand Theory in the Human Sciences Cambridge, 1985.
4. R.G.Collingwod, The Idea of History, Oxford, 1977.
5. Dictionary of the History of Ideas Vol.I II, III, New York, 1993.
6. Arvind Sharma, Our Religions, Charles Scribner’s Sons, New York, 1993.
7. S.Manickam, Theory of History and Method of Research, Paduman Publications, Madurai.
8. Aurther Marwick, The Nature of History, Macmillan, Hong Kong. 1984.

**B.A. HISTORY
SEMESTER VI
CORE COURSE XV
HISTORY OF ENGLAND FROM 1603 TO 1760 C.E.**

Code No: 18K6H15

**Hours: 6
Credit:5**

UNIT - I:

The Stuart Period – Stuarts – James I – Relations with The Parliament – Charles I – Relations with The Parliament – The Eleven Years tyranny – The Long Parliament – Religion and Foreign Policy of Early Stuarts – The Civil War.

UNIT- II:

The Common Wealth and the Protectorate – Cromwell - Domestic foreign Policy – Constitutional Experiments – The Restoration.

UNIT - III:

The later Stuarts – Charles II – Home and Foreign Policy - Origin of the Party System in – James II Glorious Revolution.

UNIT - IV:

The Revolution and Settlements in England – Ireland and Scotland – The Bill of Rights – The Act of settlements – William III and Mary- Foreign Policy – Party Government - Queen Anne - Act of Union(1707) Growth of Party System and Cabinet Government - Social - Literary Scientific Economic Conditions of 18th Century England.

UNIT - V:

The Hanoverian Period – George I – Sir Robert Walpole – Domestic and Foreign Policy –George II – The war of Austrian Succession – Pitt the Elder – The Seven Years war – The Cabinet System Under the First Two Georges.

Books for Reference:

- 1. R.J.White – A Short History of England**
- 2. K.Feiling - History of England**
- 3. G.M.Travelyan - History of England 3 parts**
- 4. R.Carter and Meals – A History of Great Britain**
- 5. K.R.Hanumanthana – Political and Constitutional History of England**
- 6. Ramachandran - Constitutional History of England in Tamil**

**B.A. HISTORY
SEMESTER VI
MBE2
JOURNALISM**

Code No: 18K6HELH2

**Hours: 5
Credit: 4**

UNIT - I:

Definition of Journalism, History of Journalism – Role of Journalism in Democracy – Freedom of Press.

UNIT- II:

Reporting - News value – Kinds of News – Reporter’s Functions and Public Meetings – Political Activities – Sports and Cultural Activities.

UNIT - III:

Different forms of Writing- Professional and Freelance Writing – Book Review – Editorial Writing.

UNIT - IV:

Editing – Editor – Role of Editors – Proof Reading – Use of Symbols – Page Makeup.

UNIT- V:

Departments in Newspaper Organization – Press Laws – Defamation – Contempt of Court – Official’s Secrets Act.

Books for Reference:

- 1. Ahuja – Introduction to Journalism**
- 2. Ramachndra Iyer – Quest for News Macmillan Edition**
- 3. George Hongenberg – The Professional Journalist,Oxford,IBII**
- 4. M.Kamath – Professional Journalism**
- 5. S.Natarajan – A History of the Press in India**
- 6. P.Aditanar – Hand Book of the Reporters,Rani Muthu,Chennai,1978**
- 7. S.Kalaivani – Tactics of Journalism Parasakthi Publication,Kuttralam,1982**
- 8. M.P.Gurusamy – Art of Journalism,2002**
- 9. Somalay – Tamil Journals,Chennai University,Chennai,1975**
- 10. K.Balasubramanian – Introduction of Journalism ,
Deviprasad Publication , Pattukkottai , 2003.**

**B.A. HISTORY
SEMESTER VI
MBE3
HUMAN RIGHTS**

Code No: 18K6HELH3

**Hours:6
Credit:4**

UNIT - I:

Definition – Theories and Development of Human Rights – Natural Rights in Ancient Medieval and Modern Period - Magna Carta.

UNIT - II:

Human Rights and the U.N.O. - UN Human Rights Commission – Universal Declaration of Human Rights –International covenants in Civil and Political Rights, in Economic - Social and Cultural Rights.

UNIT - III:

European Convention on Human Rights – Helsinki Charter – Human Rights and Non – Governmental Organizations – Amnesty International – Red Cross – People’s Watch.

UNIT - IV:

Evolution of Human Rights in India through the Ages – Gandhian Thoughts and Human Rights – Fundamental Rights - Duties –National and State Human Rights Commission.

UNIT - V:

Women’s Rights – Children’s Rights – Bonded Labour - Capital Punishment –Human Rights Violations and Remedies.

Books for Reference:

- 1. Dr.C.Ayyadurai - Human Rights(Tamil)**
- 2. V.R.Krishna Iyar - Human Rights and Law Indore Vedpal Law House,1984**
- 3. Patil,V.T and T.S.N. Sastri,eds. – Studies in Human Rights, Pondichery,P.R.,**
- 4. Sivagami Paramasivam – Studies in Human Rights,Salem,2000.**
- 5. A.Subbaian - Human Rights, New Delhi,2000**
- 6. A.Subbaian - Human Rights and Complaint System**
- 7. A.Subbaian - Manitha Kudumbathin Matrandiyatha
Urimaigal, Chidambaram, 1989.**

M.A. HISTORY
SEMESTER I
SOCIO – ECONOMIC AND CULTURAL HISTORY OF INDIA
UPTO 1206 C.E.

Code No.18KP1H01

Hours:6
Credit:5

UNIT I

Geographical Features – Sources - ,Indus Valley Civilization – Characteristic Features –Vedic Civilization – Jainism – Buddhism – Mahajanapadas.

UNIT II

The Mauryan Empire – Administration – Religion – Art and Architecture – Sungas Kanvas – Karavela of Kalinga – Kushans – Gandhara – Mathura Schools of Art.

UNIT III

The Gupta Age – Administration- Socio and Economic Condition- Literature – Revival of Hinduism – Arts – Decline of Guptas.

UNIT IV

Harshavardhana – Administration and Social Life – History of Deccan – The Satavahanas – The Chalukyas – The Rashtrakutas – Rajputs.

UNIT V:

Society and Culture - Arab Conquest of Sindh – Foundation of Turkish Empire in Northern India – Mohmad of Ghazni and Mohmad of Ghor.

Books for Reference:

- 1. Political and Cultural History of India – Vol. I – R. Sathianathier**
- 2. History of India Vol. I – Thapar, Romilla.**
- 3. Advanced History of India part I – Majumdar, Raychoudry and Datta.**
- 4. New oxford History of India – V.A. Smith.**
- 5. The Wonder that was India – A.L. Basham**
- 6. History of India's past – K.A. Nilakanta Sastri.**
- 7. History of India up to 1206 A.D. (In - India) – M. Prakash**
- 8. History of India Vol. I-Dr. Hari Rao.**
- 9. History of India up to 1206 A.D. (in Tamil) – R. Alalasundaram**
- 10. Indian History Vol. 1-V.M. Krishnamoorthy**
- 11. History of India up to 1207 A.D. – T.S. Ramalingam**
- 12. Introduction to Indian History – D.D. Kosambi**

**M.A. HISTORY
SEMESTER I
SOCIO – ECONOMIC AND CULTURAL HISTORY OF INDIA FROM
1206 TO -1707 C.E.**

Code No. 18KP1H02

**Hours: 6
Credit: 5**

Unit I :

The Delhi Sultanate: Sources – Society, Trade and Commerce – Economic, Education – Religion – Muslim Mystic Movement – Bhakti Movement.

Unit II:

Deccan: Society under the Chalukyas and Hoysalas – Temple Architecture Under the Chalukyas, The Hoysalas and the Kakatiyas.

Unit III

Vijayanagar Empire: Art and Architecture, Literature – Education - Social- Economic Life – Religion – Under the Bhamani Sultans.

Unit IV:

The Mughals: Sources - Society –Economy - Trade and Commerce - Religious Policy - Under the Great Mughals – Mughal Art and Architecture - Sikhism.

Unit V:

The Marathas: Administration – Trade and Commerce Coming of the Europeans: Cultural and Religious activities under the Marathas.

Books for Reference:

- 1. Fergusson James – History of Indian and Eastern Architecture**
- 2. N.S.Gupta – Industrial Structure of India During the Medieval Period**
- 3. M.D.Habib – Politics and Society in Early Medieval Period**
- 4. E.B.Havell - Indian Architecture**
- 5 Irfan Habib – Land Revenue System During the Medieval Period**
- 6.Eswari Prasad – A Short History of Muslim Rule in India**

**M.A. HISTORY
SEMESTER I
SOCIO - ECONOMIC AND CULTURAL HISTORY OF
TAMILNADU FROM SANGAM AGE TO 1800 C.E.**

Code No.18KP1H03

**Hours: 6
Credit: 5**

Unit I:

Sources: Archaeology, Epigraphy, Numismatics , Literature and Foreign Accounts – Sangam Age – Society - Economy and Culture.

Unit II:

Kalabhras Interrugnum - The Pallavas – The Early Pandyas – Society and Economy – Religion – Bhakthi Movement.

Unit III:

The Imperial Cholas –Society– Economy – Religion – Art and Architecture – Fine Arts.

Unit IV:

Society Under the Later Pandyas – Impact of Madurai Sultanate in Tamil Society – Land System - Trade Inland and Foreign – Trade Guilds – Monetary System – Coinage.

Unit V:

Vijayanagar and Nayaks – Society – Economy – Religion – Art and Architecture –Fine Arts.

Books for References:

- | | |
|--------------------------------|--|
| Mahalingam, T.V. | Administration and social life under Vijayanagar, Madras, University 1951 |
| | South Indian policy, Madras University, Madras, 1967. |
| | Kancchipuram in early in early south Indian History, Madras Asia publishing, 1969 |
| Nilakanta Sastri, K.A. | History of South India, Madras: OUP 1980 |
| Nilakanta Sastri, K.A. | The Cholas, Madras University, 1978 |
| Pillai K.K | Social History of the Tamils, madras, Madras University, 1975 |
| Srinivasan Iyengar P.T. | History of Tamils A Madras, C. Kumaraswamy and Sons, 1929 |
| Sathanatha Aiyar R. | History of the Nayaks of Madurai, OUP, 1924 |
| Srinivasan, K.R. | Temples of south India, New Delhi. 1995. |

**M.A. HISTORY
SEMESTER I
WORLD CIVILIZATIONS up to 1453 C.E. (Excluding India)**

Code No.18KP1H04

**Hours: 6
Credit: 5**

UNIT I :

River Valley Civilization - Nile- Euphrates and Tigris – Hwang – Ho – Their Legacies – Development of Arts, Writings – Economy, Society and Religious belief.

UNIT II :

Greece – City States – Political Experiments – Age of Pericles – Legacy of Greece.

UNIT III :

Roman Civilization – Roman Republic – Julius Ceaser- Augustus Ceaser - Contributions of Romans to the World Civilization.

UNIT IV :

Rise and Growth of Major Religions – Confucianism – Christianity – Zoroastrianism – Islam.

UNIT V:

Middle Ages in Europe – The Church – Monastic Orders – The Crusades – Feudalism – Guild system - Universities.

Books for Reference:

- | | |
|-------------------------------|---------------------------------------|
| 1. H.A.L. Fisher, | A History of Europe, Vol. I |
| 2. V.G. Gordan Childe, | What happened in History? |
| 3. W. Watsom, | Early Civilization in China |
| 4. Allen Gardinal, | Egypt at pharaoh |
| 5. J.E. Swain, | The world Civilization |
| 6. Wall Bank Taylor, | History of World Civilization |
| 7. H.G. Wells | A short History of the world |
| 8. Arnold Taynbee | A study of world civilization. |

**M.A.HISTORY
SEMESTER I
HUMAN RIGHTS**

Code No.18KP1HELH1

**Hours : 6
Credit : 4**

UNIT I:

Definition of Human Rights –Meaning –characteristics – Kinds Nature – Theories of Human Rights.

UNIT II:

UNO and Human Rights –International Covenant on Civil and Political Rights - International Covenant on Economic, Social and Cultural Rights.

UNIT III:

Fundamental Rights, Fundamental Duties and The Directive Principles of Indian Constitution – Role of Government in Protecting Human Rights in India –Public Interest Litigation- Writs.

UNIT IV:

Contemporary Challenges: Child Labour –Women Rights – Bonded Labour –Rural and Urban Labours – Problem of Refugees – Capital Punishment.

UNIT V:

National and State Human Rights Commissions: Functions - Problems and Perspective –Activities – Minorities Rights Commissions.

Book for Reference:

1. Leah Levin, Human Rights.
2. V.R.Krishna Iyer, Dialectics and Dynamics of Human Rights in India.
3. C.J.Nirmal, Human Rights in India.
4. Upendra Baxi, The Rights to be Human.
5. A.R.Desai, Violations of Democratic Rights in India
6. Sivagami Parasmaviam – Human Rights – A study.

**M.A. HISTORY
SEMESTER II**

Code No.18KP2H05

**Credit:5
Hours:6**

HISTORY OF INDIA FROM 1707 TO 1857 C.E.

UNIT I

The Later Mughals – Decline of Mughals – Peshwas – Nadirshah invasion – Third Battle of Panipat.

UNIT II

Advent of Europeans in India – The Carnatic Wars and its results – Battles of Plassey and Buxar – Administration of Clive- Warren Hastings- Cornwallis and Wellesly - Anglo – Mysore Relations.

UNIT III

Society in the 18th Century – Economic condition – Spread of Western Education – Down ward filtration Theory – Woods Despatch – Industrial Growth – Decline of Village Industries.

UNIT IV

Lord Amherest to Dalhousie – Maharaja Ranjit Singh – Anglo Sikh Relations – Reforms of William Bentinck – Dalhousie’s Imperial policy and reforms – The Great Revolt of 1857.

UNIT V

Constitutional Developments – Regulating Act of 1773 – Pitts India Act of 1784 – Charter Acts 1793, 1813, 1833 and 1853.

Books of Reference:

- | | | |
|----------------------------|---|--|
| 1. R.Sathyanathier | - | A Political and Cultural History of India, Vols.II, III. |
| 2. P.E.Roberts | - | History of British India. |
| 3. R.C.Majumdar and Others | - | An Advanced History of India. |
| 4. J.NSarkar | - | Fall of Mughal Empire. |
| 5. Chabra | - | Advanced History of India. |
| 6. V.A.Smith | - | New Oxford History of India. |

**M.A. HISTORY
SEMESTER II
SOCIO – ECONOMIC AND CULTURAL HISTORY OF
TAMILNADU FROM 1800 C.E.TO THE PRESENT DAY**

Code No. 18KP2H06

**Hours:6
Credit:5**

Unit I:

Social conditions: Caste system – Position of women – Sati – Child marriage –Devadasi system – Female Infanticide – Religion - Saivism – Vaishnavism -Christianity - Islam.

Unit II:

Economic condition : Land system – Early Land Revenue Settlements - Zamindari – Ryotwari - Agriculture and Industry .

Unit III:

Indigenous Institutions of learning – Introduction of Western education – Role of Missionaries and Modern Education – Professional and Technical Education – Female Education

Unit IV:

Socio – Religious Movements: Theosophical society - Vaikundasamigal - Ramakrishna Mission - Vallalar - Non Brahmin Movement – Self Respect Movement – Temple entry – Dalit Movements.

Unit V:

Contemporary Tamil Nadu: - Agriculture and Industrial Development – Social Welfare measures under Congress .

Books for Reference:

- | | |
|---|---|
| 1. Arasarthinam R. | - Trade in Coramandel Cost, Sydney oxford. |
| 2. Baker, C.J. (1976) | - The Politics of south India 1920 –1937,Cambridge
Tamil Country Side. OUP, New Delhi. |
| 3. Beteclle A.(1965) | - Caste, Class and power : Chancing Patters of
stratification in a Thanjavur Village, barkley. |
| 4. Beck, B.E.F. (1970) | - The right – left division of south Indian Society’
Journal of Asian Studies. |
| 5. Geetha V. &S.V. Rajadurai | - Dalits and Non–Brahmin consciousness in Tamil Nadu
E.P.W. 25 SEPT. 1993. |

**M.A. HISTORY
SEMESTER II
HISTORY OF EUROPE FROM 1453 TO 1789 C.E.**

Code No.18KP2H07

**Credit:5
Hours:6**

Unit I:

Europe in the End of the Middle Ages – Rise of Nation States – The Geographical Discoveries and Colonisation.

Unit II:

Age of Reason –Renaissance in Italy and other European Countries –Scientific Inventions Humanists Movement – Reformation – Counter Reformation.

Unit III:

The Emergence of Nationalism and Rise of Nation States–Absolute Monarchy-Commercial Revolution and Mercantilism – Ascendancy of France –Cardinal Richelieu and Mazarin.

Unit IV:

The Age of Enlightened Despots in Europe - Louis XIV of France - Frederick the Great of Prussia Peter the Great of Russia – Catherine the Great.

Unit V:

Growth of Parliamentary Institutions in England – Glorious Revolution of 1688 – Age of Enlightenment.

Books for Reference:

1. Hallam - Europe during the Middle ages
2. Emerton - Medieval Europe
3. Symonds J.A - Short History of Renaissance in Italy
4. Lunsay T.M. - A History of the Reformation 3 volumes
5. Thomson J.W. brothers - The civilization of the Renaissance
6. Philp Hughes - The Reformation in England Bertran Lee Walt E.T
Reformation writing of Martin Luther

**M.A. HISTORY
SEMESTER II
HISTORY OF SCIENCE AND TECHNOLOGY**

Code No.18KP2H08

**Hours:6
Credit:5**

Unit I:

Meaning – Science and Technology in Ancient Greece and Rome, Archimedes, Pythagoras - Hippocrates - Arab Science.

Unit II:

Renaissance and birth of Modern Science: Astronomy: Copernicus, Kepler, Galileo - Medical Science: Andreas Vesalius, William Harvey, Joseph Lister - Progress in Technology: Gutenberg, Leonardo da Vinci - Physics: Issac Newton - Biological Sciences: Charles Darwin.

Unit III:

Foundation of Scientific Academis: Royal Society in London – French Royal Academy of Sciences - Inventions and Technological Revolutions: Textile Industry – Transportation and Communication Telegraphs: Thomas Alva Edition.

Unit IV:

Science and Technology in the 20'th Centuary: Albert Einstien – Atomic Theory – Marconi and Radio – Television – Computer – Space Age - Russia and U.S.A.

Unit V:

Progress of Science and Technology in India:Aryabhata,Varahamihira,Charaka and Sushruta – J.C.Bose – Ramanujam - C.V.Raman – Homi Bhaba - Hargobind Khorana – S.Chandrasekar- Abdul Kalam.

Books for Reference:

- 1. J.D.Barnal – Science in History Vols.1-4.Chennai:Earthworm Publications,1990 rept.**
- 2.J.Dharmaraj – History of Science and Technology. Sivagasi:Tensi Publication,1997(Tamil)**
- 3. Jeyaraj Varghees - History of Science and Technology. Uthamapalayam: Anns Publications,1998**
- 4. Rajaram,Kalpana – Science and Technology in India,New Delhi:Spectrum India,1993**
- 5. R.Venkatraman - History of Science and Techonology.Madurai:N.S.Publications,1998.**

**M.A. HISTORY
SEMESTER II
PRINCIPLES AND METHODS OF ARCHAEOLOGY**

Code No.18KP2HELH2

**Hours:6
Credit:4**

Unit I:

Meaning – Definition and Scope of Archaeology – Kinds of Archaeology and Other Disciplines.

Unit II:

Epigraphy – Study of Brahmi – Tamili – Nagari -Vatteluthu Grantha – Selected Inscriptions - Puhalar – Anaimalai – Kalugumalai – Mandagapattu – Keeladi.

Unit III:

Temple Architecture - Pallavas - Cave Temples Five Radhas, Kalugumalai, Vettuvankoil – Pallavas – Pandya style - Cholas Big Temple Gangai Konda Cholapuram, Darasuram Temple.

Unit IV:

Surface Exploration – Methods and Equipments; Objectives, Survey of Pre-History, Proto Historic and Historical Sites – Excavation: Excavation Equipments – Methods of Excavation - Kinds of Excavation – Dating methods - Preservation of Art facts – Study of Numismatics – Role of Museum.

Unit V:

Eminent Archaeologists – James Princeps – Alexander Cunningham – Robert Bruce Foote – Sir John Marshall - Sir Martimer Wheeler - ASI.

Books for Reference:

- | | | |
|-------------------------|---|---------------------------------------|
| 1. K.V. Raman | - | Principles and methods of Archaeology |
| 2. R. Venkataraman | - | Indian Archaeology a survey |
| 3. T. Raja and Rajavelu | - | Tamil Nathil Agayhvaiva |
| 4. T. Mononmani | - | Tholliyal |
| 5. T. Selvanayaki | - | Tholliyal |
| 6. S.R. Balasubramanyam | - | Middle Chola Temples |

**M.A. HISTORY
SEMESTER II
HOSPITALITY MANAGEMENT**

Code No.18KP2SSH1

Credit:5

UNIT I

Hospitality Industry: Definition of Hotel – Evolution of Hotel Industry and its Growth in India – Fervent Types of Hotels – Chains – Classification of Hotels – Stars? Rating system – FHRAI.

UNIT II

Front Office: Introduction – Organization Chart – Various Sections of Front Office and Functions Reservation System – Registration Formalities. Room Plans – Types of Rooms – Tariff – Check in an Heck Out Procedures – Modes of Setting Guest Bill – Room Occupancy Report.

UNIT III

House Keeping: Introduction – Organizational Chart of Housekeeping Department Functions of 1. Executive House Keeper, 2. Floor Supervisors, 3. Public Area Supervisors. 4. Night Supervisors. Types of Cleaning Procedures.

UNIT IV

Catering: Food and Beverage Service Outlets – Different types of Food Service Restaurant Organization. Menu: Definition – Types of Menu – Factors in Menu Planning. Food Production – Chart - Duties and Responsibilities of Kitchen Staff.

UNIT V

Communication In Hospitality Industry: Needed for Communication – Nature of Hospitality Communication – Need of Proficiency in Local and International Languages – Skills in Handling Guests – Social Skill Required for a Receptionist.

BOOK FOR REFERNCE:

1. Gill Pushpinder : *Dynamics of Tourism*, Anmol Publication, New Delhi, 1996.
2. James A. Bardi : *Hotel Front Office Management*

**M.A. HISTORY
SEMESTER III
COLONIALISM AND NATIONALISM IN MODERN INDIA**

Code No.18KP3H09

**Credit: 5
Hours: 6**

Unit I:

Meaning of Colonialism – Colonialism in India: East India Company – South Indian Rebellion – Vellore Mutiny – Revolt of 1857.

Unit II:

Factors Responsible for the Rise of Indian Nationalism – Foundation of Indian National Congress – Moderates – Extremists – Partition of Bengal – Swadeshi movement – The Birth of the Muslim League.

Unit III:

Home Rule Movement - Rowlatt Act and Jallianwala Bagh Tragedy – Non Co-Operation Movement Khilafat Movement – Moplah Rebellion – Simon Commission – Peasant Movements: Champaran, Bardoli – Civil Disobedience Movement

Unit IV:

Round Table Conferences – The Cripps Mission-Quit India Movement – Cabinet Mission – INA - Partition of India.

Unit V:

Freedom fighters of Tamilnadu V.O.Chidambaram – Subhramania Siva, Subramania Bharathi – Vanchinathan, Rajaji , Theerer Sathyamoorthy – Kamaraj.

Books for Reference:

1. Chandra – Bipin; Nationalism and colonialism in Modern India
2. Mjamdar. R.C; The Emergence of Indian National Congress
3. Rajendran. N; nationalist movement Tamil Nadu – 1905-1014
4. Sumit Sarkar : modern India – 1858-1947
5. Rajayyan. K – history of Tamil Nadu from 1565 to 1982
6. Desai. A.R - social background of Indian Nationalism.

**M.A. HISTORY
SEMESTER III
HISTORY OF MODERN EUROPE FROM 1789 TO 1919 C.E.**

Code No.18KP3H10

**Hours:6
Credit:5**

Unit I:

French Revolution – Causes–Course – Results – Napoleon I Bonaparte – Consolidation and down fall.

Unit II:

Congress of Vienna – Era of Metternich- Forces of Conservation and Restoration of Old Hierarchies – Revolution of 1830 and 1848.

Unit III:

France – Third Republic- Napoleon III - Domestic and Foreign policies - Unification of Italy and Germany.

Unit IV:

Bismarck diplomacy and System of Alliances – Eastern Question – Greek war of Independence- The Crimean war – Balkan Wars – Congress of Berlin.

Unit V:

First World War- The Russian Revolution- Paris Treaty – League of Nations.

Books for Reference:

- 1. T.S.Ramalingam - History of Europe (From 1453 to the present)**
- 2. G.B. Geoch - History of Modern Europe (1879 -1919).**
- 3. V.D. Mahajan - History of Modern Europe (Since 1789).**
- 4. C.D.Hazen - History of Europe up to 1945.**
- 5. H.A.L. Fisher - History of Europe**
- 6. V.M. Krishnamoorthy a - A textbook of History of Modern Europe.**
- 7. A.J. Grant & Herald and Temperly - Europe in the 19th Century (1789 - 19150)**
- 8. B.V. Rao - History of Modern Europe (1989 to 1992).**
- 9. N. Jayabalan - History of Europe.**
- 10. DR. R.S. Chaurasia - History of Europe.**

**M.A. HISTORY
SEMESTER III
HISTORIOGRAPHY**

Code No.18KP3H11

**Hours:6
Credit:5**

Unit I:

Definition and Scope Nature and Uses of History - Kinds of History - History: Science or Art? Historical Objectivity – Subjectivity.

Unit II:

History and Other Social Science: History and Geography, History and Economics, History and Psychology, History and Sociology, History and Statistics, History and Political Science, History and Ethics - History and Ancillary Disciplines: Palaeography, Graphology, Sigillography, Archaeology and Manuscript logy.

Unit III:

Western –Historiography -Herodotus, Thucydides, Xenophan, Polibius, Livy, Voltaire, Gibbon, Ranke, Spenglar, Toynbee - French, Historiography; The Annales School - English Historiography - The Subaltern School.

Unit IV:

Indian Historiography - Kalhana, Bana, Alberuni, IbnBatuta, Barani, R.C.Dutt, Bhandarkar, K.P.Jayaswal, J.N.Sarkar, D.D.Kosambi, R.S.Sharma, K.A.NilakantaSastri, T.V.Mahalingam, K.K.Pillai, R.Sathianathiar.

Unit V:

Research Methodology - Selection of Topic - Collection of Data: Primary and Secondary – Internal and External Criticism – Chapterisation – Foot Notes – Bibliography.

Books for Reference:

- 1. N.Subramanian – Historiography and Historical Methods**
- 2. N.Subramanian – Historical Research Methodology**
- 3. N.Subramanian – Historiography**
- 4. R.K.Manjundar & A.L.Srivastva – Historiography(Method of History)**
- 5. K.Rajayyan – History in Theory and Method**
- 6. John C.B.Webster – An introduction to History**

**M.A. HISTORY
SEMESTER III
WOMEN STUDIES**

Code No.18KP3HELH3

**Hours:6
Credit:4**

UNIT-I

Perspectives on Women Studies –Ultra Conservative, Feminist, liberal, Marxist and Radical – Interpreting patriarchy –matrilineal and patriarch orders –Concept of gender justice.

UNIT-II

Condition of women at the advent of the British in India-Male reformers against social civil afflicting women –Legislative measures adopted – Age of Consent Act – Sati and Child Marriage Abolition Acts-Widow Remarriage Act –Devadasi System abolition Act.

UNIT –III

Women as Social Reformers and Freedom Fighters: Panditha Ramabai, Margret Cousin, Annie Besant, Sarojini Naidu, Ambujammal, Muthulakshmi Reddy, Aruna Asaf Ali, Sucheta Kripalini, Captain Lakshmi, Vijalakshmi Pandit, Indira Gandhi and Mother Therasa.

UNIT-IV

Women Movements –Women’s India Association (1917) – National Council for Women (1925) – All India Women’s Conference (1926) –Rights to Franchise –property rights –Hindu Marriage Act and Hindu Succession Act (1956), Social laws on Dowry, divorce, rape and sexual harassment.

UNIT-V

UN Declaration of International Women’s Year (1975) – towards Equality –International Decade of Women –National Women’s Commission –State Women’s Commission –Review of their functioning – Centre for Women’s Studies –Women’s Universities.

Book for Reference:

- | | | |
|--|---|----------------------------|
| 1. Geraldine Forbes | - | Women in Modern India |
| 2. Tara Ali Baig (ed) | - | Women of India |
| 3. Neera Desai and Maithreyi krihnaraj | - | Women and Society in India |
| 4. Pratima Asthana | - | Women’s Movement in India |
| 5. Veeramani K. | - | Periyar on Women’s Rights. |

**M.A. HISTORY
SEMESTER III
ENVIRONMENTAL HISTORY**

Code No.18KP3HELH4

**Hours:6
Credit:4**

UNIT I:

Definition –Nature-Scope and Importance – Need for Public awareness.

UNIT II:

Eco System: Concept of Eco System –Bio Diversity – Deforestation –Afforestation Global Warming –Green House Effect.

UNIT III:

Environmental Pollution –Causes, Effects and Control Measures of : Air Pollution, Water Pollution: Noise pollution – Marine pollution –Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act. Wild Life Protection Act –Forest Conservation Act.

UNIT IV:

Social Issues and Environment Water Conservation – Narmadha River Valley Project – Chipko Movement.

UNIT V:

Human Population and Environment: Population Explosion – Family Welfare Programmes Role of Information Technology in Environment and Human Health – HIV –AIDS.

REFERENCES:

1. Agarwal, K.C. 2001, Environmental Biology, Nidi Public Ltd Bikaner.
2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt Ltd, Ahmadabad- 38003, India, E-MAIL: mapin@icenet.net(R).
3. Brunner R.C. 1989, Hazardous Waste Incineration, McGraw Hill Inc 480p
4. Clark R.S.Marine Pollution, Clanderson Press Oxford (TB).
5. Cunnigham, W.P.Cooper, T.H.Gorhani E & Hepworth, M.T.2001.
6. De A.K.Environmental Chemistry, Wiley Eastern Ltd.
7. Down to Earth, Centre for science and Environment (R).

**M.A. HISTORY
SEMESTER III
HISTORY FOR COMPETITIVE EXAMINATIONS**

Code No.18KP3SSH2

Credit:5

UNIT I

Indian History and Culture: Indus Valley Civilization – Aryan Civilization – Buddhism and Jainism – The Mauryas – The Guptas - Kanishka – Harsha – Important Rulers of Tamil Nadu.

UNIT II

Muslim Rule in India: Delhi Sultanates – Bahmini Kingdom – Vijayanagar Empire – Rajputs and Mughals.

UNIT III

Impact of British Rule in India: Social and Religious Movement in the 19th Century – Indian National Movement - Cultural Heritage of India – Indian Music – Classical Dances – Salient Features of Indian Constitution.

UNIT IV

International Organization and Wars: World War I – League of Nations – World War II – United Nations Organization – Its Main Organization – Its Subsidiary Agencies.

UNIT V

International Revolutions: Glorious Revolution – American War of Independence – French Revolution – Chinese Revolution – Indian War of Independence.

Books For Reference:

1. General Studies year book, Madras.
2. History of India's past – K.A. Nilakanta Sastri.
3. Introduction to Indian History – D.D. Kosambi
4. Lunsday T.M. –A History of the Reformation 3 volumes

QUESTION PATTERN

TIME : 3 HOURS

MAXIMUM MARKS:100

SECTION 'A' (5×20 = 100)

I ESSAY TYPE : FIVE OUT OF TEN

**M.A. HISTORY
SEMESTER IV
HISTORY OF U.S.A. FROM 1865 TO 1974 C.E.**

Code No.18KP4H12

**Hours:6
Credit:5**

Unit I:

Civil war and its Aftermath: Problems of Reconstruction – Lincoln’s Reconstruction – Andrew Johnson’s Reconstruction – Congressional Reconstruction – American Presidents from 1865 to 1901.

Unit II:

Growth of Big Business and Reform Movements: Factors Leading to Big Business – Andrew Carnegie – John D.Rockefeller – Railroads – J.B.Morgan – Antitrust Legislation – Status of The Industrial Workers – Labour Movement – Farmers Grievances and The Populist Movement.

Unit III:

Emergence of the New Imperialism Samoa – Hawai, Cuba, Spanish-American war – Imperialists Vs Anti Imperialists – The progressive Era – Theodore Roosevelt - William Taft and Woodrow Wilson.

Unit IV:

America between the two world wars – First World War and U.S.A. – Hoover and Depression F.D. Roosevelt and New Deal Policy – Role of U.S.A.in The Second World War.

Unit V:

Truman Doctrine – Marshall Plan – Cold War and Its Global Implication – US and Military Pacts. Post War Periods - Eisenhower, J.F. Kennedy – L.B.Johnson – Richard M. Nixon .

Books for Reference:

1. H.B.Parker – A History of the U.S.A.
2. L.D.Baldwin - Survey of American History
3. Bragdon & P.M.C.Samuel Cutchen - History of free People
4. Charming,Edward – A History of the United States
5. Charwood,Lord – Abraham Lincoln
6. Elson,Hentry William - History of the United States of America

**M.A. HISTORY
SEMESTER IV
INTERNATIONAL RELATIONS SINCE 1919 C.E.**

Code No.18KP4H13

**Hours:6
Credit:5**

Unit I:

Meaning : Scope – Diplomacy –Kinds of Diplomacy- Balance of Power - Collective Security.

Unit II:

Second World War: Causes and Effects –Achievements of UNO – Specialized Agencies of UNO – Korean Crisis- Vietnam Crisis – Suez Canal Crisis – Cuban crisis – Kashmir Crisis.

Unit III:

Cold War: NATO-SEATO-CENTO, Anzus Pact – Warsaw pact – Organizations of American States – The Arab League - Organization of Petroleum Exporting Countries.

Unit IV:

Disarmament and Arms Control – Nuclear Policy – Disintegration of USSR – Arab – Israel – Iran – Iraq war - North South Dialogue – WTO, GATT.

Unit V:

Foreign policy of U.S.A. - Russia – China, Foreign Policy of India – India’s Role in NAM and SAARC.

Books for Reference:

1. Allin, Dana. H – Cold War Illusions: America, Europe and Civil Soviet Power 1969 - 89,St- Martins Press-1995.
2. Car E.H. – International relations between the two wars
3. Charles F Schlesher - International Relations Co-operations and Conflict
4. Louis Henkin – The Right of Man to-day
5. Ogg D-Zink – Theory of International Relations
6. Palmer & Perkins - International Relations
7. Panikkar K.M. – The Theory and Diplomacy
8. Patrick Clanson – U.S. Security Challenges in Transition, National Defence University, 1995.

**M.A. HISTORY
SEMESTER IV
HISTORY OF THANJAVUR UPTO 1947 C.E.**

Code No.18KP4H14

**Hours:6
Credit:5**

Unit I:

Sources, Topography – Early History of Thanjavur – Vallam – Venni Paranthalai - Puhar. Uraiyur – Pazhaiyarai - Thanjavur in The Pre- Chola Period: Mutharaiyar.

Unit II:

Thanjavur Under the Imperial Cholas: Legacy of The Cholas – Religion – Art and Architecture – Thanjavur Big Temple, Gangai Konda Cholapuram – Darasuram Temples – Nagai Port.

Unit III:

Thanjavur under the Nayaks: Administration – Socio – Economic and Cultural History – Art and Architecture.

Unit IV:

Thanjavur under the Marathas: Political History – Legacy of Marathas - Socio – Economic Development – Cultural Conditions - Art and Architecture – Manora – Sathirams – Sarasvathi Mahal Library – Thanjavur Paintings.

Unit V:

Thanjavur in the Modern Period: Thanjavur under the British – Treaty of Thanjavur - Freedom Fighters in Thanjavur – G.Subramaniya Ayer- Srinivasa Sastri – Thillaiyadi Valliyammai.

Books for Reference:

- 1. William Hicky – Thanjavur Maratha Principality in South India**
- 2. R.Balasubramanian – The Four Great Chola Temples**
- 3. Kudavayil Balasubramanian – History Tanjore Nayaks(Tamil)**
- 4. Kudavayil Balasubramanian – Tradition of Gopura Art in Tamil Nadu(Tamil)**
- 5. Kudavayil Balasubramanian – Thanjavur**
- 6. Nilakanta Sastri – The Cholas,Foreign Notices of South India**
- 7. Vriddhagrison – History of Nayakas**
- 8. N.Subramanian - History of Tamil Nadu**
- 9. Hemming Way – Tanjore Gazetteer**
- 10. Venkatasamy Rao – Manual of Thanjavur**

**M.A. HISTORY
SEMESTER IV
INTELLECTUAL HISTORY OF MODERN INDIA**

Code No.18KP4HELH5

**Hours:6
Credit:4**

Unit I:

Emergence of Concepts : Imperialism – Colonialism – Nationalism – Socialism – Communalism – Secularism .

Unit II:

Trends in the Political Intellectualism: A.O. Hume – Dadabhai Naroji – Progress of Nationalism: (Gokhale, Malaviya), Lal Pal and Bal - V.D.Savarkar - Vanchinathan – V.V.S.Iyer.

Unit III:

Socio – Religious: Reformers – Raja Ram Mohan Roy – Swami Dayanand – Kandukuri Veerasalingam Pandulu – Pandita Rama Bai Ramakrishna - Swami Vivekanandha — Sri Narayana Guru - Syed Ahamed Khan.

Unit IV:

Socio - Political Ideas: Jyotibai Phule – Ambethkar – Gandhiji – Nehru - Patel - V.O. Chidambaram – E.V.R. Periyar.

Unit V:

The Great Literates: Rabindranath Tagore – Bharathi - Bharathidasan, Manonmaniyam Sundaram Pillai - Maraimalai Adigal – Tiru.Vi.Ka.

Books for Reference:

1. The Dictionary of Ideas,Vols.II and III(New York)
2. Desai,A.R.,Social background of India Nationalism(Bombay,1959)
3. Irschick Eugene,F.Tamil Revivalism in 1930's(Madras,1986)
4. Lunia B.N.,Evolution of Indian Culture(Luck now)
5. Nambal Arroan, Tamil Renaissance.

SEMESTER – I
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
PRINCIPLES OF ACCOUNTANCY

Part	: III		
Core Course	: CC1	Maximum Marks	: 100
Instruction Hours	: 7	Code No.	: 18K1CO01
No. Of Credits	: 6		
OBEJCTIVE	: To Provide Basic Accounting Knowledge.		

UNIT-I :

INTRODUCTION

**Definition – Accounting Concepts - Conventions – Double Entry - Journal - Ledger- Trial balance
Subsidiary Books – Final Accounts of Sole Traders.**

UNIT- II :

BANK RECONCILIATION STATEMENT&ERRORS

Bank Reconciliation Statement – Rectification of Errors.

UNIT- III :

ACCOUNTS OF NON- PROFIT ORGANIZATION

Accounts of Non Profit Organization : Income and Expenditure Account - Receipts and Payment Account.

UNIT- IV :

CONSIGNMENT& JOINT VENTURE

Consignment - Meaning - Entries in the Books of Consignor and Consignee - Cost Price Method - Invoice Price Method - Joint venture - Average Due Date - Account Current.

UNIT- V :

BILLS OF EXCHANGE&DEPRECIATION&ARITHMETIC

Bills of Exchange – Depreciation: Straight line Method, Written down value Method - Provisions and Reserves.

TEXT BOOK

T.S. Reddy & Murthy : Financial Accounting, S.Chand & Co., New Delhi.

BOOKS FOR REFERENCE

- 1. Mukherjee and Haneef : Modern Accountancy, Tata Mcgraw Hill, New Delhi.**
- 2. Shukla and Grewal : Advanced Accountancy, S.Chand & Sons, New Delhi.**
- 3. Jain & Narang : Advanced Accountancy, Kalyani Publishers, New Delhi.**
- 4. Arulanadan : Advanced Accountancy, Himalaya Publications. New Delhi.**
- 5. N.Vinayakam, P.L.Mani,: Principles of Accountancy, Eurasia Publishing House Ltd. & K.L.Nagarajan New Delhi.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – I
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
BUSINESS LAW

Part : III

Core Course : CC2

Instruction Hours : 5

No. of Credits : 5

Maximum Marks : 100

Code No. : 18K1CO02

OBJECTIVE : To Provide a Brief idea about the provision of Indian Business Laws.

UNIT-I :

INTRODUCTION TO BUSINESS LAW

Nature - Sources of Law – Indian Contract Act 1872 – Law of contract – Nature of Contract – Essential Elements of Valid Contract – Classifications of Contract.

UNIT- II :

OFFER AND ACCEPTANCE

Elements - Types - Essentials of Valid Offer - Acceptance – Legal rules – Revocation- Consideration – Rules for Consideration, Kinds - Capacity to Contract - Free Consent – Legality of Object.

UNIT- III :

PERFORMANCE & DISCHARGE OF CONTRACT

Performance of Contract - Meaning – Essentials - Discharge – Meaning - Modes of Discharge – Remedies for Breach of Contract – Quasi Contract- Kinds.

UNIT- IV :

INDEMNITY AND GUARANTEE

Contract of Indemnity and Guarantee - Rights of Indemnity Holder – Rights of Surety – Nature & Extent of Surety's Liability.

UNIT- V :

CONTRACT OF SALE OF GOODS ACT

Definition – Essentials - Kinds of Goods – Transfer of Goods. Contract of Agency - Creation of Agency – Kinds - Rights - Duties – Termination.

TEXT BOOK

1. N. D. Kapoor : Business Laws, Sultan Chand & Sons, New Delhi.

2. R.S.N. Pillai & Bhagavathi : Business laws, S. Chand & Co., New Delhi.

BOOKS FOR REFERENCE

1. M.C. Shukla : Mercantile Laws, S.Chand & Co.,Ltd, New Delhi.

2. M.C. Kuchhal : Mercantile Laws, Vikas Publishing House, New Delhi.

3. S. Kathiresan & Dr.V.Radha : Business Laws, S.Chand & Co.,Ltd, New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – I
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
BUSINESS ECONOMICS

Part	: III	Maximum Marks	: 100
Allied Course	: AC1	Code No.	: 18K1COAC01
Instruction Hours	: 4		
No. of Credits	: 3		

OBJECTIVE : To Provide Basic Knowledge in the Principles of Business Economics

UNIT-I :

Economics – Definition – Scope - Laws of Demand & Supply - Micro and Macro Economics.

UNIT-II :

Factor of Production & Specialization - Production Function and Laws of Returns.

UNIT-III :

Market - Different Forms of Market - Objectives of Business Firm and Equilibrium Firm.

UNIT-IV :

Pricing under Perfect Competition – Pricing under Monopoly – Duopoly - Oligopoly Monopolistic Competition.

UNIT -V :

Marginal Productivity Theory of Distribution - Theories of Interest, Profits.

TEXT BOOK

S.Sankaran : Business Economics, Margham Publishers, Chennai.

BOOKS FOR REFERENCE

- 1. Varshney&Maheswari : Managerial Economics, Sultan Chand & Son New Delhi**
- 2. K.P.M.Sundaram : Micro Economics, Sultan Chand & Sons New Delhi.**
- 3. H.L.Ahuja : Advanced Economic Theory, S.Chand & Ltd., New Delhi.**
- 4. Cauvery : Managerial Economics, Sultan Chand & Sons Company Ltd., New Delhi.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – I
SYLLABUS B.COM UNDER CBCS PATTERN 2018 – 19 ONWRDS
VALUE EDUCATION

Part	: IV		
VE Course	: VE	Maximum Marks : 100	
Instruction Hours	: 2	Code No.	: 18K1VE
No. of Credits	: 2		

UNIT – I :

Introduction

- 1. Definition of Value Education – Need for Value**
- 1.1 Education - Teaching of Values by Various like Hinduism, Buddhism, Christianity, Jainism, Islam etc.**

UNIT – II :

Living & Social Values

- 2. Living & Social Values**
- 2.1 Living Values : Peace, Respect, Co- Operation, Freedom Happiness, Honesty Humility, Love, Responsibility, Simplicity, Tolerance, Optimism and Positive Thinking.**
- 2.2 Social Values: Love and Compassion, Sharing and Generosity, Politeness and Courtesy, Gratitude, Duty and Responsibility towards Society, Tolerance and Unity.**

UNIT – III :

Social Reforms

- 3 Role of visionaries and Leaders in social Reforms: Rajaram Mohan Roy, Mahatma Gandhi, Swami Vivekananda, EVR Periyar, Mother Theresa.**
- 3.1 Value Crisis: Religious Fundamentalism and Terrorism – Corruption in Society- Commerce without ethics – Education without Character – Wealth without effort.**
- 3.2 Time Management.**

UNIT – IV:

Yoga

- 4. Yoga Teaching Yoga – Manavalakkalai – By Qualified Yoga Teachers - The Aim is to Acquire Physical Health - Mental Acuteness - Strength of life forces and wisdom – To Achieve a Holistic way of Life – To take up and get involved in Social Welfare Activities – To learn their Commitment to Society.**

UNIT – V:

Project Work

- 5. Project Work (Any One of the following Activities)**
- 5.1 Collecting news details about value education from News Paper, Journals and Magazines and/or Collecting short stories or Anecdotes to stress social and living values.**
- 5.2 Writing Poems, Stories or Essays highlighting moral values or erosion of moral values.**
- 5.3 Drawings, Painting, Collage or Posters to highlight living and Social values or the erosion of these values.**

SEMESTER – II

SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS

BUSINESS TOOLS FOR DECISION MAKING

Part	: III		
Core Course	: CC3	Maximum Marks : 100	
Instruction Hours	: 7	Code No.	: 18K2CO03
No. of Credits : 6			

OBJECTIVE : To enable the students to have minimum knowledge of Statistics as applicable to business.

UNIT-I :

STATISTICS

Meaning – Definition - Objectives – Classification – Tabulation - Diagrams – Graphs - Measures of Central Tendency - Arithmetic Mean - Mode. Geometric Mean - Harmonic Mean.

UNIT-II :

MEASURES OF DISPERSION

Range – Quartiles – Deciles - Percentiles - Quartile Deviation - Mean Deviation - Standard Deviation - Co-efficient of Variation.

UNIT-III :

CORRELATION

Simple Correlation - Rank Correlation – Concurrent Deviation Methods.

UNIT-IV :

REGRESSION ANALYSIS

Simple - Regression Equation - Time Series Analysis - Components – Trend Analysis - Fitting a Straight line - Least Square Method - Moving Average Method.

UNIT-V :

INDEX NUMBERS

Weighted and Un- weighted – Price Index Numbers – Types - Test in Index Numbers - Time and Factor Reversal test - Cost of Living Index Number - Aggregate Method - Family Budget Method.

TEXT BOOK

S.P.Gupta : Statistical Methods, Sultan Chand & Sons, New Delhi.

BOOKS FOR REFERENCE

1. R.S.N.Pillai & V.Bhagavathi : Statistics, S. Chand & Co. Ltd, New Delhi.
2. P.A.Navanitham : Business Tools For Decision Making, Jai Publishers, Trichy.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

- Part A : 10 x 2 = 20 (Two Questions from Each Unit)
Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)
Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – II
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
AUDITING

Part : III
Core Course : CC4
Instruction Hours : 5
No. of Credits : 5

Maximum Marks: 100
Code No. : 18K2CO04

OBJECTIVE : To Provide an understanding of the principles and methods of Auditing.

UNIT-I :

AUDITING

Meaning - Definition - Objectives – Advantages - Limitations – Qualification – Disqualification – Appointment - Removal - Rights and Duties - Liabilities of Auditor under Companies Act 1956 - Qualities of an Auditor – Classification of Audit.

UNIT-II :

INTERNAL CHECK

Meaning and Definition - Internal Audit - Internal Control – Internal Check Vs. Internal Audit – External Audit Vs. Internal Audit – Audit Programme – Audit Note Book – Audit Working Papers.

UNIT-III :

VOUCHING

Vouching of Cash Transaction - Trading Transactions and Impersonal Ledger.

UNIT-IV :

AUDITOR'S REPORT

Auditor's Report – Contents and Object of Reports – Types of Report.

UNIT-V :

INVESTIGATION

Electronic Data Processing Audit - Difference between Investigation & Audit.

TEXT BOOK

B.N.Tandon : Practical Auditing, S.Chand & Co., Ltd., New Delhi.

BOOKS FOR REFERENCE

- 1. Dinkar Pagare : Principles & Practice of Auditing, Sulthan Chand & Sons, New Delhi.**
- 2. Dr. N. Premavathy : Practical Auditing, Sri Vishva Publications, Chennai.**
- 3. S. M. Sundaram : Practical Auditing, Sree Meenakshi Publication, Karaikudi.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours: 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – II
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
BUSINESS ENVIRONMENT AND MANAGEMENT

Part	: III		
Allied Course	: AC2	Maximum Marks	: 100
Instruction Hours	: 4	Code No.	: 18K2COAC02
No. of Credits	: 3		

OBEJCTIVE : To Provide Basic Knowledge about the emerging issues in Business.

UNIT-I :

INTRODUCTION

Business – Meaning – Nature - Scope of Business – Objectives - Business Environment - Social Responsibilities – Economic and Non Economic Environment.

UNIT-II :

ENVIRONMENT SCANNING

Environment Scanning – Features - Approaches of Environment Scanning - Methods of Gathering Information for Environment Analysis Forecasting - Factors affecting Environment - Appraisal.

UNIT-III :

MANAGEMENT

Management – Definition – Characteristics – Function - Fayol’s Principles of Management – MBO – MBE.

UNIT- IV :

PLANNING

Planning - Nature – Types - Organizing - Process - Importance - Types of Organizing – Directing - Nature – Principles - Co- ordination - Principles.

UNIT- V :

CONTROLLING

Controlling – Nature - Tools – Reporting - Budgeting.

TEXT BOOK

1. C.B.Gupta : Organization and Management, Sultan Chand & Sons, New Delhi.
2. Francis Cherunilam : Business Environment, Himalaya Publishing House.

Books for Reference:

1. S. Sankaran (Unit - I,III,IV,V) : Business Environment, Margham Publications, Chennai.
2. Dr. Kathiresan & Dr. Radha : Business Environment and Management, Prasanna Publishers, Chennai
3. S. Sankaran (Unit – II) : Business Environment Policy and Strategic Management, Margham Publications, Chennai.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

- Part A : 10 x 2 = 20 (Two Questions from Each Unit)**
Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)
Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – III
ELECTIVE COURSES OFFERED FOR OTHER THAN COMMERCE STUDENT UNDER CBCS
PATTERNS 2018 - 2019 ONWARDS
NON- MAJOR ELECTIVE - I
BANKING PRACTICES

Part : IV
Non Major Elective : NME1 **Maximum Marks : 100**
Instruction Hours : 2 **Code No. : 18K3COEL01**
No. of Credits : 2

OBJECTIVE : To provide basic practical knowledge of Banking.

UNIT-I :

INTRODUCTION

Bank - Deposits – Types of Deposits. Reserve Bank of India - Functions.

UNIT-II :

COMMERCIAL BANKS

Commercial Banks - Functions

UNIT-III :

ACCOUNT OPENING PROCEDURE

Opening of New Account – Procedures (Current and Saving Bank Accounts).

UNIT-IV :

NEGOTIABLE INSTRUMENTS

Negotiable Instruments – Bills – Cheque - Crossing of Cheques – Kinds.

UNIT-V :

MODERN SERVICES

ATM - Debit Card - Credit Card - KIOSK Banking – RTGS - NET Banking - Mobile Banking.

BOOKS FOR REFERENCE

1. Gorden and Natarajan : Banking Theory Laws Practice, Himalaya Publishing House, New Delhi.

2. B. Santhanam : Banking Theory Law & Practice, Margham Publications, Chennai

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 5 x 5 = 25 (Eight questions from five units)

Part B : 5 x 10 = 50 (Eight questions from five units)

SEMESTER – I
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
PART – IV - ENVIRONMENTAL STUDIES

Part	: IV	Maximum Marks	: 100
EVS	:	Code No.	: 15K1ES
Introduction Hours	: 2		
No. of Credits	: 2		

UNIT-1 :

INTRODUCTION

Definition Scope and Importance – Need for Public Awareness

UNIT-2 :

NATURAL RESOURCES

Natural resources – Forest Resources – Water resources- Mineral Resources – Food resources – Energy resources – Land resources.

UNIT-3 :

ECO SYSTEM

Eco system - Meaning- Forest Eco System, - Grass Land eco system - Desert eco system - Aquatic eco system - Bio geographical classification of India - Hot spots of Bio diversity.

UNIT-4 :

POLLUTION

Environmental Pollution - Air Pollution - Water Pollution - Soil Pollution - Noise Pollution - Thermal Pollution - Nuclear Hazards - Pollution Case Studies.

UNIT-5 :

POPULATION AND ENVIRONMENT

Human Population and environment –Population explosion – Family Welfare Programme- Environment and Human Health – Human Rights- HIV/AIDS- Women and Child Welfare.

BOOKS OF REFERENCE

- 1. N. Arumugham : Concepts of Ecology**
- 2. N.Arumugham : Environmental Studies**
- 3. N.Arumugham : Survey of Environment**
- 4. B.Chandrasekaran : Environmental Studies**
- 5. V.Kumaresan : Plant Ecology and Phytogeography**
- 6. Purohit : A Text Book of Environmental Science**
- 7. D.Dharmaraj : Environmental Science**
- 8. M.P.Mishra : Our environment Pollution control and future strategies**
- 9. Bharathidasan University Publication : Environmental Studies (Tamil and English).**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A : 5 x 5 = 25 (Eight questions from five units)

Part B : 5 x 10 = 50 (Eight questions from five units)

SEMESTER – III
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19ONWARDS
FINANCIAL ACCOUNTING

Part : III
Core Course : CC5 **Maximum Marks : 100**
Instruction Hours : 7 **Code No. : 18K3CO05**
No. of Credits : 6

OBJECTIVE : To provide an understanding and working knowledge of Partnership Accounts and Special Accounts.

UNIT-I :

BRANCH ACCOUNTS

Dependent Branch - Debtors System - Stock and Debtors System. (Excluding Foreign Branches)
Departmental Accounts.

UNIT-II :

HIRE PURCHASE & ROYALTY

Hire Purchase Accounts – Royalty accounts (Excluding Sub lease)

UNIT-III :

PARTNERSHIP ACCOUNTS

Admission of Partners - Retirement of a Partner - Death of a Partner – Joint Life Policy.

UNIT – IV :

DISSOLUTION OF A FIRM

Insolvency of a Partner - Garner Vs. Murray Rule – Piecemeal Distribution.

UNIT – V :

INSOLVENCY

Insolvency of an Individual – Statement of Affairs and Deficiency Account.
(Theory 20% Problem 80%)

TEXT BOOK

T. S. Reddy & Murthy : Financial Accounting, Margham publication, New Delhi.

BOOKS FOR REFERENCE

- 1. R.S.N.Pillai and Bagavathi : Advanced Accountancy, S.Chand and, New Delhi.**
 - 2. Jain & Narang : Advanced Accountancy, Kalyani Publisher, New Delhi.**
 - 3. Dr.B.Charumathi & Prof.N.Vinayagam. : Financial Accounting, S.Chand & Co., New Delhi.**
 - 4. R.L.Gupta & Radhasamy : Advanced Accounts, Sultan Chand and Sons, New Delhi.**
- Question Paper Pattern**

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – III
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
BUSINESS ORGANIZATION

Part : III

Core Course : CC6

Maximum Marks : 100

Instruction Hours : 5

Code No. : 18K3CO06

No. of Credits : 4

OBJECTIVE : To make the Students Understand about business organization.

UNIT-I :

INTRODUCTION

Meaning - Types of Business and Profession – Organization – Meaning – Importance of Business Organization.

UNIT-II :

FORMS OF BUSINESS ORGANIZATION

Sole Trader – Partnership - Joint Hindu Family Firm - Joint Stock Companies - Co- operative Societies - Public Enterprises.

UNIT-III :

LOCATION OF INDUSTRY

Factors Influencing Location – Size - Scale of Operations - Industrial Estates - District Industries Centre.

UNIT-IV :

LPG

Regulation of Stock Exchange in India – Rationalization – Automation Government Policies towards Liberalization – Privatization - Globalization.

UNIT-V :

TRADE ASSOCIATION AND CHAMBERS OF COMMERCE

Meaning – Types – Objectives – History- Chamber of Commerce – Meaning – Functions – Difference Between Trade Association and Chamber of Commerce – Evolution – Comparison with Foreign Countries.

BOOKS FOR REFERENCE

- 1. Y.K.Bhushan : Business Organization and Management, Sultan chand & Sons, New Delhi.**
- 2. Kathiresan Dr.Radha : Business Organization, Prasanna Publishers, Chennai.**
- 3. Dinker Pagare : Business Organization & Management, Sultan chand & Sons, New Delhi.**
- 4. C.B.Gupta : Business Organization & Management, Sultand chand & Sons, New Delhi.**

Question Paper Pattern

Maximum marks = 75

Exam duration hours: 3 hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – III
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
BUSINESS COMMUNICATION

Part	: III	Maximum Marks	: 100
Allied Course	: AC3	Code No.	: 18K3COAC03
Instruction Hours	: 4		
No. of Credits	: 3		
OBJECTIVE	: To develop Effective Business Communication Skills.		

UNIT – I :

INTRODUCTION

Meaning of Business Communication – Importance – Objectives – Types and Barriers of communication - Principles of Effective Communication - Layout of a Business Letter.

UNIT – II :

BUSINESS LETTER

Kinds of Business Letter – Enquiries and Replies - Order and their Executions & Cancellation – Claims - Complaints and Adjustments.

UNIT – III :

COLLECTION LETTER

Collection Letters – Stages in Collection Letter - Sales Letters – Purpose – Advantages – Structure - Circular Letters – Objectives – Structure - Application for a Job – Preparation of a Resume.

UNIT – IV :

AGENCY AND CORRESPONDENCE

Kinds of Agents – Stages - Letters Relating to Agency. Bank Correspondence – Elements of Good Banking Correspondence – Types - Correspondence Relating to Exports and Imports – Procedure for Import and Export.

UNIT – V :

REPORT

Drafting of Business Reports – Characteristics of a Good Report - Steps – Element - Press Reports – Market Reports - Speech Writing - Precise Writing.

TEXT BOOK

M.S.Ramesh & Pattenshetty : **Effective Business English& Correspondence , R. Chand, New Delhi**

BOOKS FOR REFERENCE

- 1. Rajender Paul & Korlahalli :** **Essentials of Business Communication, Sultan chand & sons New Delhi.**
- 2. R.S.N.Pillai & Bhagavathi :** **Commercial Correspondence and Office Management, S.Chand & Co. New Delhi.**
- 3. S.Kathiresan & Dr. V. Radha :** **Business Communication, Prasanna Publications, Chennai.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – III
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
ADVANCED ACCOUNTING TECHNIQUES

Part	:	
Core Course	:	Maximum Marks : 100
Instruction Hours	:	Code No. : 18K3SSCO1
No. of Credits	:	5

OBJECTIVE : To test the understanding level of various accounting skills and analyse the applicability of accounting knowledge in day to day activities of business.

UNIT - I :

PAY ROLL ACCOUNTING

Concept of Roll Accounting – Process of Pay Roll Accounting – Statutory Deductions – Accounting of Bonus and Gratuity - Wages and Direct Expenses.

UNIT - II :

STORES ACCOUNTING

Introduction – Pricing of Materials - Purchase - Issue - Returns – Issue of Materials - Disposals.

UNIT – III :

SALES ACCOUNTING – I

Meaning of Sales – Definition of Sales – Principles of Sales – Transactions not treated as Sales – Recognition of Revenue Items in the Income Statement – Account for Cash and Credit Sales – Compute and Interpret Sales Returns, Allowances - Sales Discounts - Bank Credit Card Sales.

UNIT - IV :

SALES ACCOUNTING – II

Cash management - Importance – Estimate and Interpret Uncollectible Accounts Receivable Balances – Assess the Level of Accounts Receivable – Develop and Explain Internal Control Procedures.

UNIT – V :

ASSET ACCOUNTING

Introduction – Current Asset Accounting – Fixed Asset Accounting – Project Accounting.

BOOKS FOR REFERENCE :

- 1. Hrishikesh Chakraborty : Advanced Accountancy, Oxford University Press.**
- 2. Mukharjee & Haniff : Modern Accountancy, Tata McGraw Hill, New Delhi.**
- 3. Gupta & Radhaswamy : Advanced Accountancy, Sultan Chand, New Delhi.**
- 4. Shukla & Grewal & Gupta : Advanced Accounts, Sultan Chand, New Delhi.**
- 5. Dr. D. Mukhopadhyay : Financial Accounting – A Managerial Perspective, Asian Books.**
- 6. M. E. Thukaram Rao : Advanced Accountancy, New Age International.**
- 7. Dr. S. K. Paul : Financial Accounting Vol. 1 & 2, New Central Book Agency.**
- 8. V. K. Saxena & CD Vashist : Basics of Cost Accounting, Sultan Chand, New Delhi.**

Question Paper Pattern

Maximum marks = 100

Exam Duration Hours : 3 Hours

Each unit 10 Objective type Questions (Total 50 Questions carrying 2 Marks each)

SEMESTER – IV
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
COST ACCOUNTING

Part : III
Core Course : CC7 **Maximum Marks : 100**
Instruction Hours : 6 **Code No. : 18K4CO07**
No. Of Credits : 5

OBJECTIVE : To enable the students to understand the Principles of cost Accounting.

UNIT-I :

INTRODUCTION

Cost Accounting – Meaning – Objectives – Advantages - Limitations - Cost Units - Cost Centre - Elements of Cost – Cost sheet.

UNIT-II :

MATERIAL COST

Material Cost – Material Control – Material purchase – Levels of stock – Economic Order Quantity – ABC Analysis – Perpetual Inventory System - Materials Recording - Bin Card - Store Ledger - Pricing of Materials – FIFO- LIFO - Simple Average - Weighted Average Method.

UNIT III :

LABOUR COST

Labour Cost – Methods of Remuneration – Time and Piece Rate System, Bonus System – Idle Time and Over Time – Labour Turnover – Methods.

UNIT-IV :

OVERHEADS

Overheads - Classification–Allocation - Apportionment of Overheads Reapportionment of Overheads - Absorption of Overheads – Machine Hour Rate.

UNIT-V :

METHODS OF COSTING

Process Costing (Excluding Inter process, Joint products, Equivalent production) – Normal Loss – Abnormal Loss – Abnormal Gain – Job & Batch Costing - Contract Costing.

(Theory 20%, Problems 80%)

TEXT BOOK

R.S.N.Pillai & Bhagavathi : Cost Accounting S. Chand & Co, New Delhi.

BOOKS FOR REFERENCE

- 1. S.P. Jain & K.L. Narang : Cost Accounting, Kalyani publishers, New Delhi.**
- 2. S.Khanna, Arora, Ahuja & Pande: Cost Accounting, S.Chand & Co, New Delhi.**
- 3. Srinivasan & Ramachandran : Cost Accounting, Sriram publications, Trichy.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – IV
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
MARKETING

Part : III
Core Course : CC8
Instruction Hours : 4
No. of Credits : 4

Maximum Marks : 100
Code No. : 18K4CO08

OBJECTIVE : To give basic understanding on the concept of Marketing and its Applications.

UNIT-I :

INTRODUCTION

Market – Classification – Marketing – Definition - Nature and Scope - Functions and Significance – Market segmentation – Online Marketing.

UNIT-II :

PRODUCT

Product – Product Planning and Development - Product Life Cycle – Branding - Packaging.

UNIT-III :

PRICE

Price – Pricing Objectives - Methods of Pricing – Factors Affecting Pricing.

UNIT-IV :

PROMOTION

Promotion – Sales promotion – Advertising - Benefits and Drawbacks - Type of Media- Selection of Media- Methods - Personal Selling - Functions of Salesman.

UNIT-V :

PHYSICAL DISTRIBUTION

Physical Distribution of Goods - Channels of Distribution – Wholesaler – Retailer – Functions – Transportations –Warehousing - Consumer Behaviour - Meaning – Factors Influencing Consumer Behaviour.

TEXT BOOK

Dr. L. Natarajan : Marketing Management, Margham Publications, Chennai.

BOOKS FOR REFERENCE

- 1. Dr.N.Rajan Nair & Sanjith R.Nair : Marketing, Sulthan Chand & Sons, New Delhi.**
- 2. Ramasamy & Namakumari : Marketing Management, Mac Millan Publishing House, New Delhi**
- 3. Philip Kotler : Marketing Management, Sulthan Chand & Sons, New Delhi.**
- 4. R.S.N. Pillai & Bhagavathi : Modern Marketing, S.Chand &Co,Ltd New Delhi.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – IV
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2015–2016 ONWARDS
MAJOR BASED ELECTIVE - III
COMPANY LAW

Part : III
Allied Course : AC4
Instruction Hours : 5
No. of Credits : 5

Maximum Marks : 100
Code No. : 18K4COAC04

OBJECTIVE : To Provide Basic Knowledge of the provisions of the Companies Act 1956.

UNIT – I :

INTRODUCTION

Definition - Latest Amendments in Companies Act 2013 - Features - Kinds - Incorporation of Companies - Memorandum of Association - Articles of Association - Prospectus.

UNIT – II :

SHARES AND DEBENTURES

Shares –Types of Shares – Debenture - Types of Debenture – Difference between Shares and Debentures.

UNIT – III :

TRANSFER AND TRANSMISSION OF SHARES

Share Certificate – Secretarial Duties Regarding Transfer and Transmission of Share - Distinction Between Transfer and Transmission of Shares.

UNIT – IV :

MANAGEMENT OF COMPANIES

Directors – Meaning - Appointment of Directors – Rights – Duties – Liabilities - and Removal of Director - Managing Director - Functions.

UNIT – V :

COMPANY MEETINGS

Meaning – Definition - Kinds of Meeting – Legal Provisions regarding Notice – Proxy – Minutes - Quorum – Resolution - Types.

TEXT BOOK

S. Kathiresan & Dr.V.Radha : Company Law (Including Secretarial Practice), Prasanna Publishers, Chennai.

BOOKS FOR REFERENCE

- 1. N. D. Kapoor : Elements of Company Law, Sultan Chand & Sons New Delhi.**
- 2. Prasanta K.Ghosh : Company Secretarial Practice, Sultan Chand & Sons New Delhi.**
- 3. Shukla & Gulshan : Company Secretarial Practice, Sultan Chand & Sons, New Delhi.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – IV
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2015 – 2016 ONWARDS
STATUTORY COMPLIANCE IN TAXATION

Part :
Core Course : **Maximum Marks : 100**
Instruction Hours : **Code No. : 18K4SSCO2**
No. of Credits : 5

OBJECTIVE : To test the understanding level and working knowledge of procedures, records and returns pertaining to various Tax laws and Companies Act.

UNIT - I :

CONCEPT OF TAXATION

Concept of Excise duties - Law relating to Excise Duties Goods Manufactured & Manufacturer - Classification of Goods - Valuation under Central Excise.

UNIT - II :

BASIC PROCEDURES AND RECORDS

Registration Storage & Accounting – Invoice Excise Duty Payment - Periodic Returns - Export Procedures - Export under Bond and Export under Rebate - Bringing goods in Factory for repairs.

UNIT – III :

CENVAT CREDIT

Back ground of Cenvat - Cenvat of Input / Input Service and Capital Goods - Availment & Utilization of Cenvat Credit, Exempted Goods/ Services and obligation - Removal of inputs / Capital Goods - Records of Cenvat - Accounting of Cenvat.

UNIT - IV :

JOB WORK & SMALL SCALE INDUSTRIES UNDER EXCISE

Excise Liability of Job worker - Exemptions to Job workers - Valuation in case of Job worker - Small Scale Industries and Excise Concessions availability - Exercise Options and Impact of Option - Clubbing of Turn - over of different factories - Calculation of turn- over - Items in eligible for SSI - Periodic Return to be Submitted and records to be maintained by SSI -Excise Duty Payment and Miscellaneous Provisions.

UNIT – V :

CUSTOMS

Introduction - Scope of Customs Laws - Types of Customs Duties - Valuation Under Customs - Customs Procedure Import Procedure - Export Procedures – Baggage - Import & Export through Courier and Post - Exemptions/ Refunds.

BOOKS FOR REFERENCE

- 1. V.K.Singhania : Direct Taxes Law &Practices , Taxmann.**
- 2. V.K.Singhania : Direct Tax Planning and Management, Taxmann .**
- 3. V.S.Datey : Indirect taxes Law & Practices , Taxmann .**
- 4. V.S.Datey : Central Sale Tax &VAT, Centax Publication .**
- 5.Ahuja & Gupta : Systematic Approach to Income Tax and Central Sales Tax, Sultan Chand, New Delhi.**

Question Paper Pattern

Maximum marks = 100

Exam Duration Hours : 3 Hours

Each unit 10 Objective type Questions (Total 50 Questions carrying 2 Marks each)

SEMESTER – IV
ELECTIVE COURSES OFFERED FOR OTHER THAN COMMERCE STUDENT UNDER CBCS
PATTERNS 2018 - 19 ONWARDS
NON - MAJOR ELECTIVE – II
GENERAL COMMERCIAL KNOWLEDGE

Part	: IV		
Non Major Elective Course	: NME2	Maximum Marks : 100	
Instruction Hours	: 2	Code No.	: 18K4COEL02
No. of Credits	: 2		

OBJECTIVES : To provide a basic General Commercial Knowledge to other than B.Com Students.

UNIT–I :

FORMS OF BUSINESS ORGANIZATION - I

Sole Trader – Partnership – Features - Advantages - Disadvantages.

UNIT–II :

FORMS OF BUSINESS ORGANIZATION - II

Joint Stock Company - Co- operative society - Features – Advantages - Disadvantages.

UNIT–III :

BANKING

Meaning - Definition - Functions of RBI - Functions of Commercial Banks – types of Deposits – ATM - Internet Banking.

UNIT–IV :

BUSINESS COMMUNICATIONS

Meaning – Importance – Barriers - Layout of Business Letter.

UNIT–V :

MANAGEMENT

Meaning – Functions – Principles - Levels.

BOOKS FOR REFERENCE

- 1. Dinkar Pagare : Business Organization and Management, Sultan Chand & Sons, New Delhi.**
- 2. Gorden & Natarajan : Banking, Himalaya Publishing House, New Delhi.**
- 3. R.S.N.Pillai & Bhagavathi : Business Communication, S.Chand, New Delhi.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A :5 x 5 = 25 (Eight question from five units)

Part B :5 x 10 = 50 (Eight question from five units)

SEMESTER – IV

SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS SKILL BASED ELECTIVE COURSE – I LIFE SKILLS

Part	: IV	Maximum Marks	: 100
SBE	: SBE 1	Code	: 15K5SBEC1
Instruction Hours	: 2		
No. of Credits	: 4		

UNIT-I :

ACCOUNTING, BANKING AND MARKETING (6 hours)

Accounting: Meaning – Process – Users – Branches - Accounts - Kinds – Rules – Final Accounts –
Banking - Meaning – Deposits – Opening an Account – Cheque Demand Draft – Internet Banking
- Marketing: Consumer Rights and Duties.

UNIT-II :

ECONOMICS (6 hours)

National Income: Per capita Income – National Income Accounting – Methods of Calculating National
Income - Indian Money Market - Functions – Capital Market - Sensex – Planning - Long- term
objectives – Employment Generation Programmes.

UNIT-III :

VITAL STATISTICS AND COMPUTER (6 hours)

Vital Statistics - Meaning – Uses – Rate of vital events - Measurement of fertility – Crude Birth
Rate – General Fertility Rate – Specific Fertility Rate – Total Fertility Rate – Gross Reproduction Rate
– Net Reproduction Rate. Measurement of Mortality - General/Crude Death Rate – Age Specific Death
Rate - Measures of Central Tendency - Objectives of Averaging – Types - Arithmetic Mean –
Weighted Arithmetic Mean. Interest: Simple Interest – Compound Interest - Computer -
Introduction – Components – Communication Systems – Internet – World Wide Web – E- mail – E-
Commerce.

UNIT-IV :

HOME REPAIRS AND SAFETY TIPS (6 hours)

Working of Electricity – Static Electricity – Electric Circuit – Electrical Grounding – Uses of
Electricity – Commercial Electrical Building – Electrical Safety – Dangers from Electricity – Electric
Fire – First Aid for Electric injury – Prevention tips - Acid in Eye – Alkali in Eye – Acid Burns – Alkali
Burns – Poisoning – Inhalation of Gases – Cut by glasses – Heat Burns - LPG Safety Measures at
Home.

UNIT-V :

HEALTH, HOUSE PLANTS AND DISASTER (6 hours)

Health Care System - Safety Education – Definition – Need – Safety at Home – Fire Safety in Living
Room - Dining room - Kitchen and Bed Room - House Plants as Hygenics - Introduction – Need –
House Plants, Hydroponics – Health reasons such as Air Purification - Plants - ACALYPA HISPIDA -
AGAVE AMERICANA - BOUGAINVILLE GLABRA - BAMBUSA AURINDINACEA -
EUPHORBIA SPLENDENSIS and SANSIVIERA TRIFASCIATA - Disaster - Flood and
Deforestation – Cause Effect and Controlling Measures.

Reference for Books:

Unit I

1. Vinayagam.N, Mani.P.L, Nagarajan.K, *Principles of Accountancy*, S.Chand & Co., New Delhi.
2. Gordon & Natarajan, *Banking Theory Law and Practice*, Himalaya Publishing House, New Delhi.

Unit II

1. Dutt & Sundaram, *Indian Economy*, S.Chand & Company, New Delhi.
2. Dr.S.Sankaran, *Indian Economy*, Margham Publications, Chennai.

Unit III

1. Pillai.R.S.N, Bagavathi, *Statistics*, S.Chand & Company, New Delhi.
2. Vital.P.R, *Business Mathematics*, Margham Publications, Chennai.
3. Alexis Leon, Mathews Leon, *Information Technology*, Vikas Publishing House, New Delhi.

Unit IV

1. Gopalan.R, Subramanian.P.S and Rengarajan.K, *Elements of Analytical Chemistry*, Sultan Chand and Sons, New Delhi.
2. Theraja.B.L, *Basic Electronics Solid State*, S.Chand & Co., New Delhi.

Unit V

1. Periayya, *Safety Education and First Aid*, Sri Susee Data Processing Centre, Coimbatore.
2. Day. S.C, *Indoor Gardening*, Agrobios Publications, India.
3. Savindra Singh. 2009, *Environmental Geography*, Arti Printers, Allahabad.

SEMESTER –V
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
CORPORATE ACCOUNTING

Part : III
Core course : CC9
Instruction Hours : 7
No. of Credits : 6

Maximum Marks : 100
Code No. : 18K5CO09

OBJECTIVE : To provide an understanding and knowledge of company accounts and special accounts.

UNIT-I :

ISSUE OF SHARES

Company Accounts – Introduction – Legal Provisions Regarding Issue of shares - Applications – Allotment – Calls – Forfeiture – Reissue – Premium - Discount – Redemption of Preference Share.

UNIT-II :

ISSUE OF DEBENTURES

Issue and Redemption of Debentures – Various Kinds of Debentures – Discount – Premium - Redemption through Sinking Fund.

UNIT-III :

FINAL ACCOUNTS OF COMPANIES

Final Accounts of Companies – Profit Prior to Incorporation.

UNIT-IV :

HOLDING COMPANIES

Holding Companies Account – Preparation of Consolidated Balance Sheet (Excluding chain holding and cross holding).

UNIT-V :

BANKING ACCOUNTS AND INSURANCES COMPANIES

Final Accounts of Banking Companies and Insurance Companies (New Format).

(Theory 20%, Problems 80%)

TEXT BOOK

1. Corporate Accounting : T. S. Reddy, Dr. A. Murthy, Margham Publications, Chennai

BOOKS FOR REFERENCE

- 1. R.L.Gupta and Radhasamy : Advanced Accountancy, Sultan Chand & Sons New Delhi.**
- 2. Jain & Narang : Advanced Accountancy, Kalyani Publishers, Chennai.**
- 3. Arulanadam and Raman : Advanced Accountancy, Himalaya Publishing House, New Delhi.**
- 4. Shukla and Grewal : Advanced Accountancy, Sultan Chand & sons New Delhi.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – V
SYLLABUS FOR B.COM UNDER CBCS PATTERN – 2018 - 19 ONWARDS
MANAGEMENT ACCOUNTING

Part	: III		
Core Course	: CC10	Maximum Marks	: 100
Instruction Hours	: 5	Code No.	: 18K5CO10
No. Of Credits	: 5		

OBJECTIVE : To Provide an understanding of the Application of Accounting Techniques for Management.

UNIT-I :

Introduction

Management Accounting – Definition - Scope & Functions - Management Accounting Vs Financial Accounting - Cost Accounting Vs. Management Accounting - Utility - Limitations of Management Accounting.

UNIT-II :

Financial Statement Analysis

Meaning – Techniques of Financial Analysis – Ratio Analysis- Classification of Ratios - Interpretation of Ratio - Profitability Ratio Turnover Ratio - Liquidity and Solvency Ratio - Preparation of Balance Sheet.

UNIT-III :

Fund Flow Statement

Meaning - Uses- Preparation of Fund Flow Statement - Cash Flow Statement - Meaning & Uses - Preparation of Cash Flow Statement(New Format According to AS3) - Fund Flow Statement Vs Cash Flow statement.

UNIT-IV :

Marginal Costing

Contribution - Key factor - Break Even Analysis - Determination of Sales Mix - Make or Buy Decision – Capital budgeting.

UNIT-V :

Budgets

Types - Budgetary Control – Objectives - Advantages - Functional Budgets - Fixed - Flexible Budget – Zero Base Budget.

(Theory 20% Problems 80%)

TEXT BOOK

S.N.Maheswari : Management Accounting, Sultan Chand & Sons, New Delhi.

BOOKS FOR REFERENCE

- 1. R.S.N.Pillai and V.Bhagavathy : Management Accounting, S. Chand & Sons, New Delhi.**
- 2. Grewal Hingarani & Ramanathan: Management Accounting, Sultan Chand & Sons, New Delhi,**
- 3. Ramachandran & Srinivasan : Management Accounting, Sriram Publications, Trichy.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – V
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 2019 ONWARDS
COMPUTER APPLICATIONS IN BUSINESS PRACTICES - PRACTICALS

Part : III
Core course : CC11 **Maximum Marks : 100**
Instruction hours : 6 **Code No. : 18K5CO11P**
No. of Credits : 5
OBJECTIVE : To impart basic computer Knowledge as applicable to business.

UNIT-I :

INTRODUCTION

Meaning of Computer – Characteristics of a Computer – Areas of Application – Components of Computer – Memory and Control unit –Input and Output devices –Operating System – Desktop – Taskbar – Startup Menu Option – Creation of Files and Folders - Windows Explorer – Find Option – Shortcuts - Brief Case.

UNIT-II :

MS WORD 2007

Introduction to Word 2007- Starting – Creating Shortcut - Creating Word Document – Saving - Opening - Closing Documents - Creating Business Letters Using Wizards – Editing Word Document – Inserting Object – Formatting Documents – Spelling - Grammar Check – Word Count – Thesaurus – Auto Correct - Working with Tables – Mail Merge.

UNIT-III :

MS EXCEL

Ms Excel and its Features – Savings, Opening and Closing Work Books - Entering Data in Work Sheets - Editing and Formatting Work Sheet – Fill Series - Creating Different Types of Chart – Creating a List & Sorting Data – Filtering Data using Auto Filter - Custom Filter – Analysing and Organizing Data using Automatic Subtotal - Preparation of Mark Sheet - Pay Slip - Electricity Bill using Functions.

UNIT- IV :

COMPUTERIZED ACCOUNTING – I

Fundamental of Accounting – Computerized Accounting Vs Manual Accounting - Architecture and Customization of Tally – Features of Tally – Configuration Of Tally – Tally Screens and Menus – Creation of Company - Creation of Group – Editing and Deleting Group – Creation of Ledger Editing and Deleting Ledger – Introduction to Vouchers – Vouches Entry - Payment – Receipt - Sales - Purchase - Contra - Journal – Debit Note and Credit Note - Editing and Deleting Vouchers.

UNIT-V :

COMPUTERIZED ACCOUNTING – II

Introduction to Inventories - Creation of Stock Categories - Configuration and Features - Stock Groups - Editing and Deleting Stocks - Usage of Stock in Voucher Entry – Purchase Orders - Sales Orders - Introduction to Cost - Creation of Cost Category - Creation of Cost Centers – Reports - Day Book - Trial Balance - Profit and Loss Account - Balance Sheet - Cash Flow - Fund Flow – Ratio Analysis.

TEXT BOOK

1. **K. Mohan Kumar and Dr. S. Rajkumar : Computer application in Business, Vijay, Nicole imprints (P) Ltd., Chennai.**

BOOKS FOR REFERENCE

1. **S. M. W. Deva : Tital Smart Accountant Book, AVC Deva Publications.**

Question Paper Pattern

Maximum Marks = 60

Exam Duration Hours : 3 Hours

Part A : 4 x 10 = 40

Part B : Record = 10

Viva = 10

—————
60
—————

SEMESTER – V
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 2019 ONWARDS
MAJOR BASED ELECTIVE - I
BASICS OF E - COMMERCE

Part	: III		
Major Based Elective Course	: MBE1	Maximum Marks	: 100
Instruction Hours	: 6	Code No.	: 18K5COELC01
No. of Credits	: 4		

OBJECTIVE : To Provide Basic Knowledge of Electronic Commerce and its Applications.

UNIT-I :

INTRODUCTION

Meaning - Definition – Pre-requisites - Main activities – Scope – E- Commerce Vs Traditional Commerce - Significance – Major Modes – Advantages – Limitations.

UNIT-II :

B2B

Meaning – Benefits – Applications - Future Trends - Implementation Process – Requirements Trade Cycle - Documents Exchanged - Four C's – Convenience – Collaborative Computing - Content Management – Call Centre.

UNIT-III :

B2C

Meaning – E-shop – Features – Trade Cycle – Advantages – Limitations difference between B2B and B2C – ECRM – Need – Architecture – Applications – Major Trends – ECRM in India.

UNIT-IV :

E - PAYMENTS

E payments – Types – Traditional Payment System – Modern Payment System – Steps in E-payment – Payment Security – E-cash.

UNIT-V :

EDI

Definition – Components – Applications – Advantages – Limitations – Concept of EDI – Cost - Model – Data Standards – TDCC – UCS – WINS – ASCXIZ – UMEDI FACT – EDI Communication.

TEXT BOOK

- 1. C.S.V. Murthy : E – Commerce, Himalaya publishing house, New Delhi.**
- 2. J. J. Jeyakumari : E- Commerce, Anuradha Publications, Kumbakonam.**

BOOKS FOR REFERENCE

- 1. David Whitely : E- Commerce, Tata McGraw Hill Publishing Co. Ltd., New Delhi.**
- 2. Jeffrey F. Rayport : E- Commerce, Tata McGraw Hill Publishing Co., Ltd., New Delhi**
- 3. S. Jaiswal : Doing Business on the Internet E- Commerce Galgotia Publications, New Delhi.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - V

SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 – 2019 ONWARDS OFFICE MANAGEMENT

Core Course : SBE2 **Maximum Marks** : 100
Instruction Hours : 2 **Code** : 18K5SBEC2
Credit : 2

OBJECTIVE : To gain Knowledge about Office Management and Records Management.

UNIT – I :

INTRODUCTION

Meaning - Definition – Elements – Functions – Importance - Qualities and Functions of Office Manager

UNIT – II :

OFFICE ORGANISATION

Techniques - Basic Principles – Types of Office Organization.

UNIT – III :

OFFICE ACCOMMODATION

Office location – Factors affecting Location – Office building – Factors in Selection of Office Premises.

UNIT – IV :

OFFICE ENVIRONMENT

Elements - Lighting – Ventilation – Temperature - Noise & Dust – Cleanliness – Safety and Security – Secrecy.

UNIT – V :

RECORDS MANAGEMENT

Records Classification – Meaning – Significance – Principles – Filing – Importance – Steps – Methods – Indexing - Meaning – Objectives – Essentials of Good Indexing System.

Text Book

C.B.Gupta - Office Organization & Management, Sultan Chand & Sons, New Delhi

Books for Reference

1.R.C.Bhatia - Principles of Office Management, Lotus Press, New Delhi.

2.V.Balachandran – Office Management, Tata McGraw Hill Education (P) Ltd., New Delhi

3.T.S. Devanarayanan & N.S.Raghunathan- Office Management, Margham Publicaitons, Chennai

4.S.P.Arora - Office Organisation and Management, Vikas Publishing House, New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part – A : 5 x 5 = 25 (Eight Questions from Five Units)

Part – B : 5 x 10 = 50 (Eight Questions from Five Units)

SEMESTER – V
ELECTIVE COURSES OFFERED FOR OTHER THAN COMMERCE STUDENT UNDER CBCS
PATTERNS 2018 - 19 ONWARDS
SKILL BASED ELECTIVE – II
SOFT SKILL DEVELOPMENT

Soft Skills Development : SSD
Instruction Hours : 2
No. of Credits : 2

Max Marks : 100
Code : 18K5SSD

Objective: To enable students to achieve excellence in both personal and professional life.

UNIT – I :

Knowing Self

Introducing Self - how to shake hands small talk skills - Benefits of Etiquette - Forming values.

UNIT – II :

Verbal Communication

Communication process - types of communication - verbal communication how to improve verbal communication - listening skills.

Non – Verbal Communication

Classification – function – positive gesture cluster – body language in detail – final thought – e-mails – email etiquette

UNIT – III :

Assertive Communication

What is assertion? - How assertive are you? - Four types of assertion - How to be assertive?

UNIT – IV :

Accent Neutralization

Introduction – articulation - types of articulation - basic exercises - articulation and voice exercises - deep voice exercises - diction exercises - seven secrets to be accent.

UNIT – V :

Goal, Time and Stress Management

Smart goals - put your smart goal in writing - question to set smart goals - steps to accomplish goals
time - management tools - difference between urgent and important - know how your spend your
time - known and respect your priorities - stress management.

Text Books:

1. Meena .K and V. Ayothi : A book on Development of Soft Skills (Soft Skills: A Road Map to Success) P.R. Publishers & Distributors, No. B- 20 & 21, V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli. 620 002.
2. Alex.K : Soft Skills- Know Yourself & Know the World, S.Chand & Co.Ltd. Ram Nagar, New Delhi- 110 055

SEMESTER – VI
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018–2019 ONWARDS
INCOME TAX LAW AND PRACTICE

Part	: III	Maximum Marks	: 100
Core Course	: CC12	Code No.	: 18K6CO12
Instruction Hours	: 6		
No. of Credits	: 5		

OBJECTIVE : To provide an understanding of the basic principles of Income Tax Act and its implications.

UNIT – I :

BASIC CONCEPTS

Income - Assessee - Assessment Year - Previous Year - Person - Gross Total Income - Total Income - Determination of Residential Status - Incidence of Tax- Exempted Incomes

UNIT – II :

SALARIES

Chargeability - Allowances – Perquisites - Profits in lieu of Salary - Provident Funds - Deductions u/s 16 - Computation of Income from Salary.

UNIT – III :

HOUSE PROPERTY

Determination of Annual Value - Permissible Deductions – Computation of Income from House Property.

UNIT – IV :

BUSINESS OR PROFESSION

Basis of Charge - Methods – Deductions - Computation of profits and gains from Business or Profession - Deemed Profits.

UNIT – V :

CAPITAL GAINS

Chargeability - Capital Assets and Cost of Acquisition, Computation of Capital Gain - Deductions - Income from Other Sources – Computation – Permissible Deductions.

(Theory 20% Problems 80%)

TEXT BOOK

1. T.S.Reddy and

Y.Hari Prasad Reddy : Income Tax Theory, law & Practice, Margham Publications, Chennai.

BOOKS FOR REFERENCE

1. Vinod K.Singhania : Students Guide to Income Tax, Taxman Publications(P) Ltd., New Delhi.

2. Bagavathi Prasad : Income Tax Law & Practice, Wishwa Prakashan, New Delhi.

3. V.P.Gaur & D.B.Narang : Income Tax Law & Practice, Kalyani Publishers, New Delhi.

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – VI
SYLLABUS FOR B.COM UNDER CBCS PATTERN–2018–2019 ONWARDS
PERSONNEL MANAGEMENT

Part	: III		
Core Course	: CC13	Maximum Marks	: 100
Instruction Hours	: 4	Code No.	: 18K6CO13
No. of Credits	: 4		

OBJECTIVE : To provide knowledge of the various concepts of personnel management.

UNIT- I :

INTRODUCTION

Personnel Management - Definition – Characteristics – Scope - Objectives –Principles - Functions of Personnel Management.

UNIT- II :

MANPOWER PLANNING

Manpower planning - Needs - Steps - Factors affecting Manpower Planning - Recruitment Selection - Interview and Test - Training - Methods of Training.

UNIT- III :

JOB ANALYSIS

Job Analysis - Job Description - Job Evaluations – Promotion - Transfer.

UNIT- IV :

MOTIVATION

Motivation - Importance and Characteristics - Types - Positive and Negative Motivation - Theories - Maslows, Herzbergs and XY theories.

UNIT- V :

LEADERSHIP

Leadership Concept - Types - Leadership Qualities - Theories of Leadership.

TEXT BOOK

C.B. Memoria : Personnel Management, Himalaya Publishing House, New Delhi.

BOOKS FOR REFERENCE :

- 1. P.C.Tripathi : Industrial Relations and Personnel Management, S.Chand & Sons, New Delhi.**
- 2. Arun Monoppa : Personnel Management, TATA Mc Graw Hill Publishing Ltd., New Delhi.**
- 3 J. Jayasankar : Personnel Management, Margham Publications, Chennai.**

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – VI
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 2019 ONWARDS
FINANCIAL MANAGEMENT

Part	: III		
Core Course	: CC14	Maximum Marks	: 100
Instruction Hours	: 6	Code No.	: 18K6CO14
No. Of Credits	: 5		

OBJECTIVE : To provide a detail insight into Financial Decision Making Procedures and their applications.

UNIT-I :

INTRODUCTION

Nature & Scope _ Objectives – Functions of Financial Manager – Time value of Money – Risk & Return Analysis.

UNIT-II :

COST OF CAPITAL

Meaning – Significance – Weighted Average Cost of Capital – Capital Structure Theories – Net Income Approach - Net operating Income Approach – Modigliani Millar Approach – Traditional Approach.

UNIT-III :

LEVERAGES

Types of Leverage – Operating Leverage - Financial Leverage – Combined Leverage – EBIT – EPS Analysis.

UNIT-IV :

WORKING CAPITAL

Nature and Significance – Factors Determining Working Capital – Determination of Working Capital.

UNIT-V :

RECEIVABLE MANAGEMENT

Credit Standards – Credit terms - Collection Policies – Inventory Management – Objectives Techniques.

(Theory : 20%, Problem :80%)

TEXT BOOK

1. Shashi K.Gupta & R.K.Sharma : Financial Management, Kalyani Publishers, Chennai.
2. Ramachandran & Srinivasan : Financial Management, Sriram Publications, Trichy.

BOOKS FOR REFERENCE

1. S.N.Maheswari : Elements of Financial Management, S.Chand & Sons, New Delhi.
2. I.M.Pandey : Financial Management, Vikas Publishing, House Pvt Ltd, New Delhi.
3. Khan & Jain : Financial Management, Tata Mc Graw Hill Publishing House, New Delhi.

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours: 3 hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – VI
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
BANKING THEORY LAW & PRACTICE

Part	: III		
Core Course	: CC15	Maximum Marks : 100	
Instruction Hours	: 4	Code No.	: 18K6CO15
No. of Credits	: 4		

OBJECTIVE : To Provide an understanding of Banking Law and Practices.

UNIT-I :

INTRODUCTION

Banking – Meaning – Origin – Growth – Importance - Central Bank: Nature - Organization and Management – Function – RBI – Function - Methods of Credit Control – Quantitative & Qualitative.

UNIT-II :

COMMERCIAL BANKS

Commercial Banks – Classification – Functions - Workings – Regional rural Banks Functions – IDBI, IFCI, SFC's, UTI, SIDBI, NABARD.

UNIT-III :

BANKER AND CUSTOMER

Banker and customer – Meaning & Definition – General & Special Relationship- Obligations of a Banker to Honour Cheque - Wrongful Dishonour and its Consequences – Maintain Secrecy of Customers Account.

UNIT-IV :

PASS BOOK

Pass book - Procedures for Opening a New Account in the Case of Special Customers - Minor - Married Women – Lunatics - Trustees Partnership firm - Joint stock companies – Cheque – crossing – Types – Endorsement - Types.

UNIT- V :

MODERN SERVICES

E- Banking – ECS – EFT – ATM – RTGS - KIOSK - Internet Banking - Mobile banking.

TEXT BOOK

1. Sundaram & Varshney : Banking Theory Law & Practice, Sultan Chand & Sons, New Delhi

BOOKS FOR REFERENCE

1. Gordon & Natarjan : Banking Theory Law & Practice Sultan Chand & Co., New Delhi.
2. S.M.Sundaram : Banking, Sree Meenakshi Publications, Karaikudi.
3. Dr.V.Radha : Banking Theory Law & Practice, Prasanna Publishers, Chennai.

Question Paper Pattern

Maximum marks = 75

Exam Duration Hours : 3 Hours

- Part A :10 x 2 = 20 (Two Questions from Each Unit)**
Part B :5 x 5 = 25 (Either or Type - One Question from Each Unit)
Part C :3 x 10 = 30 (One Question from Each Unit)

SEMESTER – VI
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018–2019 ONWARDS
MAJOR BASED ELECTIVE – II
ENTREPRENEURIAL DEVELOPMENT

Part	: III	Maximum Marks	: 100
Major Based Elective Course	: MBE2	Code No.	: 18K6COELC02
Instruction Hours	: 5		
No. of Credits	: 4		

OBJECTIVE : To Provide knowledge about the concept of Entrepreneurial Cultural Development.

UNIT – I:

ENTREPRENEURSHIP

Entrepreneurship Concept - Entrepreneur and Enterprise - Meaning, Definition, Characteristics – Functions - Classification of Entrepreneurs - Factors Affecting Entrepreneurial Growth - Role of Entrepreneurs in the Economic Development-

UNIT – II:

WOMEN ENTREPRENEURS

Women Entrepreneurs Concept – Functions - Problems - Development of Women Entrepreneurs.

UNIT –III:

ENTREPRENEURSHIP DEVELOPMENT PROGRAMMES (EDP)

EDP – Meaning - Objectives – Phases of EDP - Role of Government & NGO Organizing in EDP.

UNIT - IV:

PROJECT MANAGEMENT

Business Idea Generation Techniques - Meaning - Sources of Business Ideas - Identification of Business Opportunities - Feasibility Study – Project Formulation - Project Report – Project Appraisal.

UNIT – V:

SMALL SCALE INDUSTRY

Small Scale Industry Definition – Objectives – Procedure to start an SSI - State and Central Govt. Incentives and Subsidies - Institutional Finance to Entrepreneurs - DICs, IFCI, NSIC, SIDO, and Commercial Bank.

TEXT BOOKS:

1. Dr. S.S. Khanka : Entrepreneurial Development, S. Chand & Company Ltd, New Delhi.
2. Vasanth Desai : Dynamics of Entrepreneurial Development & Management, Himalaya Publishing House, Mumbai.

BOOKS FOR REFERENCE

1. Govt. of Tamil Nadu : Industrial Development Guide to Entrepreneurs - SIPCOT
 2. C.B.Gupta & N.P.Srinivasan: Entrepreneurial Development, Sultan Chand & Sons, New Delhi.
 3. J. J. Jeyakumari : Entrepreneurial Development, Anuradha Publications, Kumbakonam.
- Question Paper Pattern**

Maximum marks = 75

Exam Duration Hours : 3 Hours

Part – A	:	10 x 2 = 20	(Two Questions from Each Unit)
Part - B	:	5 x 5 = 25	(Either or Type - One Question from Each Unit)
Part – C	:	3 x 10 = 30	(One question from each Unit)

SEMESTER –VI
SYLLABUS FOR B.COM UNDER CBCS PATTERN 2018 - 2019 ONWARDS
MAJOR BASED ELECTIVE – III
FINANCIAL MARKETS AND SERVICES

Part	: III		
Major Based Elective Course	: MBE3	Maximum Marks	: 100
Instruction Hours	: 4	Code No.	: 18K6COELC03
No. of Credits	: 3		

OBJECTIVES : Acquainting the students with working of financial market in India.

UNIT-I :

FINANCIAL MARKET

Meaning – Components – Money Market – Definition - Components – Characteristics - Money Market Vs Capital Market – Instruments in Indian Money Market.

UNIT- II :

CAPITAL MARKET

Importance – Classification of Capital Market – Stock Exchange –BSE & NSE Functions – Online Stock (share) Trading – Share Market Indices.

UNIT- III :

FINANCIAL SERVICES

Meaning – Scope, Sources, Importance – Types - Causes for Financial innovation Innovative Financial Instruments - Challenges Faced by Financial Sector.

UNIT- IV :

MERCHANT BANKING

Definition – SEBI Guidelines - Scope for Merchant Banking in India - Mutual Funds – Concept – Types - Benefits.

UNIT-V :

LEASING

Concept – Types – Hire Purchase – RBI Guidelines – Hire purchase and Leasing Factoring – Meaning – Benefits.

TEXT BOOK

B.Shanthanam : Financial Services, Margham Publications, Chennai.

BOOKS FOR REFERENCE

- 1. Gorden & Natarajan : Emerging scenario of Financial Services, Himalaya Publishing House, New Delhi.**
- 2. D. Joseph Anbarasu : Financial Services, Sultan Chand & Sons, New Delhi.
&V.K.Boominathan**
- 3. Dr. V.Radha : Financial Services, Prasanna Publishers, Chennai.**
- 4. V.A.Avadhani : Capital Markets, Himalaya Publishing House, New Delhi.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or Type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - I

SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS

PROJECT MANAGEMENT

Core Course	: CC1	Maximum Marks	: 100
Instruction Hours	: 6	Code	: 18KP1CO01
Credit	: 5		

OBJECTIVE: To Provide knowledge about the project management and concept of Entrepreneurship.

UNIT-I:

INTRODUCTION

Project Management – Objectives - Classification and Benefits – Project Delays - Project Life Cycle.

UNIT-II :

CAPITAL BUDGETING

Phases – Facts of Project Analysis – Portfolio Strategy scouting for Projects Ideas.

UNIT-III :

MARKET AND DEMAND ANALYSIS

Steps – Uncertainties in Demand Forecasting – Marketing Plan - Choice of Technology - Project Charts, Layouts and Implementation.

UNIT-IV :

SELECTION AND FINANCING

Project Cash Flow Elements – Principles – Biases in Cash Flow Estimation – Project Risk Analysis – Sources and Measures – Raising Capital in International Markets – Project Appraisal.

UNIT-V:

PROJECT IMPLEMENTATION AND ITS TECHNIQUES

Project Organization Forms – Human Aspects of Project Management –Pre-requisites for successful Project Implementation – Development of Project Network.

TEXT BOOK

Dr. C. D. Balaji : Project Management Margham Publications, Chennai.

BOOKS FOR REFERENCE:

1.R.Panneer Selvam : Project management, PHI Learning (P)Ltd., New Delhi.

2.Prasanna Chandra : Projects, Tata McGraw Hill Education Private Limited, New Delhi

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - I

SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS

QUANTITATIVE TECHNIQUES

Core Course	: CC2	Maximum Marks	: 100
Instruction Hours	: 6	Code No.	: 18KP1CO02
Credit	: 5		

OBJECTIVE: To enable the students to gain adequate knowledge on application of Quantitative Techniques in Business Decision making.

UNIT I :

INTRODUCTION

Quantitative Techniques: Meaning – Classification – Limitations – Correlation: Simple (Karl Pearson), Multiple Correlation, Partial Correlation.

UNIT II :

HYPOTHESIS

Testing of Hypothesis - Null Hypothesis, Alternative Hypothesis - Type I Error - Type II Error - Chi-Square Distribution – ANOVA – t Test – f Test – z Test.

UNIT III :

LINEAR PROGRAMMING

Linear Programming - Simplex Method - Graphical Method.

UNIT IV :

TRANSPORTATION

Transportation Problem: North West Corner Rule, Least Cost Method, Vogel's Approximation Method - Assignment Problem

UNIT V :

THEORY OF GAMES

Theory of Games - Types of Games – Dominance - Rule for Dominance - Solution through Graphic Method

NOTE: Theory 20%; Problems 80%

BOOKS FOR REFERENCE:

1. S.P.Gupta (Unit I & II) : Statistical Method, S.Chand & Sons, New Delhi.
2. C.R.Kothari(Unit I) : Quantitative Techniques, Chicks Publishing House Pvt. Ltd., New Delhi.
3. V.Sundaresan, A.K.Ganapathy Subramaniam & K.Ganesan (Unit III, IV) : Operations Research, A.R.Publications, Nagai.
4. Vijay K.Gupta, Bhushan K.Sharma K.K.Chawla (Unit V) : Operations Research, Kalyani Publishers, New Delhi.
5. Kanti Swarup, (2009) : Operations Research, Sultan Chand & Sons, New Delhi.
6. Dr.S.Manmohan&S.P.Gupta : Business Statistics and Operation Research, Sultan Chand & Sons, New Delhi.
7. Prem Kumar Gupta, & D.S. Hira : Operations Research, S.Chand & Sons, New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - I
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
STRATEGIC MANAGEMENT

Core Course : CC3 **Maximum Marks : 100** **Instruction**
Hours : 6 **Code : 18KP1CO03** **Credit : 5**

OBJECTIVE: To make the students to gain adequate knowledge of Strategic Management in respect of Business Enterprises.

UNIT-I:

INTRODUCTION

Strategic Management - Definition – Scope – Evolution – Objectives - Significance - Conceptual Framework – Strategic Management Process – Vision – Mission – Strategic Intent.

UNIT- II :

ENVIRONMENT ANALYSIS

Environment Analysis - SWOT Analysis - Environment Scanning – Industry Analysis - Internal Scanning – Competition Analysis – Organisational Analysis.

UNIT- III :

CORPORATE STRATEGIES

Corporate Strategies – Business Strategy – BCG Matrix – Choice of Strategy - Strategic Formulation.

UNIT- IV :

STRATEGIC IMPLEMENTATION

Strategic Implementation - Issues – Structural Implementation – Behavioral Implementation - Functional Implementation.

UNIT- V :

STRATEGIC CONTROL

Strategic Control - Evaluation - Strategic Surveillance, Special Alert -Strategic Effectiveness – Barriers – Role – Control Process - Criteria.

BOOKS FOR REFERENCE:

1. L.M. Prasad : Strategic Management, Sultan Chand & Sons, New Delhi.
2. P.K.Gosh (Unit I & IV) : Strategic Planning Management Himalaya Publishing house, New Delhi.
3. Azhar Kaxmi (Unit II, III& V): Business Policy, Tata Mc Graw Hill, New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - I

SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS

INTERNATIONAL BUSINESS ENVIRONMENT

Core Course : CC 4 Maximum Marks : 100 Instruction
Hours : 6 Code : 18KP1CO04 Credit : 5

OBJECTIVE : To make the students to understand the operation of business in International Environment.

UNIT-I:

INTRODUCTION

International Business and its Environment: Significance - Nature and Scope of International Business - Environment of International Business

UNIT-II :

INTERNATIONAL ECONOMIC INSTITUTIONS

International Economic Institutions - International Monetary Fund -World Bank - Asian Development Bank – UNCTAD – UNIDO – WTO - GATT

UNIT-III :

INTERNATIONAL TRADE AND PAYMENTS

International Trade and Payments - Government Influence on Trade -EXIM Policy – Global Trade in Merchandise - Global Sourcing - Balance of Payments.

UNIT-IV :

MULTINATIONAL CORPORATIONS

International Investment and Multinational Corporations - Types of Foreign Investment - Foreign Investment in India - Foreign Investment by Indian Companies - Importance and Dominance of MNCs - Transfer of Technology.

UNIT-V :

GLOBALIZATION:

Globalization of Business – Features – Stages - Essential Conditions -Pros and Cons.

BOOKS FOR REFERENCE:

1. Francis Cherunilam : International Business Environment, Himalaya Publications, Mumbai.
2. S.Sankaran : International Business Environment, Margham Publications, Chennai.
3. D.M.Mithani (Unit I,II,IV&V): International Economics, Himalaya Publications, Mumbai.
4. S.S.M.Desai (Unit III,IV) : International Economics, Himalaya Publications, Mumbai.
5. S.Sankaran (Unit I&V) : Money Banking and International Trade, Margham Publications, Chennai.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - I
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
MANAGERIAL ECONOMICS

Core Course : MBE1 **Maximum Marks : 100**
Instruction Hours : 6 **Code : 18KP1COELC01**
Credit : 4

OBJECTIVE : To enable the students to understand the application of economic tools and logical methods in managerial decision making.

UNIT-I:

MANAGERIAL ECONOMICS

Nature and Scope - Role of Managerial Economics - Demand Analysis – Meaning – Determinants - Demand function - Concept of Elasticity of Demand - Demand Forecasting Meaning - Types and Methods.

UNIT-II :

PRODUCTION FUNCTION

Meaning - Law of Production – Break Even Analysis – Cost Analysis - Concept and Classification - Cost function - Short run cost & Long run cost.

UNIT-III :

PRICE POLICIES

Meaning - Types of Pricing - Pricing under Perfect Competition and Imperfect Competition – Monopoly – Oligopoly – Duopoly - Pricing a New product - Price as a tool of Competition.

UNIT-IV :

PROFIT MANAGEMENT

Meaning - Nature – Methods of Measurement of Profit – Profit Policies and Profit Forecasting.

UNIT-V :

BUSINESS CYCLE & BUSINESS POLICIES

Definition – Characteristics - Phases of Business Cycle - Control over Business Cycle - Economic Forecasting - National Income – Methods of Estimating National Income.

BOOKS FOR REFERENCE:

- 1. R.Cauvery, U.K.Suladhanayak : Managerial Economics. S.Chand&co.Ltd, New Delhi.**
- 2. S.Sankaran (Unit I,II&V) : Managerial Economics, Margham Publications, Chennai.**
- 3. D.M.Mithani (Unit III & IV) : Managerial Economics, Himalaya Publishing House, Mumbai.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - II
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 - 19ONWARDS
ADVANCED CORPORATE ACCOUNTING

Core Course : CC5 **Maximum Marks** : 100
Instruction Hours : 6 **Code** : 18KP2CO05
Credit : 5

OBJECTIVE: To enable the students to understand the accounting procedures of
Corporate Accounting.

UNIT-I:

SHARES & GOODWILL

Valuation of Shares and Goodwill.

UNIT-II :

AMALGAMATION

Amalgamation – Absorption – External Reconstruction.

UNIT-III :

ALTERATION OF SHARE CAPITAL

Alteration of share capital – Internal reconstruction.

UNIT-IV :

DOUBLE ACCOUNT SYSTEM

Double Account System – Accounting Standards.

UNIT-V :

ACCOUNTING

Human Resource Accounting – Inflation Accounting – Social Responsibility Accounting – Final Accounts of Companies.

BOOKS FOR REFERENCE:

1. T.S. Reddy : Corporate Accounting, Margham Publication, Chennai
2. Shukla & Grewal : Advanced accountancy, S.Chand & Co Ltd, New Delhi.
3. R.I.Gupta & Radhaswamy : Advanced accountancy, Sultan Chand&Sons, New Delhi.
4. Jain & Narang : Advanced accountancy, Kalyani Publishers, New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – II
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
ADDITIONAL CREDIT PAPER
RESEARCH PRACTICES

Part	:	Maximum Marks	: 100
ACP	:	Code	: 18KP2SSCO1
Instruction Hours	:		
No. of Credits	:		: 5

UNIT – I :
INTRODUCTION

Meaning of Research - Relevance of Social Science Research – The Place of Commerce – Trends in Research in Commerce – Choosing the Problems - How a Problem originate - Need to Survey Literature - Formulating the Problem - Criteria of a Good Research Problem.

UNIT – II :
HYPOTHESIS

Introduction - Meaning - Examples of Hypothesis - Types of Hypothesis - Null - Hypothesis - Formulation of Hypothesis – Research Design – Meaning - Need - Components - Sampling – Meaning - Advantages - Sampling and Social Survey - Sampling Procedure - Methods - Probability Vs Non Probability Sampling - Questionnaire Preparation .

UNIT – III :
SOURCES OF DATA

Primary Sources – Advantages and Disadvantages - Methods of Collecting Primary Data - Schedule and Questionnaire - Secondary Source – Advantages and Disadvantages.

UNIT – IV :
DATA PROCESSING

Classification - Stem and Leaf Display of Information – Editing - Coding - Tabulation - Parts of a Table - Graphic and Diagrammatic Presentation of Data - Rules of Drawing a Diagramme - Basic Types of Diagrams - Types of Bar Charts.

UNIT – V :
REPORT WRITING

Essentials of a Good Report – Stages of Report Writing - Presentation of Paper.

TEXT BOOK

K. V. Rao, Research Methodology, Sterling Publishers PVT Ltd, New Delhi.

BOOKS FOR REFERENCE

- 1. B. N. GOSH** : Scientific method and social research, Sterling Publishers PVT Ltd, New Delhi.
- 2. Kulbir singh Sidhu** : Methodology of Research in Education, Sterling Publishers PVT Ltd, New Delhi.

Question Paper Pattern

Maximum Marks = 100

Exam Duration Hours : 3 Hours

Each unit 10 Objective type Questions (Total 50 Questions carrying 2 Marks each)

SEMESTER – II
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
BUSINESS FINANCE

Core Course : CC6 **Maximum Marks : 100**
Instruction Hours : 6 **Code : 18KP2CO06**
Credit : 4

OBJECTIVE: To provide an insight into financial decision making procedure and their application in complex situation.

UNIT-I:

INTRODUCTION

An Overview of Financial Management – Indian Financial System – Financial Decisions - Approaches to Financial Management – Functions - Profit Vs. Wealth Maximization - Time Value of Money.

UNIT-II :

VALUATION OF SECURITIES

Valuation of Securities - Valuation of Debenture and Valuation of Shares - Financial Planning – Objectives – Factors – Capitalization - Meaning – Theories - Over & Undercapitalization.

UNIT-III :

WORKING CAPITAL MANAGEMENT

Working Capital Management – Cash Management – Sources of Long term Finance - Equity Shares - Preference Shares - Debentures or Bonds - Term Loans Retained Earnings.

UNIT-IV :

CAPITAL BUDGETING

Basis of Capital Budgeting Decision - Payback Period - Accounting Rate of Return and Discounted Cash Flow Method – Risk Analysis in Capital Budgeting - Risk Adjusted Discount Rate - Net Present Value - Cash Inflows.

UNIT-V :

CAPITAL STRUCTURE

Capital Structure Theories – Planning the Capital Structure – Dividend Policy - Issues in Dividend Decision, Walter’s Model, Gordon’s Model and MM Hypothesis.

NOTE : THEORY 80 % PROBLEM 20 %

BOOKS FOR REFERENCE:

1. I.M.Pandey : Financial Management, Vikas Publishing House PVT Ltd., New Delhi.
2. Dr.S.N.Maheswari: Elements of Financial Management, Sultan Chand & Sons, New Delhi.
3. M.Y.Khan, P.K.Jain: Financial Management, Tata Mc.Graw – Hill publishing company Limited, New Delhi.
4. Dr. R. Ramachandran &: Financial Management Theory& Problem, Sriram Publication, Dr.P.Srinivasan Trichy.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - II
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
CUSTOMER RELATIONSHIP MANAGEMENT

Core Course	: CC7	Maximum Marks	: 100
Instruction Hours	: 6	Code	: 18KP2CO07
Credit	: 5		

OBJECTIVE : To facilitate the students to understand the process of CRM, implementation of CRM strategies and customisation of services

UNIT-I:

INTRODUCTION AND SIGNIFICANCE

CRM Emerging Concepts; Need for CRM; CRM Applications; CRM Decisions; The Myth of Customer Satisfaction; CRM Model; Understanding Principles of Customer Relationship; Relationship Building Strategies; Building CRM by Customer Retention; Stages of Retention; Sequences in Retention Process; Understanding Strategies to Prevent Defection and Recover Customers.

UNIT II :

CRM PROCESS

Introduction and Objectives - An Insight into CRM and e-CRM / online CRM; The CRM cycle - Assessment Phase; Planning Phase; The Executive Phase; Modules in CRM, 4C's of CRM Process; CRM Process for Marketing Organization; CRM Affiliation in Retailing Sector; Key e-CRM features.

UNIT III :

CRM ARCHITECTURE

IT Tools in CRM; Data Warehousing - Integrating Data from different phases with Data Warehousing Technology; Data Mining: - Learning from Information using Data Mining Technology like OLAP etc.; Understanding of Data Mining Process; Use of Modelling Tools; Benefits of CRM Architecture in Sales & Productivity; Relationship Marketing and Customer Care, CRM Over Internet.

UNIT IV :

CRM IMPLEMENTATION

Choosing the right CRM Solution; Framework for Implementing CRM - A step by step Process - Five Phases of CRM Projects.

UNIT V :

DEVELOPMENT OF CUSTOMISATION

Beta Test and Data Import; Train and Retain; Roll out and System Hand-off; Support, System Optimisation and Follow-up; Client/Server CRM Model; Use of CRM in Call Centers using Computer Telephony Integration (CTI): CTI Functionality; Integration of CRM with ERP System.

BOOKS FOR REFERENCE :

1. Mohammed, H. Peeru & Sagadevan (2004) : Customer Relationship Management. Vikas Publishing House, Delhi.
2. Paul Greenberge (2005) : CRM-Essential Customer Strategies for the 21st Century. TataMcGraw Hill.
3. William, G. Zikmund, Faye W. Gilbert : Customer Relationships Management. Raymund McLeod Jr.; Wiley.
4. Alex Berson, Stephen Smith, (2004): Building Data Mining Applications for CRM. & Kurt Thearling Tata McGraw Hill

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - II
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
CORPORATE LAW

Core Course : CC8 **Maximum Marks : 100**

Instruction Hours : 6 **Code : 18KP2CO08**

Credit : 4

OBJECTIVE : To make the students gain a wider knowledge of the regulatory frame work relating to functioning of companies act in India.

UNIT-I:

INTRODUCTION

Provisions for Companies Act 1956 – Latest Amendments in Companies Act 2013 – Board of Directors – Directors – Appointment of Directors – Loans to Directors – Meeting of Directors.

UNIT-II :

INDUSTRY (DEVELOPMENT & REGULATION) ACT 1951

Object – Definition – Central Advisory Council – Development Council – Regulation of Scheduled Industries – Registration and Licensing – Investigation and take over Management of Industrial undertakings of Central Govt.

UNIT-III :

FOREIGN EXCHANGE

Foreign Exchange Management Act 1999 – Objects – Definition – Adjudication and Penalties – Directorate of Enforcement.

UNIT-IV :

CONSUMER PROTECTION ACT 1986

Consumer Protection Act 1986 – Definition – Consumer Protection Council – Consumer Disputes Redressal Agencies – District Forum – State Commission and National Commission.

UNIT-V :

WATER (PREVENTION & CONTROL OF POLLUTION) ACT 1974

Definition – Functions and Powers of various Boards – Compliance regarding Discharges causing Pollution, Penalties and Offences – Air (Prevention and Control of Pollution) Act 1981 – Definition – Functions and Powers of various Boards

BOOKS FOR REFERENCE:

1. N. D. Kapoor (Unit I & II) : Company Law, Sultan Chand & Sons, New Delhi.
2. N.K Jain (Unit III, IV, V) : Corporate Laws, Deep & Deep Publications Pvt. Ltd. New Delhi.
3. N. D. Kapoor, Kapoor : Corporate Laws and Secretarial Practices, Sulthan Dr. G. K. Chand & Sons, New Delhi.
4. U. K. Chandhary : Economic Legislation Law & Practice, Sultan Chand & Sons, New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - II
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
MANAGEMENT INFORMATION SYSTEM

Major Based Elective : MBE2
Instruction Hours : 6
Credit : 4

Maximum Marks : 100
Code : 18KP2COELC02

OBJECTIVE : To enable the students to trace the growing importance of information system, vital role in decision making, role of computers in this task

UNIT – I :
INTRODUCTION

Information System – Establishing the Framework - Business Model - Information System Architecture – Evolution of Information Systems.

UNIT – II :
MIS

Modern Information System – System Development Life Cycle – Structured Methodologies – Designing Computer Based Method - Procedures Control and Designing Structured Programs.

UNIT – III :
FUNCTIONAL AREAS

Finance - Marketing – Production - Personnel – Levels - Concepts of DSS, EIS, ES – Comparison - Concepts and Knowledge Representation – Managing International Information System.

UNIT – IV :
TESTING SECURITY

Testing security – Coding Techniques – Detection of Error – Validation – Cost Benefit Analysis – Assessing the Value and Risk of Information Systems.

UNIT – V :
SOFTWARE ENGINEERING QUALITIES

Software Engineering Qualities – Design – Production – Service - Software Specification - Software Metrics - Software Quality Assurance – Systems Methodology - Objectives – Time and Logic - Knowledge and Human Dimension – Software Life Cycle Models – Verification and Validation.

BOOKS FOR REFERENCE :

1. D P Goyal : Management Information Systems, Management Perspectives, Second Edition, Macmillan, New York.
2. Dr. S.P. Rajagopalan : Management Information Systems, Margham Publications, Chennai.
3. Gordon B.Davis : Management Information System, Conceptual Foundations, McGraw Hill, U.S.A.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours: 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - III
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
RESEARCH METHODOLOGY

Core Course : CC9 **Maximum Marks : 100**
Instruction Hours : 6 **Code : 18KP3CO09**
Credit : 5

OBJECTIVE : To help the students to gain knowledge about Research Methodology.

UNIT-I:

INTRODUCTION

Research: Meaning – Purpose – Types – Steps in Research – Experimental Research – Survey Research – Case Study Method.

UNIT-II :

RESEARCH PROBLEM

Formulation a Research Problem – Literature Review – Hypothesis –Preparation of Research Design – Steps and Significance of Research Design.

UNIT-III :

SAMPLING

Sampling Techniques – Sampling Theory – Sampling Errors –Sampling methods and their Applications – Advantages and Limitations.

UNIT-IV :

DATA COLLECTION

Data Collection and Measurement – Primary and Secondary Data –Methods of Data Collection – Questionnaire and Schedule – Check List – Pretest – Pilot Study.

UNIT-V :

DATA ANALYSIS

Processing and Analysis of Data – Editing , Coding and Interpretation of data – Report Writing – Steps – Contents – Precautions for writing Research Report.

BOOKS FOR REFERENCE:

- 1. C. R.Kothari : Research Methodology, New Age International (P) ltd. Publishers, New Delhi.**
- 2. P. Saravanavel : Research Methodology, Kitab Mahal Publication, Allahabad.**
- 3. P. Ravilochanan : Research Methodology, Margham Publication, Chennai.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – III
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
ADDITIONAL CREDIT PAPER
COMPETITIVE SKILLS

Part : **Maximum Marks: 100**
ACP : **Code** : **18KP3SSCO2**
Instruction Hours :
No. of Credits : **5**

UNIT –I :

BANKS

Banks – English Languages – General Awareness Marketing and Computers - Data Analysis and Inter Practicals - Test of Reasoning.

UNIT-II :

SSC

SSC- Personality – Interview – Computer Proficiency – Skill Test –Quantitative Aptitude.

UNIT- III :

RAILWAY RECRUITMENT BOARD

Railway Recruitment Board – General Awareness - Arithmetic Ability – Technical Ability - Reasoning Ability - General Intelligence.

UNIT –IV :

TNPSC

TNPSC- History and Culture of India – Indian Polity – Indian Economy –Indian National Aptitude and Mental Ability - General Science – Physics – Chemistry – Botony – Zoology - Current Events – History - Political Science – Geography - Economics.

UNIT – V :

UPSC

UPSC –Commerce and Accounting – Financial Account – Cost Account – Test Account – Auditing – FM – Financial Market and Services – Organization Theory - Organization Behavior – HRM – Industrial.

BOOKS FOR REFERENCE

1. V.V.K. Subburaj : Railway recruitment exams, Sura College of Competition Chennai.
2. V.V.K. Subburaj : RRB, Technical cadre, Sura College of Competition, Chennai.
3. Lal & Jain : UPSC, Special class Railway apprentice examination, Upkar Prakashan, Agra.
4. TNPSC : General Tamil, Eagles Eye, Chennai.
5. T. S. Jain : SBI clerical cadre. Upkar, Prakashan, Agra.
6. Davinder Kaur Bright : Bank Clerical recruitment exam, Bright Publications, New Delhi.
7. SSC : Combined higher Secondary level, Arihant Publications, Meerut.

Question Paper Pattern

Maximum marks = 100

Exam Duration Hours : 3 Hours

Each unit 10 Objective type Questions (Total 50 Questions carrying 2 Marks each)

SEMESTER - III
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 - 19 ONWARDS
PRODUCTION AND MATERIALS MANAGEMENT

Core Course : CC10 **Maximum Marks : 100**
Instruction Hours : 6 **Code : 18KP3CO10**
Credit : 4

OBJECTIVE : To provide as insight into the various activities involved in the
Production and Material Management.

UNIT-I:

INTRODUCTION

Production & Materials Management – Meaning – Significance – Production System & Design – Product Planning & Development – Product Life Cycle – Make or Buy Decisions.

UNIT-II :

PLANT LOCATION

Plant Location – Importance - Factors – Plant Layout– Principles –Types of Layout (Process, Product hybrid, Fixed Position)

UNIT-III :

PRODUCTION CONTROL

Production control – Objectives & Benefits – Functions of Production Control – Types – Stages.

UNIT-IV :

INVENTORY CONTROL

Inventory Models – EOQ – Objections of EOQ Models – Limitations of EOQ – Determination of Stock Levels (Mini – Max) – Economic Batch Qty – Physical Verification of Materials.

UNIT-V :

STORE KEEPING

Store Keeping & Warehousing Management – Types - Functions – Responsibility of Store Keeper – Benefits of Scientific Store Keeping – Centralized and Decentralized Stores – Advantages and Disadvantages of Centralized Stores.

BOOKS FOR REFERENCE:

- 1. P. Saravanavel & S. Sumathi : Production & Materials Management - Margham Publications, Chennai.**
- 2. Menipaz, Ehed, : Essentials of Production and Operations Management Prentice Hall.**
- 3. Gopalakrishnan. P : Purchasing and Materials Management, TMH, New Delhi. Question Paper Pattern**

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - III
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
ACCOUNTING SOFTWARE - PRACTICALS

Core Course : CC11 **Maximum Marks : 100**
Instruction Hours : 6 **Code : 18KP3CO11P**
Credit : 5

OBJECTIVE: To enable the students to gain knowledge about Accounting Software.

UNIT-I:

FUNDAMENTALS OF ACCOUNTING

Fundamentals of Accounting - Tally Features – Configuration – F11, F12 – Classification of Accounts (Groups and Ledger) – Voucher - Menu - Computerized Accounting Vs Manual Accounting.

UNIT-II:

COMPANY CREATION

Creation of Company – Selecting, Editing & Deleting Companies – Configuration – Groups & Ledgers : Creating – Altering - Deleting and Entering Opening Balances from Trial Balance – Adjustment Entries – Accounting Voucher Entries (including debit and credit note) - Petty cash.

UNIT-III:

REPORT GENERATION

Generating Reports – Day Books, Trial Balance, Final Accounts – Cash flow & fund flow statements – Ratio Analysis – Usage of reference in payment & receipt vouchers – Voucher numbering – Invoicing - Printing Configuration – Printing Vouchers - Invoices and Reports – Export and Import of Data - Security Controls in Tally.

UNIT-IV:

COST CENTRE

Cost Centre & Cost Category: Creation, Alteration and Deletion – Allocation and Apportionment of cost: Voucher Entries using Cost Centres – Cost centre related reports – Budgets: Creation - Alteration - Deletion and Reporting.

UNIT-V:

INVENTORIES

Introduction to Inventories – Inventory features – Inventory info – Creation - Alteration and Deletion of Stock group - Stock category - Stock item – Godown – Accounting vouchers using Stock items – Inventory Vouchers – Types of Inventory vouchers – Purchase Order Processing – Sales Order Processing – Pure Inventory Voucher Entries – Sales Tax Control Ledgers.

BOOKS FOR REFERENCE:

- 1. Vishnu P. Singh (2010) : “Tally. Erp 9”, Computech Publications Ltd., New Delhi.**
- 2. Nadhani A.K & Nadhani K.K(2005) : ‘Implementing Tally’, BPB Publications, New Delhi.**
- 3. Srinivasa Valaban (2006) : Computer Applications in Business, Sultan & Sons, New Delhi.**
- 4. K.Mohankumar & Dr.S.Rajkumar : Computer Application in Business, Vijay – Nichole Imprints PVT. Ltd, Chennai.**
- 5. A.K Nadhani, (2008) : Simple Tally 9, BPB Publications, Chennai.**

Question Paper Pattern

Maximum marks = 60

Exam Duration Hours : 3 Hours

Part A : 4 x 10 = 40

Part B : Record = 10

Viva = 10

Total = 60

SEMESTER – III
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
SERVICES MARKETING

Major Based Elective Course : MBE1 Maximum Marks: 100
Instruction Hours : 6 Code : 15KP3COELC01
Credit : 5

OBJECTIVE: To make students gain expert knowledge of marketing various services.

UNIT-I:

INTRODUCTION TO SERVICES

Meaning – Reasons for growth – Role of Services – Types – Characteristics – Differences between Goods and Services – Classification of Services.

UNIT-II :

SERVICES MARKETING MANAGEMENT

Services Marketing Management – Process – Managing & Controlling – Managing Demand and Supply – Managing Capacity Constraints – Strategies to match Demand to meet Capacity – Strategies to Match Capacity to meet Demand – Strategies when Demand & Capacity be Matched.

UNIT-III :

SERVICES MARKETING MIX

Services Marketing Mix – Product – Service Concept – Stages in new Service Development – Positioning; Price – Role – Steps – Objectives – Methods; Promotion – Steps – Promotion Mix; Place – Location – Channels – Role of Customers; People – Types of Service Personnel – Role of Front line Staff – Quality Circles; Process – Designing Service process – Layout – Bench Marking; Physical Evidence – Physical facilities – Physical setting – Social Setting – Role – Guidelines.

UNIT-IV :

SERVICES MARKETING - I

Bank Marketing – Concept - Banking Services - Profile of users -Insurance Marketing – Concept – Users – Profile - Tourism Marketing -Concept – Users - Profile of Users - Tourism Marketing in Indian Perspective.

UNIT-V :

SERVICES MARKETING-II

Educational Marketing - Strategic Marketing for Higher Education – Hospital Marketing – Types – Justification for Marketing Medicare – Thrust areas for Medicare Services – Hotel Marketing – Types – Selling the hotel Service – Users.

BOOKS FOR REFERENCE:

- 1.Vasanthi Venugopal,V.N.Raghu : Services Marketing, Himalaya Publishing House, Mumbai. (Unit I,II,III&IV)
2. S.M.Jha (Unit II,IV & V) : Services Marketing, Himalaya Publishing House, Mumbai
3. Dr.V.Balu : Services Marketing, Sri Venkateshwara Publications, Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER – III
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS

TOTAL QUALITY MANAGEMENT

Major Based Elective Course	: MBE4	Maximum Marks	: 100
Instruction Hours	: 6	Code	: 18KP3COELC04
Credit	: 4		

OBJECTIVE: To facilitate the understanding of quality management principles and process.

UNIT- I :

INTRODUCTION

Introduction to Quality – Need, Evolution , Meaning and Definitions of Quality - Dimensions of Product and Service Quality –Types and Categories, Levels, Determinants and Measurement of Quality - Basic Concepts of TQM - Aims of TQM- Elements of TQM - Strategic Tools and Techniques of TQM - Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM.

UNIT – II :

QUALITY MANAGEMENT

Quality Control - Quality And Cost Consideration –Leadership - Strategic Quality Planning, Customer Focus - Customer Orientation, Customer Satisfaction, Customer Complaints, Customer Retention - Employee Involvement Motivation, Empowerment, Team and Teamwork, Quality Circles, Recognition and Reward, Performance Appraisal - Continuous Process Improvement - PDCA Cycle, 5S, Kaizen – Quality Planning.

UNIT – III :

QUALITY CONTROL

Meaning and significance of Statistical Process Control (SPC) – Construction of Control Charts for Variables and Attributes - Process Capability – Meaning – Significance and Measurement – Six Sigma - Concepts of Process Capability- Seven Tools of Quality.

UNIT – IV :

QUALITY IMPROVEMENT

Quality improvement – Recent techniques for quality improvement – Zero defect – Defect diagnosis and prevention – ABC analysis – Total quality control –Environmental management system.

UNIT – V :

QUALITY SYSTEM

Introduction to ISO – selection of ISO model and implementation of ISO 9000 - Need for ISO - Importance- Benefits - Steps to Achieve ISO – Quality Management Systems – Elements - Implementation of Quality System- Guidelines for Performance Improvements - Quality Audits.

BOOKS FOR REFERENCE :

- 1. V.S.Bagad : Total Quality Management, Technical publication, Pune.
(Unit – II & III)**
- 2. Dr.Vikram Sharma : Quality Management, JLH National Publication, U.P.
(Unit – I)**

3. **L.Suganthi, & Anand A. Samuel, Limited, Delhi.** :Total Quality Management, PHI Learning Private
(Unit – II)
4. **Durga Devipradeepa &Dr.N.R.V.Prabhu Consultancy, Chennai.** :Total Quality Management, UAR Publishing &
(Unit – V)
5. **Prof. K.Shridhara Bhat: Total Quality Management, Himalaya Publishing**
(Unit – I) House, Mumbai Prof.
6. **Prof. R.Saravanavel & S.Balakumar** : Total Quality Management, Margham Publications, Chennai.
(Unit – IV)
7. **Lal. H** :Total Quality Management, New Age International Publisher,
(Unit – IV) New Delhi.

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A :10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - IV
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

Core Course : CC 12
Hours : 6
Credit : 4

Maximum Marks : 100
Code : 18KP4CO12
Instruction

OBJECTIVE : To provide the students understand the conceptual framework underlying security and portfolio management.

UNIT-I:

INTRODUCTION

Portfolio Management – Phases – Evolution – Role – Principle.

UNIT - II :

INVESTMENT

Investment Objectives – Media, Investment Process, Features – Risk and Return: Tax - Marketability and Liquidity - Classification.

UNIT-III :

VALUATION

Valuation of Equity Shares - Share Valuation – Models - Valuation of Bond – Derivatives – Financial Derivatives – Bond return – Price – Returns – Risk.

UNIT-IV :

PORTFOLIO ANALYSIS

Portfolio Analysis – Technical Analysis – Industry Analysis - Company Analysis – Fundamental Analysis.

UNIT-V :

PORTFOLIO SELECTION

Portfolio Selection – CAPM – Revision – Evaluation - DOW Theory – Efficient Market Theory – Markowitz Theory.

BOOKS FOR REFERENCE:

1. S.Kevin : Security Analysis and Portfolio Management, International Book House, NewDelhi
2. V.A.Avadhani : Security Analysis and Portfolio Management, International Book House NewDelhi. (Unit II,III).
3. Punithavalli Pandian : Security Analysis and Portfolio Management, Vikas Publication PVT.Ltd (Unit II,III) New Delhi.
4. Preeti Singh : Investment Management, Himalaya Publications, New Delhi. (Unit I,IV,V)

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - IV
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
EXPORT MANAGEMENT

Core Course : CC13 **Maximum Marks** : 100
Instruction Hours : 6 **Code** : 18KP4CO13
Credit : 4

OBJECTIVE : To create awareness on the concepts of export and export procedures

UNIT – I :

INTRODUCTION

Meaning – Objectives – Scope – Need and Importance of Export Trade Distinction between Internal Trade and International Trade – Problems Faced by Exporters.

UNIT – II :

EXPORT PROCEDURES - I

Steps involved in export – Confirmation of order – Production of Goods – Shipment - Negotiation – Documents used for Export – Commercial documents – Regulatory Documents – ISO Certificate.

UNIT – III :

EXPORT PROCEDURES – II

Export Procedures - Excise Clearance for Exports - Marine Insurance of Export Cargo – Shipment of goods - Quality and Pre shipment Inspection - EGC Services - GSP Rules of origin.

UNIT – IV :

EXPORT POLICY AND PROMOTION

EXIM Policy – Regulation of Export Trade - Organisations for Promoting Export – Incentives and Assistance – Export Houses – Trading Houses.

UNIT – V :

EXPORT PROMOTING INSTITUTIONS

Institutions Engaged in Financing Export – ECGC – EXIM Bank - Organisations Promoting Export – Commodity Board – EPC – STC – MMTC.

BOOKS FOR REFERENCE:

1. Export Management – Balagopal, T.A.S., Himalaya Publishing House.
2. Export Marketing – Rathor, B.S., and Rathor, J.S., HPH.
3. International Trade and Export Management – Francis Cherunilam.
4. New Export Import Policy – Nabhi's publications

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - IV

SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 - 19ONWARDS HUMAN RESOURCE MANAGEMENT

Core Course : CC14 Maximum Marks : 100
Instruction Hours : 6 Code : 18KP4CO14
Credit : 5

OBJECTIVE: To make the students gain expert knowledge Human Relations.

UNIT-I:

INTRODUCTION

HRM – Concept – Meaning – Significance – Various Approaches to HRM – Scope – Functions – Strategic HRM

UNIT-II:

BEHAVIOUR

Individual Behaviour – Personality – Perception – Value Attitude – Job Analysis & Design - Job Satisfaction – Learning – Group Behaviour –Group Dynamics.

UNIT-III:

MOTIVATION

Motivation – Leadership - Leadership Theories - Theory X and Theory Y, Trait Theory, Goal Theory of Leadership - Styles – Conflicts and Stress – Power and Authority.

UNIT-IV:

DYNAMICS

Organizational Dynamics – Communication – Resistance to Change –Management of Change – Organizational Development – Size, Technology, Environment and Organizational Design and Culture.

UNIT-V :

HUMAN RESOURCE DEVELOPMENT

Human Resources Development – Personnel Function – Manpower Planning – Recruitment and Selection – Employee Remuneration – Plans and Policies – Performance Appraisal – Training and Development – Morale and Productivity – Career Planning.

BOOKS FOR REFERENCE:

1. C.B.Gupta : Human Resource Management, Sultan Chand & Sons, New Delhi.
2. L.M.Prasad : Organizational Behaviour, Sultan Chand & Sons, New Delhi.
3. K. Aswathappa : Organizational Behaviour, Himalaya Publishing House, Mumbai.
4. S.S.Khanka : Human Resource Management, S.Chand, New Delhi.
5. Shashi K. Gupta : Organisational Behaviour, Kalyani Publishers, New Delhi.
Roshi Joshi

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

SEMESTER - IV
SYLLABUS FOR M.COM UNDER CBCS PATTERN 2018 – 19 ONWARDS
MARKETING MANAGEMENT

Major Based Elective : MBE5

Maximum Marks : 100

Instruction Hours : 6

Code

: 18KP4COELC05

Credit : 4

OBJECTIVE : To provide knowledge about the concept of Marketing and Marketing Management

UNIT - I :

Introduction

Introduction to Marketing – Classification – Characteristics – Objectives – Factors Influencing Marketing Concept – Marketing Management – Objectives – Functions – New Thoughts in Marketing.

UNIT – II :

Buyer Behaviour

Definitions of Consumer Behaviour – Need and Importance of Consumer Behaviour – Buying Process – Social and Cultural Influences on Buyer Behaviour – Determinants of Consumer Behaviour – Characteristics of Organisational Buying Behaviour – Components of Industrial Buying Process – Problem Recognition.

UNIT – III :

Marketing Information System and Sales Force Management

Definitions of MIS – Sources – Characteristics – Components – Elements of Good MIS – MIS Design – Marketing Management and Information Needs – Need for Information – Sales-Force Management – Selection Process – Six steps in Selection Procedure – Training of Sales force – Importance – Methods of Training – Methods of Motivation – Personal Conference – Financial Security Programmes – Sales force Control – Importance of Sales force – Methods of Performance Appraisal – Salesman’s Performance against Quota.

UNIT – IV :

Marketing Research

Definitions – Features – Objectives – Scope – Process – Methods – Reasons for use of Survey – Methods of Survey - Projective Techniques.

UNIT – V :

Ethics in Marketing and E-Marketing Management

Business Corruption – Misuse of Powers – Political Contributions – Information Leakage – Manipulation of Accounts and Records – E-marketing Objectives – E-marketing Strategy – Benefits – Activity Level e-business Model – Customer Perspective – Measurement of the Innovation and Learning Perspective – Measurement of Financial Perspective.

TEXT BOOK

Dr. L. Natarajan : Marketing Management, Margham Publications, Chennai.

BOOKS FOR REFERENCE:

- 1. R. S. N. Pillai & Bagavathi : Modern Marketing, S.Chand & Co. Ltd. New Delhi.**
- 2. Dr. C. B. Gupta & Dr. N. Rajan Nair : Marketing Management, Sultan Chand & Sons, New Delhi.**

Question Paper Pattern

Maximum Marks = 75

Exam Duration Hours : 3 Hours

Part A : 10 x 2 = 20 (Two Questions from Each Unit)

Part B : 5 x 5 = 25 (Either or type - One Question from Each Unit)

Part C : 3 x 10 = 30 (One Question from Each Unit)

**KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN
(AUTONOMOUS)
PG & RESEARCH DEPARTMENT OF COMMERCE
M.PHIL
PART I : PAPER - I RESEARCH METHODOLOGY**

Code No. 18KMICO1

Hours: 4; Credits : 4

UNIT I :

Foundations of Research

Meaning, Objectives, Motivation, Utility. Concept of theory, empiricism, deductive and inductive theory. Characteristics of scientific method - Research Process. Problem Identification & Formulation – Research Question – Investigation Question – Measurement Issues - Hypothesis – Qualities of a good Hypothesis – Null Hypothesis & Alternative Hypothesis. Hypothesis Testing - Logic & Importance

UNIT II :

Research Design

Concept and Importance in Research - Features of a good research design – Exploratory Research Design – types and uses, Descriptive Research Designs - types and uses. Experimental Design: Causal relationships, Concept of Independent & Dependent variables, concomitant variable, extraneous variable, Treatment, Control group. Qualitative and quantitative research: Qualitative research – Quantitative research – Concept of measurement, causality, generalization, replication.

UNIT III:

Measurement

Concept of measurement–Problems in measurement in management research - Validity and Reliability. Levels of measurement - Nominal, Ordinal, Interval, Ratio. Attitude Scaling Techniques: Concept of Scale – Rating Scales viz. Likert Scales, Semantic Differential Scales, Constant Sum Scales, Graphic Rating Scales – Ranking Scales – Paired Comparison & Forced Ranking.

UNIT IV:

Types of Data

Primary & Secondary Data – Meaning, Definition, Sources, Characteristics, Advantages and disadvantages, Observation method, Questionnaire Construction, Personal Interviews, Telephonic Interview, Mail Survey, Email/Internet survey.

UNIT V:

Sampling

Sampling: Concepts of Statistical Population, Sample, Sampling Frame, Sampling Error, Sample Size, Non Response. Characteristics of a good sample. Probability Sampling – Simple Random Sampling, Systematic Sampling, Stratified Random Sampling & Multi-stage sampling - Non Probability Sampling – Judgment, Convenience, Quota & Snowballing methods. Determining size of the sample - Practical considerations in sampling and sample size.

Books Recommended:-

- 1. C.R.Kothari, (2010), Research Methodology, New Age International (P) Ltd., Publishers, New Delhi**
- 2. Dr. P. Ravilochanan, (2008) Research Methodology, Margham Publications, Chennai**
- 3. P.Saravanavel, (2010), Research Methodology, Kidap Publications, Allahabad**
- 4. R. Panneerselvam, (2011), Research Methodology, PHI Learning Private limited, New Delhi.**
- 5. Santosh Gupta, (2010), Research Methodology & Statistical Techniques, Deep & Deep Publications private limited, New Delhi.**

PART I : PAPER - II STATISTICAL ANALYSIS FOR BUSINESS RESEARCH

Code No. 18KMICO2

Hours: 4; Credits : 4

UNIT I :

Business statistics

Meaning and Definition - Scope and functions – Advantages and limitations - Meaning of data, variables, random variable, population and Sampling Techniques - Measures of central tendency - Mean, Median, Mode - Measures of dispersion - Standard deviation, Mean deviation and Co-efficient of Variation.

UNIT II :

Correlation Analysis

Simple, rank, Partial and Multiple Correlation – Auto Correlation - Regression analysis - Simple Linear Regression, Use of dummy variables.

UNIT III :

Testing of Hypothesis

Z Test – t Test - Chi-square Test - F Test and ANOVA.

UNIT IV : Multivariate Analysis (Theory only)

Principal Component Analysis, factor analysis, discriminate analysis - Cluster Analysis and Path analysis.

UNIT V :

Data Analysis

Data Preparation – Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis – Cross tabulations and Chi-square test Non parametric statistics in Data analysis - The Sign test - Runs test - Time Series analysis- SPSS (basics). Interpretation of Data and Report Writing - Layout of a Research Paper.

Books Recommended:-

- 1. S.P.Gupta, (2008), Statistical Methods, Sultan Chand, New Delhi.**
- 2. R.S.N Pillain & Bagavathi, (2003), Practical Statistics, S.Chand & Co., New Delhi**
- 3. Prem Kumar Gupta & D.S. Hira, (2012), Operations Research, S.Chand & Co., New Delhi.**
- 4.P.R.Vittal, (2006), Business Statistics & Operations Research, Margham Publications, Chennai.**
- 5. Vohra (2001), Quantitative Techniques in Management, Tata Macgraw Hill LTD., New Delhi.**

**PART I : PAPER - III ADVANCED FUNCTIONAL MANAGEMENT
(THEORY ONLY)**

Code No. 18KMICO3

Hours: 4; Credits : 4

Unit I :

Financial Management

Financing decisions – Theories of capital structure – financial leverage EBIT – EPS analysis – Analysis of internal and external financing methods – Capital structure planning in practice – determinants.

Unit II :

Human Resources Management

Recruitment Management – Training and Development – Reward Management – Welfare Measures – Performance Management – Employee Maintenance and Separation - Strategic Human Resources Management – Global Human Resources Management – Recent Trends in HRM

Unit III :

Marketing Management

Marketing Research Objectives and methods of marketing research – Retail Management – Global Marketing – rationale and principle – product strategy and organization for Global marketing – E-marketing – Marketing of Services.

Unit IV :

Financial Markets

Capital Market – Instruments – Equities, debts and derivatives – Primary Market – Issue methods. Market intermediaries – Secondary Market – Trading techniques and settlement procedures – Mutual Funds.

Unit V :

Banking Practices

Modern and Commercial Banking Practices - Priority Sector lending in Banks-Small Scale Industries & Tiny Sector-Functions of DIC- Role of Co-operative Banks Services of banks – CAMELS, Tele Banking- Credit Card, Debit Card -ATM – Net Banking - Core Banking in India.

Books Recommended:

- 1. S.N. Maheswari, (2010), Financial Management, Sultan Chand, New Delhi.**
- 2. S.S. Khanna, (2012), Human Resource Management, S.Chand & Co., New Delhi.**
- 3. R.S.N. Pillai and Bagavathy, (2009), Modern Marketing, S. Chand & Co., New Delhi.**
- 4. E.Gordon & K.Natarajan, (2010), Financial Markets & Services, Himalaya Publishing House, New Delhi.**
- 5. E.Gordon & K.Natarajan, (2007), Banking Theory Law & Practice, Himalaya Publishing House, New Delhi.**

**PART I: PAPER IV - TEACHING AND LEARNING SKILLS
(Common Paper)**

Code No. 18KMICO4

Hours: 4; Credits : 4

Unit I:

Teaching Skills

Teaching skill: Definition, Meaning and Nature – Types of Teaching skills: Skill of Set Induction, Skill of Stimulus Variation, Skill of Explaining, Skill of Probing Questions, Skill of Black Board writing and Skill of Closure – Integration of Teaching Skills – Evaluation of Teaching Skills

Unit II:

Computer Application Skills

Computer system: Characteristics, Parts and their functions – Different generations of Computer – Operation of Computer: switching on / off / restart, Mouse control, Use of key board and some functions of key – Information and Communication Technology (ICT): Definition, Meaning, Features, Trends – Integration of ICT in teaching and learning.

Unit II:

Communication Skills

Communication: Definitions – Elements of Communication: Sender, Message, Channel, Receiver, Feedback and Noise – Types of Communication: Spoken and written; Non-verbal communication – Intrapersonal, Interpersonal, Group and Mass communication – Barriers to communication: Mechanical, Physical, Linguistic & Cultural – Skills of communication: Listening, Speaking, Reading and writing.

Unit IV:

Remedial Skill:

Remedial teaching-diagnosis-Principles of Diagnosis - Steps in Diagnosis – Reading - Remedial Education in Reading - Causes of Reading Disability - Reading Programmes - Development of reading Programme - Corrective Instruction - Remedial Instruction - Remedial Teaching for Academic Low Achievers.

Unit V: Pedagogy

Instructional Technology: Definition, Objectives and Types – Difference between Teaching and Instruction – Lecture Technique: Steps, Planning of a Lecture, Delivery of a lecture.

Text Book

1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi.
2. Pandey S.K. (2005) Teaching Communication, Commonwealth Publishers, New Delhi
3. Don Skinner (2005), Teacher Training, Edinburgh University Press Ltd., Edinburgh.
4. Kumar K.I (2008) Educational Technology, New Age International Publishers, New Delhi.
5. Sharma R. A. (2006) Fundamentals of Educational Technology, Surya Publications, Meerut.

Reference:

1. **Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Van Weart, UNESCO, 2002.**
2. **Mangal, S.K. (2002) Essential of Teaching – Learning and Information Technology, Tandon Publications, Ludhiana.**
3. **Michael D. and William (2000), Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, New York.**
4. **Ram Babu A. and Dandapani S (2006) Microteaching (Vol.1&2)Neelakamal Publications, Hyderabad.**

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)

Thanjavur-613007

Department of Business Administration

BBA- Syllabus 2018 – 2019

PRINCIPLES OF MANAGEMENT

Hours :6

Code : 18K1BB01

Credit Allotted: 5

Max Marks : 75

UNIT – I

Management – Definitions – Nature of Management – Distinction between Administration and Management – Importance – functions of Management – Managerial roles(informational, Interpersonal and decisional), Management levels and skill mix.

UNIT – II

Contributions of experts to management thought, F.W.Taylor – Henry Fayol – Management by objectives – Planning, Definitions – Nature of Planning – Importance – limitations of planning – process of planning – Classifications of plans according to time – Methods of planning.

UNIT – III

Decision Making – Definitions – Characteristics – importance – problems in Decision making – steps involved in decision making – Types of decision-Methods or Techniques of Decision making.

UNIT – IV

Organization – Definition – Process – Importance, Organization structure – Chart, Merits, drawbacks .principles of organization – Types of organization.

UNIT – V

Delegation and Decentralization – Definitions of Delegation of Authority – Process or Elements of delegation – Advantages – Types – Principles how to make delegation effective – Decentralization – Distinction between Delegation and decentralization. Factors determining the degree of decentralization.

REFERENCE:

- 1. PC Tripathi,PN Reddy- Principles of Management.TataMcGraw Hill,4th edition.**
- 2. Jayasankar,Principles of Management.**
- 3. Umasekaran, Organisational Behaviour.**

MARKETING MANAGEMENT

Hours : 6
Code :18K1BB02

Credit Allotted: 5
Max Marks : 75

UNIT – I

Marketing –Definition, Classification of markets, Objectives of Marketing, Functions of marketing, Difference between marketing and selling –. New trends in marketing – Relationship marketing, SMS Marketing.

Meaning of e- Business,Tele marketing, automatic vending, e- banking, e-trading, e-auctioning.

UNIT – II

Marketing Management – definition , Importance, Objectives, Functions. Marketing planning process, Importance of marketing planning, Types of Demand. Marketing mix. Marketing environment.

UNIT – III

Buyer behavior –factors influencing buyer behavior-buying process. Difference between consumer, Customer and buyer. Marketing Research-Definition, Objectives of marketing research, Types of Marketing research, Advantages of Marketing research. Methods of data collection.

UNIT – IV

Market segmentation – Definition, Bases for segmentation – Advantages – Procedure – Qualities of a good market segment . Market Targeting, Product positioning, Qualities of successful position. Product differentiation-Meaning.

UNIT – V

Product – Meaning – Types– Product life cycle – Product planning – product mix .

Pricing -definition ,objectives of pricing ,Importance ,Factors influencing pricing – pricing methods, kinds of pricing.

REFERENCE:

1. Marketing Management – J.Jayashankar – Margham Publications
2. Marketing Management – Rajansaxena – TataMcGrawHill, 2002.
3. Marketing Management – S,Jayachandran – TMH, 2003.
4. Marketing management – RSN Pillai & Bagavath

MANAGERIAL SKILLS

Hours : 4
Code :18K1BBABB1

Credit Allotted: 3
Max Marks : 75

UNIT: I

Managing self

Importance of knowing oneself-Process of knowing oneself-SWOT Analysis for an individual. Self esteem-Characters associated with people having high self esteem and low self esteem-Ways to improve one's self esteem.

UNIT-II

Managing others/Interpersonal skills

Interpersonal skills-definition. Ways to Improve relationship. Transactional analysis-Three ego states-Johari window. Managing time-Time management matrix. Factors to be considered for successful time management. Time management tips for students.

UNIT: III

Strategic thinking – Stages in strategic thinking- Process of strategic thinking-Importance and characteristics of strategic thinking-How to develop strategic thinking. Lateral thinking –Meaning – Need and Uses of lateral thinking-Techniques of lateral thinking.

UNIT: IV

Decision Making- Process of decision making-steps to effective decision making. Conflict meaning-sources of conflict- techniques of conflict resolution. Steps for conflict resolution.

UNIT:V

Boss-subordinate relationship – Steps in building relationship with boss. Change management- why people resist to change ?- Change management model- How to reduce resistance to change?

TEXT BOOK:

Dr.Alex K. (2012) Managerial skills -S. C hand &Company LTD, Ram Nagar,
New Delhi- 110 055.
Mobile No: 94425 14814

HUMAN RESOURCE MANAGEMENT

Hours : 6
Code :18K2BB03

Credit Allotted: 5
Max Marks : 75

UNIT – I

Meaning and Definition of HR – Characteristics, Scope, Objectives – principles of HRM – Functions of Personnel Department – Managerial and Operative functions. Role of a HR manager.

UNIT – II

Basics and needs of HR Planning – Factors affecting HR planning – Steps in HR planning – Recruitment, Selection and placement of personnel – Interviews and Tests – Job Analysis, Job Description, Job Specification, Job Evaluation.

UNIT – III

Training – Objectives – methods – executive development methods – Promotion – criteria and types – Transfer – Types – career planning – meaning – importance.

UNIT – IV

Wages – Different methods of wage payments – time rate – piece rate. Incentives – Financial and Non Financial Incentives, Merits of Incentives, Problems arising out of Incentives, Requirements of a sound incentive plan. Profit Sharing – Characteristics of profit sharing, Merits and demerits of profit sharing, Non Financial Incentives-Fringe Benefits.

UNIT – V

Performance evaluation – methods – Discipline and Disciplinary procedure – Grievances and Grievance Handling – steps

REFERENCE:

1. Human Resource Management – J.Jayasankar
2. Human Resource Management – S.S.Khanka – Himalaya publishing house
3. Personnel Management – C.B.MAMORIA, Himalaya publishing house
4. Personnel Management – ARUN MONAPPA, MIRZA SAIYADAIN, TataMcGrawHill

BUSINESS LAW

Hours : 6
Code :18K2BB04

Credit Allotted: 5
Max Marks : 75

OBJECTIVE: To acquaint the students with principles and legal aspects of Various legislations like contract, agency, partnership, insurance and sale of goods act.

UNIT – I

Contract Act – Definition, Distinction between agreement and contract, Classification – Essentials of a contract. Offer-Types of offer. Legal rules regarding consideration. Coercion , Effects of undue influence, Essential elements of fraud.

UNIT – II

Performance of Contract – Conditions of valid offer to perform. Assignment of contract. Modes of Discharge of Contract – Remedies for Breach of Contract. Types of damages.

UNIT – III

Agent and Principal definition, Creation of agency, Classification of agent, Duties of an agent. Sub agent and substituted agent definitions. Modes of Termination of Agency.

UNIT – IV

Contract of Sale- essentials of contract of sale. Goods – classification of Goods –Document of title to goods. Difference between condition and warranty,Implied conditions in a contract of sale. Delivery of goods- Rules. Rights of an unpaid seller.

UNIT – V

Partnership – Definition, essentials of partnership – Rights, duties and Liabilities of Partners – Types of Partnership – Dissolution of Partnership.

REFERENCE:

1. Elements of Mercantile Law – N.D.KAPOOR
2. Principles of Mercantile Law – B.N.TANDON
3. Mercantile Law – DAVAR
4. Business Law – PILLAI &BHAGAVATHI

STATISTICS AND MATHEMATICS OF MANAGEMENT

Hours : 4
Code : 18K2BBAS1

Credit Allotted: 3
Max Marks : 75

UNIT – I

Statistics – Definition, Merits and demerits, Methods of collecting primary data and secondary data. Classification and Tabulation – Objectives, Types and uses. Bar Diagrams simple, component, Multiple, Percentage and Pie diagram. Graphs- Histograms and Ogives.

UNIT – II

Measures of central Tendency – Mean, Median, Mode – merits, demerits and simple problems. Measures of Dispersion – Range, Quartile Deviation Standard Deviation.

UNIT – III

Simple correlation – Karl pearson’s correlation co-efficient and Spearman’s rank correlation co-efficient, Simple Regression lines – simple problems. Index numbers – Laspeyre’s, paasche’s and Fisher’s Index numbers – simple problems.

UNIT – IV

Definition of the linear programming problem, decision variable, basic assumptions mathematical formulation of the problem - procedure of solving LPP by Graphical method simple problems.(Two variables only}

UNIT – V

Matrix – definition, Types of matrices, Addition, Subtraction and Multiplication of matrices. Determinants of order one, two and three and inverse of matrix – simple problems.

REFERENCE:

1. Statistics theory and practice – R.S.N.Pilla and bagavathi
2. Comprehensive statistical methods P.N. Arora
3. Operation Research S.Kalavathy
4. Calculus – S.Narayanan. T.K. Manickavachagam

FINANCIAL AND MANAGEMENT ACCOUNTING

Hours : 6
Code : 18K3BB05

Credit Allotted: 5
Max Marks : 75

OBJECTIVE: To enable the students to understand Accounting principles and gain knowledge in the preparation of final Accounts of sole Trader.

UNIT – I

Concepts – Double Entry Vs single entry – Journal – Ledger – Trial Balance. Definition of Account – Accounting principles – Nature of Accounting.

UNIT – II

Subsidiary Books – Purchase Book, Sales Book, Purchase Return Book, Sales Return Book and Cash Book:- Simple Cash Book and Petty Cash Book.

UNIT – III

Methods of Depreciation:- Straight Line Method, Written Down Value Method and Annuity Method – Final Accounts of sole trader with simple adjustments.

UNIT – IV

Management Accounting – Definition – Nature – Scope – Objectives – Merits and Limitations – Financial Statement Analysis – Comparative Statements – Common Size Statements – Trend Percentages – Cash flow analysis ,Distinction of cash from funds.

UNIT – V

Fund Flow Statement – Uses of Fund Flow Analysis – Construction of Fund Flow Statement. Cash Flow Analysis – Ratio analysis current ratio, quick ratio, operating ratio , expenses ratio, fixed asset turnover ratio, gross profit ratio.

(Marks – Theory 40% and Problems 60%)

REFERENCE:

1. Advanced Accountancy – M.C.SHUKLA, T.S.GREWAL & S.C.GUPTA
2. Management Accounting – S.N.MAHESWARI
3. Management Accounting – R.S.N.PILLAI & BHAGAVATHI, SULTHAN CHAND & SONS

MANAGERIAL ECONOMICS

Hours : 6
Code :18K3BB06

Credit Allotted: 5
Max Marks : 75

UNIT – I

Definition – Scope – Significance of Managerial Economics – Firms Objectives and the Role of Managerial Economist. Relationship of managerial economics with other discipline. Law of diminishing Marginal Utility.

UNIT – II

Demand Determinants- law of demand, exceptions to law of demand. Price elasticity of demand, Income elasticity of demand, Income demand curve of normal commodity and inferior commodity. Price of related goods and demand. Demand distinction.

UNIT – III

Market structure and competition- definitions, classification of markets, perfect competition- features of perfect competition. Monopoly – features of monopoly, monopoly power, Types of price discrimination. Imperfect competition. Monopolistic competition – features of monopolistic competition. Oligopoly- definition, characteristics of oligopoly. Duopoly- Monopsony.

UNIT – IV

Pricing Methods. Cost concepts and Classifications, Demand forecasting techniques-profitteering and profit earning, Break even Analysis.

UNIT – V

National Income – definition, national income accounts, Computation of National income, Difficulties in measurement of national income. Monetary Policy-Meaning, Objectives of monetary policy. Fiscal policy- meaning, Objectives of fiscal policy.

REFERENCE:

1. Managerial Economics – S.Sankaran, MarghamPublications,Chennai.
2. Managerial Economics – D.M.Mithani,Himalaya Publishing House,NewDelhi.

ADVERTISING AND SALES PROMOTION

Hours : 4
Code :18K3BBABB2

Credit Allotted: 3
Max Marks : 75

Unit 1

Advertising definition. Characteristics of Advertising-5- M's of Advertising programme- Problems in Advertising. Functions of Advertising- Need or reasons for advertising- Advantages of advertising. Positive Social effects of Advertising. Social ill effects of advertising. Forms of Unethical advertising.

Unit II

Distinction between advertising and Publicity- Distinction between advertising and Sales promotion. Distinction between Advertising and Salesmanship. Classification of Advertising Objectives. DAGMAR method- AIDA model.

Unit III

Classification of Advertising. Relationship between Advertising and Product Life Cycle. Criticism of advertising. Causes for waste in advertising. Direct and Indirect advertising. Classification of Advertising media.

Unit IV

Salesmanship – Definition, Objectives of salesmanship, Features of salesmanship, Advantages of salesmanship, Methods of personal selling .Qualities of a salesman. Duties and responsibilities of salesman.

Unit V

Sales promotion – definition, Objectives, methods of sales promotion, Benefits of sales promotion. Limitations of sales promotion. Push strategy, Pull Strategy & Push and pull strategy. Sales promotion schemes.

Text Book:

1. Advertising and Salesmanship – P.Saravanel & S.Sumathi

AN INTRODUCTION TO PRINCIPLES OF MANAGEMENT

Hours : 2
Code : 18K3BBELO1

Credit Allotted: 2
Max Marks : 75

UNIT – I

Management – Definitions – Nature and scope of Management.

UNIT – II

Contributions of experts to management thought, F.W.Taylor – Henry Fayol – Elton Mayo – Management by objectives.

UNIT – III

Decision Making – Definitions – Characteristics – importance – problems in Decision making.

UNIT – IV

Organisation – Definition – Process – Importance, Organisation structure.

UNIT – V

Delegation and Decentralization – Definitions of Delegation of Authority – Process or Elements of delegation.

REFERENCE:

1. PC Tripathi,PN Reddy- Principles of Management.TataMcGraw Hill,4th edition.
2. Jayasankar,Principles of Management.
3. Umasekaran, Organisational Behaviour.

SELF STUDY PAPER – ENGLISH AND LOGICAL REASONING

Code: 18K3SSBB1

Credit : 5
Marks: 100

Objective: To help the students prepare themselves for MBA Entrance Exam.

UNIT 1

Analysis of Business Situation- Passages type problems.

UNIT 2

Reading comprehension. English usage –synonyms and antonyms.

UNIT 3

Reasoning- Analogy, Classification, Series completion, Coding and decoding, Direction Sense test.

UNIT 4

Blood relations, Puzzle test, Logical venn diagram, Assertion and reason, Inserting the missing one.

UNIT 5

Logical sequence of words, Series, Analytical reasoning, Mirror images and Water images.

Reference:

1. MBA TANCET EXAM – Sura guide- ES.Ramasamy
2. MBA TANCET – Shakthi guide.
3. Quantitative aptitude and reasoning – R.V.Praveen.
4. Quantitative aptitude – Dr.R.S.Aggarwal

Question paper pattern: 50 X 2= 100 Objective type questions.

(Question paper pattern changed in April 2017 Academic Council)

RETAIL MANAGEMENT -I

Hours : 5
Code :18K4BB07

Credit Allotted: 5
Max Marks : 75

UNIT I

Retailing – definition ,Importance of retailing, Functions of retailing, Characteristics of retailing, Drivers of Retail change in India, Benefits of FDI in retail, Challenges to retail development in India, Challenges faced by global retailers.

UNIT II

**Classification of retailers – store ,non store and Retail organization.
Types of retailers – Itinerant, Fixed shop retailers, small scale retailers, Large scale retailers.
Advantages and disadvantages of department stores, chain stores. Difference between department stores and chain stores. Mail order business – Pre requisites for success of mail order business.
Merits and demerits of mail order business.**

UNIT III

**Functions of retail management, Classification of retail formats.
Retail location – Issues to be considered in site selection and retail location selection. Approaches to study of distribution of land. Types of retail location site – Solitary site, Unplanned shopping area site and planned shopping area site.**

UNIT IV

**Branding in retail – Brand – Meaning, Advantages of brand building to retailers and consumers.
Brand loyalty – Types of store loyalty, consumer loyalty. Own brands – Types of own brands, Advantages of Own brands. Brand extension –Meaning, Advantages and disadvantages of brand extension. Retail Store brands- Private labels- Process of private label creation.**

UNIT V

Role of IT in retailing. Information technology – meaning. Competitive advantages and limitations of IT in retail trade. EPOS – meaning, Advantages of EPOS data. Elements of data capture- coding system, code symbology, means of data capture. Future trends in retailing.

REFERENCES:

1. Retail Management – Dunne Lusch. 1,2,5th Unit.
2. Retail Management - Gibson G Vedamani – 3,4 th Unit.

ORGANIZATIONAL BEHAVIOUR

Hours : 5
Code :18K4BB08

Credit Allotted: 5
Max Marks : 75

UNIT – I

Organizational Behaviour – Concept – Nature – Organizational Behaviour. Disciplines contributing to Organizational Behaviour.

UNIT – II

Individual Behaviour – positive and negative behavior-factors influencing individual behavior. Personality – definitions, determinants of personality, Factors influencing personality. Perception.

UNIT – III

Group – definitions, Why are groups formed? Types of groups-stages in group development- Group Norms, Group Cohesiveness, Group Behaviour and Group Decision – making. Leadership – Concept – Qualities of effective Leadership – Leadership styles.

UNIT – IV

Power and Authority – Definition of Power – Types of Power. Definition of Authority . Morale – Characteristics – Morale and Productivity – steps to improve Morale in an organization. Factors influencing morale. Delegation-meaning, Problems in delegation.

UNIT – V

Motivation – Nature – significance – Theories of Motivation – Maslow’s need hierarchy theory – McGregor’s theory X and Theory Y – Herzberg Two Factor Theory.

BOOKS FOR REFERENCE:

1. **Organisation Theory and Behaviour – V.S.P.RAO & S.NARAYANA**
2. **OrganisationBehaviour – L.M.PRASAD**
3. **OrganisationBehaviour – Dr.P.C.SEKAR**
4. **Organizational Behavior – Jayasankar**

COMPANY LAW

Hours : 4
Code: 18K4BBABB3

Credit Allotted: 3
Max Marks : 75

OBJECTIVE:

To promote basic understanding on the concepts of Business Laws and to enable them to realize how its related to Business.

UNIT – I

Definition of Company, Characteristics of a company. Advantages of Incorporation. Company distinguished from partnership. Public company and private company. Distinguish between Public company and private company. Formation of company- Amendments to companies act 61B. Schemes for filing of statutory documents, Documents to be filled with registrar. Certificate of incorporation.

UNIT – II

Memorandum of association, meaning - contents of Memorandum- Alteration of memorandum- procedure for alteration. Articles of Association – meaning, Alteration of articles-limitations to articles. Memorandum and articles their relation. Difference between memorandum and articles.

UNIT – III

Prospectus – Definition, Registration of prospectus, Contents of prospectus, Acceptance of public deposits. Share capital – Meaning, Kinds of share capital, Voting rights. Difference between underwriters and brokers. Types of shares. Kinds of preference shares. Dividend - meaning. Debentures – meaning, Types of debentures.

UNIT – IV

Members and Shareholders- Who can become a member- how to become a member- Rights of Members – Liability of members. Meetings of company- Statutory report- Requisites of a valid meeting – Resolutions , kinds of resolutions.

UNIT – V

Winding up - meaning, Modes of winding up, Grounds for compulsory winding up, Whether workers entitled to be heard in a winding up petition. Consequences of winding up order. Liquidator's duties and liabilities. Statement of affairs. Committee of Inspection. Dissolution of company.

TEXT BOOK RECOMMENDED:

1. Company law – ND Kapoor.

AN INTRODUCTION TO ORGANIZATIONAL BEHAVIOUR

Hours : 2
Code :18K4BBELO2

Credit Allotted: 2
Max Marks : 75

UNIT – I

Organizational Behaviour – Concept – Nature – Organizational Behaviour. Disciplines contributing to Organizational Behaviour.

UNIT – II

Individual Behaviour – positive and negative behavior-factors influencing individual behavior. Personality – definitions, determinants of personality, Factors influencing personality. Formal and Informal Group.

UNIT – III

Leadership – Concept – Qualities of effective Leadership – Leadership styles. Power and Authority – Definition of Power – Types of Power.

UNIT – IV

Definition of Authority – Characteristics – Types of Authority. Morale – Concept - importance – Morale and Productivity – steps to improve Morale in an organization.

UNIT – V

Motivation – Nature – significance – Theories of Motivation – Maslow’s need hierarchy theory – McGregor’s theory X and Theory Y – Herzberg Two Factor Theory.

BOOKS FOR REFERENCE:

5. **Organisation Theory and Behaviour – V.S.P.RAO & S.NARAYANA**
6. **OrganisationBehaviour – L.M.PRASAD**
7. **OrganisationBehaviour – Dr.P.C.SEKAR**
8. **Organizational Behavior – Jayasankar**

SELF STUDY PAPER - QUANTITATIVE APTITUDE

Code: 18K4SSBB2

**Credit : 5
Marks: 100**

Objective: To help the students prepare themselves for MBA Entrance Exam.

UNIT 1

Time and Distance, Time and work and problems on trains.

UNIT 2

Divisibility ,Profit and Loss and Partnership related problems.

UNIT 3

Percentage, Discount and Age related problems

UNIT 4

Clock, Data Interpretation and Data sufficiency related problems

UNIT 5

Interest, Numbers and Average , Ratio and proportion related problems.

Reference:

- 1. MBA TANCET EXAM – Sura guide- ES.Ramasamy**
- 2. MBA TANCET – Shakthi guide.**
- 3. Quantitative aptitude and reasoning – R.V.Praveen.**
- 4. Quantitative aptitude – Dr.R.S.Aggarwal**

Question paper pattern: 50 x 2 = 100 Objective type questions.

RESEARCH METHODOLOGY

Hours : 6
Code :18K5BB09

Credit Allotted: 5
Max Marks : 75

Unit-I

Research- Definition-Objectives of research-Types of Research- Significance of Research- Research process- Criteria of good Research- Problems faced by researchers in India.

Unit-II

Research problem-Meaning, factors to be observed by a researcher while selecting a research problem, Techniques involved in defining a problem.

Research design- Definition- Features of a good design- Steps in Research design- Exploratory design- Descriptive design.

Unit-III

Sample & Population Definition-Steps in developing a sampling design-Characteristics of good sample design- Factors affecting the size of the sample-Types of sampling- Probability sampling, Non Probability sampling.

Unit-IV

Measurements of scale-Sources of Data collection- Methods of collecting primary data- Secondary data- Characteristics of secondary data, Selection of appropriate method for data collection. Difference between questionnaires and schedule. What is hypothesis?-Characteristics of hypothesis. Meaning of Chi square- ANOVA.

Unit-V

Define Report- Significance of report writing-Steps in writing report-Layout of research report-Types of Reports- Precautions for writing research report- What is SPSS?- Use of SPSS.

Text Book

C.R.Kothari "Research Methodology Methods And Techniques", New Age International Publishers.

Dr.Vijay Upagade "Research Methodology"

RETAIL MANAGEMENT -II

Hours :6
Code :18K5BB10

Credit Allotted: 5
Max Marks : 75

UNIT – I

Distinction between a consumer and a customer. Factors influencing consumer shopping patterns. Purchase decision process. Buying decision roles. Shopper profile analysis. Application of consumer behavior in retailing.

UNIT – II

Managing Retail personnel

Various tasks involved in retailing. Problems faced in retail selection process. Motivation – what motivates retail people? Tools used by sales manager to motivate staff. Issues and concerns in retailing – Manpower planning, Recruitment, Motivation and retention.

UNIT – III

Category management – Definition, Reasons for category management, Process of Category management, Demerits of Category management. Space management – Space planning process, Types of store layout , Measuring space performance.

UNIT – IV

Merchandise management – definition. Phases in developing a merchandise plan. Methods of planning and calculating inventory levels. Requisites of a successful merchandiser. Key areas in merchandise management.

UNIT V

Consumerism and ethics in retailing.

Consumerism – definition, Reason for consumerism, Legislations for consumer protection. What are unfair trade practices? Business Ethics- meaning, Overt Ethical Issues and Convert ethical issues-meaning. Ethical issues in retailing, Councils for redressal of consumer disputes.

REFERENCE BOOKS :

1. Retail Marketing – Dr.L.Natarajan.3rd& 5th Unit.
2. Retail Management - Gibson G Vedamani –1,2,4th Unit.

UNIT – I Gibson ch 22, UNIT – II Gibson ch 19, UNIT – IV RM Gibson.ch 18, UNIT – V RM Gibson.ch 29

INTERNATIONAL BUSINESS MANAGEMENT

Hours : 7
Code : 18K5BB11

Credit Allotted: 6
Max Marks : 75

UNIT : I

International Business – Definitions, nature of International business, Difference between international business and domestic business, Advantages of International Business, Problems in International Business. Globalization- Positive and negative impacts of globalization.

UNIT : II

FDI –definition. Types of FDI.- Horizontal and vertical FDI.

Multinational companies(MNC's)-Definition, Characteristics of MNCs, Arguments for and against MNC's. FDI-Types of FDI, Benefits of FDI to host countries and to MNC's. Adverse effect of FDI to host countries.

UNIT – III

International Market entry strategies-Exporting, Licensing & Technology transfer, International sub contracting, Franchising, Joint ventures, Counter trade ,Turnkey, mergers and acquisition .Factors influencing a firm's selection of entry strategy. Factors to be considered before finalizing a Joint venture agreement.

UNIT – IV

International marketing. Major steps in International marketing. International pricing. Transfer pricing – meaning. Factors affecting pricing, pricing methods. Dumping. International trade terms-FOB,FAS,CIF,C & F.

UNIT – V

Reasons for low presence of female executives in global business. Organizations role in utilizing women as managers.

Corporate Social responsibility- meaning, Importance of corporate social responsibility. Business Ethics – meaning, Principles of Business ethics, Advantages of business ethics-Characteristics of business ethics.

REFERENCE BOOKS:

1. International Business Management – S.C.Gupta. 2,3,4th Unit
2. A Text on International Business – M.V.Badi- 1st unit
3. International business – k.Aswathappa – 5th Unit.
4. International business – V.Thanigairajan.1st and 5th unit.

ENTREPRENEURIAL DEVELOPMENT

Hours : 5
Code : 18K5BBELBB1

Credit Allotted: 4
Max Marks : 75

UNIT – I

Meaning of entrepreneur –Characteristics of Entrepreneur-Distinction between entrepreneur and manager -Functions of Entrepreneur-Types of Entrepreneur. Intrapreneur. Qualities of a successful entrepreneur. Factors affecting entrepreneurial growth.

UNIT – II

Women Entrepreneurs –Functions of women entrepreneurs-Problems faced by women entrepreneurs. Rural Entrepreneurship-Problems in Rural Entrepreneurship. Entrepreneurial development agencies – DIC, THIC,SISI, IDBI.

UNIT – III

Small scale industries in India – Definition, Objectives of SSI, Characteristics of SSI, Role of SSI in the economic development, Problems faced by SSI , Registration of SSI, Incentives available to SSI units in Backward or rural area. Reasons for industrial sickness, remedial measures to prevent sickness.

UNIT – IV

Business Plan – meaning, Steps involved in preparing a business plan, Common errors in business plan formulation or project formulation. Project classification- project identification-project selection. Project report- Contents of a project report-Stages in formulation of a project report.

UNIT – V

Sources of finance-Internal sources and external sources. Sources of Term loans. Sources of short term finance. Factors determining capital structure. Under capitalization-Causes , effects and Remedies of under capitalization. Tax benefits to small scale industries.

STUDY MATERIAL

1. Khanka .S.S – Entrepreneurship development
2. Saravanavel – Entrepreneurial development
3. Bhattacharjee . H – Entrepreneurial development
4. Entrepreneurial development – S. Sivasankari. Charulatha publications. 3rd & 4th unit.

SOFT SKILLS DEVELOPMENT

Hours :2
18K5SSD

MARKS : 75
Credit :2

Learning Objective

Today's world is all about relationship, communication and presenting oneself, one's ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

Unit I

Know Thyself/ Understanding Self

Introduction to Soft skills-Self discovery-Developing positive attitude-Improving perceptions-Forming values.

Unit II

Interpersonal Skills/ Understanding Others

Developing interpersonal relationship-Team building. Groups – Definition, Characteristics, Why are groups formed? Types of group, Stages of group development, Group cohesiveness –Definition, factors influencing group cohesiveness.

Unit III

Communication Skills / Communication with others

Art of listening-Art of reading-Art of speaking-Art of writing-Art of writing e-mails - Email etiquette

Unit IV

Corporate Skills / Working with Others

Developing body language- Practicing etiquette and mannerism-Stress management.

Unit V

Selling Self

Writing resume/CV-interview skills-Group discussion.

TEXT BOOKS:

Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055.

Mobile No : 94425 14814 (Dr.K.Alex)

REFERENCE BOOKS:

- (i) Developing the leader within you John c Maxwell**
- (ii) Good to Great by *Jim Collins***
- (iii) The seven habits of highly effective people Stephen Covey**
- (iv) Emotional Intelligence Daniel Goleman**
- (v) You can win Shiv Khera**
- (vi) Principle centred leadership Stephen Covey**

RETAIL MARKETING & SALES PROMOTION

Hours : 5
Code :18K6BB12

Credit Allotted: 5
Max Marks : 75

UNIT – I

Retail Marketing – meaning, Four p’s of Retail marketing mix, Factors influencing retail planning. Mark down policy- meaning, reasons for mark down policy. Types of retail Pricing policies. Segmentation – Meaning, Basis for segmentation, benefits of retail segmentation.

Unit II

Retail promotion- SMART objectives- Approaches to retail promotional budget. Supply chain structures from retailing point-Extended channel, limited channel & direct channel. Objectives of supply chain, Problems in supply chain.

Unit III

Sales promotion - Objectives of sales promotion , Kinds of consumer sales promotion, advantages of sales promotion. CRM in retailing, difference between transaction marketing and CRM. Strategies in retailing.

Unit IV

Media strategy: The reach pattern and effective frequency. The creative strategy and tactics. Media selection- selecting media vehicles .

Complaints Management – Features of good complaint management System, Objectives of complaint management, Advantages of implementing retail complaint management, Steps for effective complaint management.

Unit V

Online retailing or e –tailing. Advantages and disadvantages of online retailing. Barriers to the growth of e –retailing.

International retailing – factors involved in International retailing, reasons for Internationalization, Factors contributing to the growth of Internationalization.

Reference:

Retail Marketing – Dr.L.Natarajan

PRODUCTION MANAGEMENT

Hours : 5
Code : 18K6BB13

Credit Allotted: 5
Max Marks : 75

UNIT – I

Production –definition. Production system – Functions and responsibilities of a production manager- Relationship of production with other functions. Problems of Production Management.

UNIT II

Types of production system-continuous production system, Intermittent system, Unit production , Batch production. Comparison of various manufacturing system. Make or Buy decisions.

UNIT III

Product Life Cycle . Objectives of designing a product- Factors affecting the design of a product. Process of New product development. Automation- meaning , Advantages and disadvantages of automation.

UNIT IV

Plant location- objectives, factors influencing plant location decision. Factors influencing selection of site. Advantages and disadvantages of Urban area and rural area.

UNIT V

Plant layout – characteristics of efficient layout- Objectives of plant layout- Advantages of good layout-tools and techniques used in plat layout- Types of plant layout-Factors influencing plant layout.

Text Book:

Production and materials management- P.Saravanavel and S.Sumathi.

BUSINESS COMMUNICATION

Hours : 5
Code : 18K6BB14

Credit Allotted: 5
Max Marks : 75

UNIT – I

Communication-definition, Importance and characteristics of Communication – Process of Communication – Requirements of Effective Communication – Barriers to Communication .

UNIT – II

Media of Communication -Verbal and Non verbal communication. Oral Communication, Written Communication, Merits and demerits of oral and written communication. Paralanguage- meaning. Directions of communication - Downward, Upward, Horizontal and diagonal. Modern forms of communication – Fax, internet / e-mail, video conferencing. Advantages and disadvantages of email.

UNIT – III

Forms of Communication-Formal & Informal communication .Advantages and disadvantages of formal and informal communication .
Listening skills - Process of listening, Approaches to listening, Barriers to effective listening, Tips for effective listening.

UNIT – IV

Business letters: Functions and kinds. Essentials of an effective business letter. Parts/layout of a letter. Letters: Sales letters, Application letters, Circular letter.

UNIT – V

Group communication-Meaning and Definition of Group – Group Dynamics – Advantages and disadvantages of Group Decision Making – Techniques of Group Decision – Committee meetings, Types of committees, Command meetings, Brain storming sessions, Nominal group technique and Delphi technique.

Meetings- Purpose of meetings, Advantages and disadvantages of meetings. Tips for the conduct of effective meeting. Agenda - Meaning, Items included in agenda, specimen of agenda. Minutes-meaning, tips for writing minutes.

Reference books:

- 1.Business Communication – V.K.jain & OmprakashBiyani. S.Chand publication.
2. Managerial communication- varinder kumar and Bodh raj.

PROJECT - 18K6BB15PW CREDITS - 4

Course Objectives/Course Description

To familiarize the students with management concepts and their applications in business and research

Learning Outcome

To understand and link human resource, marketing, financial, manufacturing and other functions of an organization.

To make the students to realize the importance of nurturing these skills for professional success.

The aim of the *mini project* is that the student has to understand the real time business.

PROJECT REPORT AND VIVA-VOCE:

a) The Project report in the seventh semester carries 100 marks (75 marks for project report and 25 marks for viva – voce) which shall form part of sixth semester examination.

b) There shall be single valuation of project report and this will be done simultaneously along with Viva - Voce. Internal Assessment does not carry any marks.

c) A batch of Two (02) Project Report and Viva – Voce Examiners shall evaluate and conduct Viva - Voce examinations for a maximum of Thirty (30) Project Reports and Conduct Viva – Voce Examinations for the same candidates.

d) The principal of the college shall submit the project reports of the students, to the CONTROLLER OF EXAMINATIONS after the completion of Viva - Voce examination.

e) Candidate shall obtain a minimum of 40% marks (Including Viva-Voce) in this subject (project Report) failing which she shall revise and resubmit before the commencement of the next examination. However, no student shall be allowed to resubmit the project report after three consecutive chances.

f) The student who fails to submit the project report shall not be permitted to take the examination.

g) The board of examiners or their nominees' shall conduct viva-voce examination for Project Report.

Mini Project on Business Administration:

Industrial visit to nearby companies. The Student has to submit a Project Report of nearly 50 to 70 Pages. This Project must be prepared based on the functional areas of a business (All functional areas must be Covered). The Project carries 75 Marks for Project Report and 25 Marks for Viva-Voce. Viva-Voce also must be conducted by panel of examiners and It has to be valued by internal and external examiners . Board must invite one External examiner for Viva-Voce Examinations.

INSTRUCTIONS FOR TYPING/PRINTING The project report should be strictly prepared according to the following guidelines. • Finalization of the Project Report Student should obtain clearance from their respective guide before final printing of the final project report. • The size of the paper sheet: A4 Typing should be done on one side of the paper. • Font Type: New Times Roman Size:12 • Line Spacing Body of the text:1.5 lines List of tables/graphs/charts/bibliography: Single Line • Alignment Title page : Centre Chapter heading : Centre Subheading : Left Body of Text: Justify • Margins At the binding edge(Left) : not less than 3 cm Other margins (Right, Top, Bottom): not less than 2 cm. • Titles: All titles and subtitles should be printed in BOLD. All the Tables/Graphs/Charts/ should have appropriate titles. Report should contain main page numbers

(i.e.1, 2.....) after Executive Summary. Main page numbers should start from first page of Chapter 1 and will continue until last page of the report. Page numbers are to be given at the centre of bottom of the page. Pages separating Chapters should not be numbered but be counted. The project should be hard bound as per the standard format. 2 Hard copies to be prepared.

FORMAT OF PROJECT REPORT

With general guide lines on how to write a Project Report For the students of BBA.

- **Consult your Guide from time to time, as well as whenever necessary, carry out suggested changes by your guide and then proceed for next step.**
- **Work regularly with commitment and ensure you are following Project Report Activity Completion Schedule and avoid last minute's hustle.**

Note: For any query contact your respective Project Guide / Class coordinator

- **Front page(mention college name, university, department, regno , student name, year, guide)**
- **Certificate from the Department (Guide, HOD sign)**
- **Student's Declaration**
- **Certificate from the Company**
- **Acknowledgements**
- **List of Tables**
- **List of Charts**
- **Table of Contents**
- **Chapter 1 :Introduction about the Industry and Company profile.**
- **Chapter 2 : Review of literature (related to the types of industries)**
- **Chapter 3: Functional areas observed**
- **Chapter 4: SWOT Analysis of the company studied .**
- **Chapter 5: Recommendations / Suggestions**
- **Chapter 6:Conclusion**
- **Chapter 7:Limitations of the Study**
- **Bibliography**

Annexure 1. Questionnaire (If Applicable) 2. Miscellaneous :

COMPUTER LITERACY FOR MANAGERS

Hours : 5
Code : 18K6BBELBB2

Credit Allotted: 4
Max Marks : 75

UNIT – I

Introduction – What is computer? – History of computer- Generations, Advantages & Disadvantages. – Characteristics of computer

UNIT- II

Areas of Application- IPO cycle, Components of computer- Hardware & Software- Operating System.

UNIT-III

Data Representation- The CPU-Memory Organisation- Multimedia- Input, Output devices- Windows 98- Logging on- Desktop & taskbar –Creation of file & folders.

UNIT-IV

Word- Creating word Document- Creating business letter using wizard- Editing, inserting, Formatting, spelling & Grammer check, word count, Autocorrect, Table, saving, opening & closing Documents, Mail merge.

UNIT-V

Excel – Spreadsheet- Creating, Editing, formatting charts, saving, opening, closing worksheet. Ms Powerpoint- Create new slide, delete and insert slide. Basics of creating and saving a presentation. Internet Basics.

REFERENCE BOOKS:

- 1.K.Mohan Kumar, Dr.S.Rajkumar – Computer Application in Business
2. Sanjay Saxena – Prabhpreet Chopra
3. Ms Office –C.Nellai Kannan.

FINANCIAL SERVICES

Hours : 5
Code : 18K6BBELBB3

Credit Allotted: 3
Max Marks : 75

UNIT – I

Financial service-meaning, Importance of financial service-Components of financial services-Players in financial service sectors.

UNIT II

Mutual Fund-meaning, Mutual fund agreement-benefits of Mutual funds- Classifications of Mutual fund- regulations of SEBI on Mutual funds.

UNIT III

Hire Purchase –Features of Hire purchase agreement-Contents of Hire purchase agreement-Tax benefits in Hire purchase agreement –Difference between hire purchase and leasing-Difference between Hire purchase and Installment sale.

UNIT IV

Factoring – Steps involved in the factoring transactions- Types of factoring-Benefits and demerits of factoring – Difference between factoring and Bills discounting-legal aspects of factoring.

UNIT V

Leasing – terms used in leasing-Steps in leasing transaction- legal aspects of leasing – Types of leasing – Advantages of leasing- drawbacks of leasing- Difference between Financial lease and Operating Lease.

Text Book:

- 1. Financial service – B.Santhanam.**

**DEPARTMENT OF PHYSICS
UG SYLLABUS 2018**

Code:18K1P01

PROPERTIES OF MATTER AND SOUND

Unit –I: Elasticity

Hooke's Law - Different moduli of elasticity - Work done in Strain- Relation between elastic constants- Poisson's ratio- Expression for ratio in terms of elastic constants- Torsion- Torsion of a Cylindrical Wire- Expression for Torque per unit Twist- Work done in twisting wire- torsion oscillations of a body- Rigidity modulus of a wire by Torsional Pendulum- Moment of inertia of the disc.

Unit – II: Bending of Beams

Beam – bending of beams- Expression for bending moment- Cantilever – Young's modulus by Cantilever depression – Oscillations of a cantilever – Uniform bending – Expression for elevation – Experiment to find Young's modulus using scale and telescope – Non uniform bending – Expression for depression – Experiment to find Young's modulus using pin and microscope – Koenig's method to find the Young's modulus of a beam by non-uniform bending – I section of Girders.

Unit - III: Viscosity

Coefficient of viscosity and its dimension – Stream lined motion and turbulent motion – critical velocity - Poiseuille's formula for the flow of liquid through a capillary tube – – Experiment to determine the coefficient of viscosity of liquid – Ostwald's viscometer – viscosity of highly viscous liquids – viscosity of air - Meyer's formula – Rankine's method.

Unit – IV: Surface Tension

Definition and dimensions of surface tension – Molecular forces – Explanation of surface tension on kinetic theory – surface energy – Angle of contact – Neumann's triangle – Excess pressure inside a curved liquid surface- Excess pressure inside a liquid drop and a soap bubble- Surface tension- Drop weight method- Jaegar's experiment for determination of surface tension of liquid- Variation of surface tension with temperature- Quincke's method to determine the surface tension of mercury and angle of contact.

Unit – V: Sound

Laws of transverse vibrations in strings – Experimental verifications of laws of transverse vibration by sonometer – Melde's experiment to find the frequency – Music and noise – Intensity of sound – Decibel – Phon – Bel – Production of Ultrasonic waves – Magnetostriction and Piezo electric method- Detection of Ultrasonic waves – Application of ultrasonic waves. Acoustics of Building- Reverberation - Reverberation time – Absorption Coefficient (no derivation- Basic ideas only) – Factors affecting Acoustics of Buildings.

Book for Study

- 1) Properties of matter - R. Murugesan (S. Chand & Co. 2010)
- 2) Properties of matter - A. Sundravelusamy (Priya Publications 2012)

Books for Reference

- 1) A Text book of Sound – Brijlal and N. Subramanyam (Vikas Publishing Pvt. Ltd. 2001)
- 2) Properties of matter – Brijlal and N. Subramanyam (Vikas Publishing Pvt. Ltd. 2005)

PHYSICS PRACTICAL – I
(ANY 12)

1. Torsional Pendulum- n and I
2. Cantilever Depression – Scale and Telescope
3. Uniform bending- Pin and Microscope
4. Non- Uniform bending- Pin and Microscope
5. Co- efficient of Viscosity- Graduated Burette Method
6. Surface Tension of liquid by drop weight method
7. Interfacial Surface Tension of liquid by drop weight method
8. Sonometer – Verification of first two Laws.
9. Compound Pendulum – g and k
10. Specific heat capacity of a liquid – Newton’s law of Cooling
11. Thermal conductivity of a bad conductor – Lee’s disc
12. Long focus Convex Lens- f (in contact & out of contact)
13. Concave Lens – f (in contact & out of contact)
14. Stoke’s Method- Viscosity

MECHANICS AND RELATIVITY

Unit – I: Projectile and Impact of Elastic Bodies

Projectile – Path and range of projectile – Impulse of a force – Laws of impact – Impact of a smooth sphere on a smooth fixed horizontal plane – Direct and Oblique impacts between two smooth spheres – Loss of Kinetic energy due to direct and oblique impacts.

Unit – II: Statics, Hydrostatics and Hydrodynamics

Centre of Gravity of body – Centre of gravity of a solid hemisphere and solid cone.
Atmospheric pressure– variation of atmospheric pressure with altitude– height of homogeneous atmosphere.

Total energy possessed by liquid in motion – Bernoulli’s theorem - Application of Bernoulli’s theorem to liquids. 1. Torricelli’s Theorem, 2. Venturimeter

Unit- III: Dynamics and Friction

Moment of Inertia and radius of gyration (Definition only) – Parallel axis theorem and perpendicular axis theorem – Kinetic energy of body rotating about an axis through its center of mass – The compound pendulum – Period of oscillation of Bifilar Pendulum with parallel threads.

Forces of friction – Laws of friction – angle of friction, Resultant reaction and cone of friction – Equilibrium of a body on a rough inclined plane (with and without force) to the Horizontal - The friction clutch.

Unit – IV: Gravitation and Seismology

Basic forces of nature – Newton’s law of Gravitation – Density of the earth – Mass of the earth and the sun – Velocity of escape from the earth - velocity of escape from the solar system – variation of g with latitude, altitude and depth.

Earth quakes – Seismic waves – Determination of epicenter and the focus – Modern applications of Seismology

Unit – V: Special theory of Relativity

Special theory of Relativity-Frame of reference, Newtonian relativity. Lorentz transformation equations – Results from Lorentz transformation equations (i) length contraction (ii) Time dilation (iii) Relativity of simultaneity (iv) Addition of velocities.

Variation of mass with velocity – mass energy equivalence with one example - Zero rest mass.

Books for study

1. Dynamic – M. Narayanamurthi, N. Nagarathnam (The national Publishing Co.2002)
2. Statics, Hydrostatics and Hydrodynamics – M. Nareyanamurthi, N Nagarathnam (The National Publishing Co 1990)
3. Mechanics – D.S.Mathur (S. Chand and Co. 2007)
4. Properties Matter – R. Murugesan (S.Chand and Co. 2010)

Books for Reference

1. Elements of properties of matter D.S . Mathur (S. Chand and Co. 2007)
2. Modern Physics – R. Murugesan. (Kiruthiga Sivaprasath publications 2008)

OPTICS and LASER PHYSICS

UNIT – I: Lens and Aberrations

Refraction through lens – Sign convention – Defects of images – Spherical aberration – Methods of Minimization (qualitative study) – Coma (qualitative study) - Chromatic aberration – Chromatic aberration in a lens - Achromatic combination of lenses – Condition for achromatism - Lenses in contact – Lenses separated by a distance “d ” apart.

UNIT – II: Interference

Interference of light – Coherent sources – Theory of interference by reflected light – Newton’s rings in the reflected system – Determination of wave length of sodium light and Refractive index of a liquid – Fringes produced by a wedge shaped thin film – Interferometer – Michelson’s interferometer – Determination of wave length of monochromatic light and Difference in wavelength between two neighboring spectral lines.

UNIT – III: Diffraction

Fresnel and Fraunhofer types of diffraction – Diffraction at a straight edge – Fraunhofer diffraction at a single slit – Double slit – Plane transmission grating – Theory – Width of principal maxima - Dispersive power of a grating – Resolving power of a prism and grating – Comparison of prism and grating spectra.

UNIT – IV: Polarization

Introduction - Double refraction – Nicol prism - Nicol prism as polarizer and analyzer – Quarter and Half wave plate – Production and Detection of plane, elliptically and circularly polarised light – Optical activity – Specific rotation – Laurent’s half shade Polarimeter.

UNIT - V: LASER

LASER – Characteristics - Energy levels - Spontaneous emission - Stimulated emission – Einstein’s Co-efficient - Population Inversion - Active medium – Pumping - Optical resonator - Meta Stable State – Types of LASER – Nd-YAG LASER - CO₂ LASER – Semiconductor LASER – Applications.

Books for study

- 1. A Text Book of Optics – Brijlal and Subrahmanyam(S.Chand and Co. 2004)**
- 2. An Introduction to LASERS
Theory and Applications – M. N. Avadhanulu(S.Chand and Co.2004)**

Books for Reference

- 1. Engineering physics – G.Vijayakumari. (Vikas Publications 2013)**

PHYSICS PRACTICAL – II
(ANY 12)

1. **Junction Diode Characteristics**
2. **Zener Diode Characteristics**
3. **Metre Bridge – Resistance and Specific Resistance of the given coil.**
4. **Carey foster's Bridge – Specific Resistance of the given coil**
5. **Potentiometer – Ammeter Calibration**
6. **Potentiometer – Low range Voltmeter**
7. **Spectrometer – Refractive index of the liquid Prism**
8. **Spectrometer – Grating – Normal incidence method – Wavelength Determination**
9. **Air wedge – Thickness of a wire**
10. **Newton's Rings – Radius of curvature of a Convex Lens**
11. **Joule's Calorimeter – Specific heat capacity of liquid**
12. **Emissive power of a surface – Spherical Calorimeter**
13. **Post office Box – Temperature Co-efficient of the given coil of wire.**
14. **Figure of Merit of B.G / Spot Galvanometer**
15. **Study of waveforms using C.R.O**

THERMAL AND STATISTICAL PHYSICS**Unit - I: Heat and Transmission**

Heat capacity- Definition of Specific heat - Specific heat of a gas – Joly's Differential Steam Calorimeter and Regnault's Method- Dulong and Petits law.

Conduction: Definition – Rectilinear flow of heat along a Bar by Fourier Equation of heat flow- Forbe's method- Thermal Conductivity of poor conductors : Lee's Disc Method- Wiedmann- Franz Law. Convection: Definition- Applications of Convection- Central heating system- Thermos Flask.

Unit- II: Radiation

Black Body Radiation- Emissive Power and Absorptive power- Kirchhoff's Laws- Stefan-Boltzmann Law- Wien's Displacement Law- Rayleigh Jeans Law- Planck's law- Derivation of Stefan's Law- Determination of Stefan's Constant- Verification of Newton's law of cooling – Surface temperature of sun- Green house effect.

Unit- III: Equation of state and Liquefaction of Gases

Change of State- Andrew's experiment on Carbon-di-oxide- Derivation of Vander Waal's equation- Critical Constants : Definition, estimation - Joule Thomson effect- Porous Plug Experiment – Liquefaction of Hydrogen- Helium- Helium I and II- Electrolux Refrigerator- Vapour Absorptio machine.

Unit- IV: Thermodynamics

Statements of Zeroth and First law of Thermodynamics- Isothermal and Adiabatic Process – Work done during Isothermal and Adiabatic Processes- Reversible and Irreversible Processes- Second law of Thermodynamics- Carnot's Ideal Heat Engine- Carnot's Cycle- Carnot's theorem- Entropy: Temperature - Entropy diagram- Third law of Thermodynamics- Maxwell's thermo dynamical relations.

Unit –V: Statistical Physics

Macrostates and Microstates- Thermodynamic probability- ensembles - Degrees of freedom (definitions only)- Phase space- Fundamental postulates of statistical mechanics- Statistical equilibrium- Maxwell-Boltzmann Statistics- Bose-Einstein Statistics- Fermi Dirac Statistics- Comparison of three statistics.

Books for Study

1. Heat and Thermodynamics – J. B. Rajam and C. L. Arora(S.Chand and Co. 1983)
2. Heat and Thermodynamics & Statistical Physics, Brijlal Subrahmanyam (S.Chand and Co. 2015)
3. Thermal Physics – R.Murugesan, Er.Kiruthiga sivaprasath (S.Chand and Co. 2015)

Book for Reference

- 1) Heat and Thermodynamics -Zemansky (Tata McGraw hill Co. 4th Edition)
- 2) Thermal Physics & Statistical Mechanics –Dr..D.Jayaraman & Dr. K. ilangovan (S.Viswanathan Pvt. Ltd- 2016)
- 3) Statistical Mechanics –Agarwal Eisner.
- 4) Heat and Thermodynamics – D.S. Mathur, (S.Chand and C2014).

ELECTRICITY and MAGNETISM

Unit- I: Electrostatics

Gauss Theorem - application – Electric intensity at a point due to charged sphere and charged cylinder - Coulomb's theorem - Mechanical force experienced by unit area of charged surface – Energy stored per unit volume in an electric field - Capacity of a conductor -Capacitance of a cylindrical condenser - Energy of a condenser - Loss of energy on sharing of charges between two conductors.

Unit – II: Current Electricity

Ampere's Circuital Law - Biot-Savart Law - Field along the axis of a circular coil and solenoid – Theory of Ballistic galvanometer- Figure of merit – Damping correction - Kirchhoff's laws – Wheatstone's network - conditions for balance - Carey Foster's Bridge - Principle of potentiometer.

Unit – III: DC and AC Circuits

Growth and decay of current in a circuit containing L and R with steady EMF- Charging and discharging of a condenser through R – Charging of a condenser through L and R - Determination of high resistance by leakage – Series and Parallel resonance circuits – Q factor.

Unit – IV: Electromagnetic Induction

Laws of Electromagnetic Induction – Expression for induced EMF – Expression for self-inductance of a solenoid – Rayleigh's method of finding self-inductance of a coil- Mutual induction – coefficient of coupling- Determination of mutual inductance (BG) between a pair of coils.

Unit –V: Magnetic Properties of Materials

Properties of Dia, Para and Ferro magnetic materials – Cycle of Magnetization – Hysteresis-Retentivity and Coercivity – B-H Curves for a magnetic material – Magnetometer method – Loss of energy per cycle (Hysteresis loss) – Hard magnetic materials (permanent magnets) and soft magnetic materials (electro magnets) - difference in the magnetic property of Iron and Steel.

Books for study

1. Electricity and Magnetism – Brijlal and Subrahmanyam- (RatanPrakashanMandir- 1995, Delhi)
2. Electricity and Magnetism – R.Murugesan- (S. Chand & Co.,1983)

Books for Reference

1. Fundamentals of Electricity and Magnetism – D.N.Vasudeva (S.Chand&Co.2006)
2. Electricity and Magnetism – K. L. Chopra and N. K. Sehgal (S.Chand&Co. 1993)

ANALOG ELECTRONICS

UNIT- I: Semi conductor & Rectifiers

Semi conductor – Energy band Description of semi conductor – intrinsic and Extrinsic Semi conductor – PN junction Diode – Volt Ampere characteristics of PN junction Diode – Zener Diode – Zener diode as voltage regulator.

Half wave Rectifier - Efficiency of Half wave Rectifier – Full Wave Rectifier - Bridge Rectifier - Efficiency of Full wave Rectifier – Ripple Factor.

Unit – II: Transistors

Transistor – Transistor action – Characteristics of Common Emitter and Common Base Configuration - Transistor as an Amplifier in CE Arrangement –Transistor biasing – voltage divider - FET – N channel – P Channel FET – performance and characteristics-JFET – Common source FET amplifier .

Unit - III: Amplifiers and Oscillators

Single stage transistor Amplifiers – D.C and A.C Equivalent circuits –Gain – frequency response - band width - decibel gain - Transistor Amplifiers – RC Coupled Transistor Amplifier – Feedback - Principles of Negative Feedback in Amplifiers – Gain of Negative Feedback Amplifiers – Oscillators- Barkhausen criterion - Hartley Oscillators – Tuned collector Oscillators.

Unit - IV:Operational Amplifiers

The basic Operational Amplifiers –characteristics - Inverting and Non inverting operational amplifier –Differential operational amplifier - CMRR – Adder- Subtractor – Differentiator - Integrator – Comparator – A/D conversion- Successive approximation method- D/A conversion – R-2R ladder network.

Unit - V: Integrated Circuits

Integrated circuits – Advantages and disadvantages of ICs – Scale of integration – Classification of ICs by structure - Classification of ICs by function –Epitaxial Growth- Masking and Etching- Monolithic Integrated Circuit Fabrication Process – Fabrication of IC Components – Popular Applications of ICs.

Books for study:

1. Principles of Electronics – V.K Metha (S. Chand& Co. 2013)
2. Basic electronics B.L.Theraja (S. Chand& Co. 2009)
3. Microelectronics – Jacob Millman (MC Graw Hill. 1985)
4. Applied Physics paper II – A.Sundravelusamy Priya Publications 2011)
5. Introduction to Integrated Electronics – V.Vijayendran(S.Viswanathan Pvt. Ltd. 2012)

Books for Reference

1. Text book of Applied Electronics – R.S.Sedha (S. Chnad& Co. 2003)
2. Introduction to Electronics – A.Ambrose and T.VincentDevaraj (Meera Publications 1990)

WAVE MECHANICS AND NUCLEAR PHYSICS**Unit – I: Dual Nature of Matter**

De Broglie's concept of matter waves – The De Broglie wave length – Wave velocity and Group velocity for De Broglie waves – Experimental study of matter waves – Davisson and Germer experiment – G.P.Thomson's experiment for verifying De Broglie relation – Heisenberg's uncertainty principle.

Unit – II: Schrodinger's Wave Equations

Basic postulates of wave mechanics – Development of Schrodinger's wave equation – Time independent and dependent form of Schrodinger's equation – Properties of wave function – Orthogonal and Normalized wave function – Eigen function and Eigen values – Applications of Schrodinger's equation: Particle in a box and Linear harmonic oscillator.

Unit – III: The Nucleus, Detectors and Accelerators

Nuclear size – Nuclear mass – Nuclear charge - Binding energy – Packing factor – Liquid drop model – Shell model.

Introduction – Ionization chamber – Geiger Muller counter – The Linear Accelerator – The Cyclotron – The Betatron.

Unit – IV: Radioactivity

Natural Radioactivity – Alpha, Beta, and Gamma rays – Alpha particle spectra – Theory of Alpha decay – Beta ray spectra – The neutrino theory of Beta decay – Nuclear Isomerism – Internal conversion – Soddy Fajan's displacement law – Laws of radioactive disintegration – Half-life period and Mean life – The Age of Earth – Biological effects of nuclear radiations.

Unit – V: Nuclear Fission and Fusion

Nuclear fission – Energy released in fission – Chain reaction – Atom Bomb – Nuclear Reactors – Nuclear fusion – Source of stellar energy – Thermonuclear reactions – Hydrogen Bomb – plasma – Confinement of plasma - magnetic bottling.

Books for study

1. Modern Physics - R.Murugeshan (KiruthigaSivaprasath publications 2008)

Books for Reference

1. Modern Physics - J.B.Rajam (S. Chnad& Co. 1983)

NUMERICAL METHODS

Unit – I: Solutions of Linear Algebraic Equation

Method of triangularisation – Gauss elimination method- Gauss-Jordan method-Inverse of matrix using Gauss Jordan method – Iterative Methods – Gauss –Jacobi’s Method –Gauss-Seidal method.

Unit –II: Curve Fitting

Curve fitting – method of least squares – Fitting of a straight line-Fitting of a Parabola –Fitting of an exponential curve – Linear regression – regression co-efficient for linear regression.

Unit – III: Solution of algebraic, transcendental and differential equation

Bisection method- Method of successive approximation –Regulafalsi Method- Newton Raphson Method (Simple Problems Only) – Taylor series method – Euler’s method - RungeKutta Method (II & IV order)

Unit – IV: Finite Differences

First differences- difference table- properties of the forward, backward and central difference operators- Linear interpolation -Newton forward interpolation formula- Interpolation with unequal intervals – Lagrange’s interpolation - Bessel interpolation

Unit – V: Numerical Integration

General quadrature formula for equi distant ordinates – Trapezoidal rule – Simpson’s 1/3 rule and 3/8 rule – Practical applications – Weddle’s rule – Gaussian Quadrature formula – Gaussian quadrature (3 point)formula.

Books for study

- 1.Numerical Methods in Science and Engineering - vengatraman. M.K, (1970), National Publishing Company, Chennai.
2. Numerical Methods – Singaravelu .A, (Meenakshi Agency,2012)
3. Introductory methods of Numerical Analysis – Shastry S.S, (Prentice, Hall Ltd., 1977)

Books for Reference

1. Numerical Methods in science and Engineering – Vengatraman. M.K, (1977),National Publishing Company, Chennai.

PHYSICS PRACTICAL – III

(ANY 12)

1. Newton's rings – Refractive index of a liquid.
2. Spectrometer – i-d curve.
3. Spectrometer – i-i' curve.
4. Temperature co-efficient of Thermistor using P.O box
5. Spectrometer – Grating – Minimum deviation.
6. Spectrometer – Cauchy's constants (using grating by normal incidence).
7. M and H – absolute determination using deflection and vibration magnetometer.
8. Field along the axis of the coil – Determination of M.
9. Potentiometer – EMF of a thermocouple.
10. Potentiometer – Calibration of High range voltmeter.
11. B.G. – Absolute capacity of a capacitor.
12. B.G. –Determination of co-efficient of Mutual inductance of a pair of coils.
13. Series Resonance Circuit – self – inductance and quality factor of a coil.
14. Parallel Resonance Circuit – self – inductance and quality factor of a coil.

Programming in 'C'

(ANY 3)

1. Convert the given temperature from Celsius to Fahrenheit / Fahrenheit to Celsius.
2. Find the biggest / smallest number from the given array.
3. Ascending and descending order of an array.
4. Factorial of numbers.
5. Evaluation of series (Sin x and Log x only).

PHYSICS PRACTICAL – IV
ELECTRONICS (ANY 6)

1. Regulated Power Supply using Zener Diode-Percentage of regulation.
2. Characteristics of a Transistor- CE configuration.
3. FET- Characteristics.
4. Voltage Doubler.
5. Tuned Collector Oscillator.
6. Astable Multivibrator.
7. Operational amplifier (Adder and Subtractor).
8. Operational amplifier (Differentiator and Integrator).

DIGITAL ELECTRONICS (ANY 6)

9. Basic and Derived Gates (AND, OR, NOT, NAND, NOR and EX-OR) using IC.
10. AND, OR and NOT gates using discrete components.
11. NAND as Universal Gates.
12. NOR as Universal Gates.
13. Verification of Laws of Boolean Algebra.
14. Verification of De Morgan's Theorem.
15. Half Adder and Full Adder using Logic Gates.
16. Half Subtractor and Full Subtractor using Logic Gates.

Microprocessor 8085 (ANY 3)

17. 8-bit addition and 8-bit subtraction.
18. 8-bit multiplication and 8-bit division.
19. Finding the largest and smallest of the given list of numbers.
20. 16-bit addition.
21. Stepper Motor (Clock Wise and Anti-Clock Wise).
22. One's Complement Addition and Subtraction.

MICROPROCESSOR AND 'C' PROGRAMMING

UNIT I - Intel 8085 and its Architecture

Evolution of microprocessors - Hardware, Software and Firmware - Architecture of INTEL 8085 - Various registers - Status Flags –Address and data bus - Addressing modes - Direct, Register, Register indirect, Immediate and implicit addressing - one byte, two byte and three byte instruction - Instruction set - Data transfer group - Arithmetic Group - Logical group - Branch group, Stack, I/O and Machine controlgroup.

UNIT II - Assembly Language Programming

Addition , subtraction, multiplication and division of two 8-bit numbers – Addition of two 16-bit numbers – One's Complement of an 8-bit number – Two's Complement of 8-bit number-Finding the largest number in a data array - Finding the smallest number in a data array

Unit II - Introduction to C

Basic Structure of C programs – Character set – C tokens – Keywords and identifiers - Constants – Variables – Data types – Declaration of variables – Assigning values to variables – Symbolic constants – Operators and Expressions – Arithmetic operators – Relational, Logical and Assignment operators, Increment and Decrement operators – Conditional operator, Bitwise and Special operators – Arithmetic Expressions – Mathematical functions.

Unit IV-Preliminaries And Functions

Data input and output – getchar, putchar, scanf, printf, gets, puts functions – Decision making and branching –if, if...else, else if ladder, switch, break, continue, goto – Decision making and looping – while, do... while, for, nested loops – Arrays(one-, two- and multi-dimensional arrays)- Declaration, Initialization of arrays.

Unit V: Programs

Development of algorithm, flow chart and program for the following problems

1. Area of Circle, Cylinder, Sphere, Square and Rectangle
2. Centigrade to Fahrenheit and Fahrenheit to Centigrade conversion
3. Average of a set of numbers
4. To print all odd / even numbers upto N
5. To print sum of squares of odd / even numbers upto N
6. Sorting the given string in Alphabetic Order.
7. Finding the largest and smallest element in an array.
8. Finding the factorial of a given number.
9. Solving Quadratic equation.
10. Sorting a set of numbers in Ascending / Descending order.

Books for Study

1. Programming in C – E. Balagurusamy- (Tata MCGraw Hill Pub. Co. 2000)
2. Programming with C–Venugopal, K. R. and Sudep, R.P – (Tata McGraw Hill Pub. Co. 1999)

Reference Book

1. ProgrammingwithC– Byron S Gottifried – Schaum'S Series, (Tata McGraw Hill Pub. Co. 1997)
2. Let us C -YashvantKanetkar – (BPB Publications 1999)

DIGITAL ELECTRONICS

Unit-1: Number of system, Codes and Logic Gates

Number of system – Decimal, Binary, Octal and Hexadecimal Number system and their inter conversions – Arithmetic operations-Binary addition, Subtraction- 1's compliment and 2's compliment representations-Codes-8421 codes-grey code, Excess -3 code and ASCII code, Logic Gates- AND, OR , NOT, EXOR , NAND and NOR XOR and XNOR gates – Universality of NAND and NOR gates.

Unit-II : Boolean algebra and Karnaugh Map

Boolean laws - De Morgan's Theorems - Duality theorem- Simplification using Boolean laws and theorems. Min terms – Max terms – Sum of product method- products of sum methods -3and 4 variables Karnaugh map simplifications- Don't care conditions.

Unit –III: Arithmetic,Data Processing Circuits and Memories

Arithmetic circuits, Half adder, Fulladder, Halfsubtractor and Fullsubtractor. DataProcessing circuits-Multiplexers –Demultiplexers - Decimal to BCD Encoders-BCD to Decimal Decoders-Memories-ROM-PROM,EPRAM and RAM.

Unit-IV: Registers and counters

Registers - shift registers- Counters-Ring Counters- Ripple Counter -Decade counter Mod5counter and Mod 10 counter.

Unit-V: Multivibrators and Filpflops

Cross coupled amplifier- Astable multivibrator - monostable multivibrator - Bistablemultivibrator - schmitt trigger-flip flops -RS, D, JK and JK master slave.

Books for study

- 1.Digital Principles and Applications-Donald P Leach,Albert Paul Malvino,Goutam saha-Sixth edition-Special Indian Edition-Tata McGraw Hill Education India Pvt Ltd,(2005) New Delhi.
- 2.Digital computer Electronics-An Instruction to Microcomputers-Malvino-second edition TMH edition.
- 3.Fundamentals of Microprocessor and Micro Computers-B.Ram (DhanapatiRai Publications 2000).

Books for Reference

- 1.Integrated Electronics-V.Vijaendran,(Viswanathan Pvt.Ltd.2011,Chennai).

ATOMIC AND SOLID STATE PHYSICS

Unit – I: Atom Model

The Vector Atom Model – Quantum Numbers Associated with the Vector Atom Model- Coupling Schemes- Pauli Exclusion Principle- Periodic Classification of Elements- Magnetic dipole moment due to orbital motion of the electron- Magnetic Dipole moment due to spin- Stern and Gerlach Experiment.

Unit- II: Fine Structure of Spectral Lines

Optical Spectra- Spectral terms and notation- Selection rules- intensity rules and interval rule- Fine Structure of sodium D line- Zeeman effect- Larmor's Theorem- Debye's quantum mechanical explanation of normal Zeeman Effect- Anomalous Zeeman effect- Paschen- Back effect- Stark effect.

Unit - III: Bonding and Defects in solids

Introduction - Inter atomic forces – Bond energy- Cohesive energy – Types of bonds in solids – Primary bond – Ionic bond – Covalent bond – Metallic bond – Secondary bonds – Dispersion bond – Dipole bond – Hydrogen bond – Defects - Types of defects - point defects - Line defects – Surface defects – Volume defects (definition only).

Unit - IV: Elementary Crystallography

Introduction – Fundamental definitions in crystallography – Space lattice - Unit cell – lattice parameters – Primitive cell- Seven Classes of crystal – Simple cubic structure – Body centered cubic structure – Face centered cubic structure – Hexagonal closed packed structure – Sodium chloride structure – Miller indices - Diffraction of X – rays by crystals – Bragg's law in one dimension – Experimental method in X- Ray diffraction (Laue method).

Unit V: Dielectrics and Super Conductivity

Dielectrics- Dielectric constant – Electric polarization - Polarization vector - Electric displacement vector – Electric susceptibility – Internal Field Derivation - Clausius – Mossotti relation – Superconductivity - Introduction – Explanation for the occurrence of superconductivity– BCS theory – Meissner effect – Types of superconductors – Applications of superconductors- SQUID – Magnetic levitation, Cryotron.

Books for study

1. Modern physics – R.Murugesan (S.Chand & Co. 2006)
2. Solid State Physics – M.Arumugam (Anuradha Agencies, 2004)
3. Solid State Physics – Gupta & Kumar (K.Nath & Co. Meerut)

Books for Reference

1. Solid State Physics – K.Karuppannan & N. Suganthi
2. Engineering Physics I – Dr. P. Mani (Dhanam Publications, 2013)

ADVANCED PHYSICS**Unit – I: Applications of Solar Energy**

1. Crop driers
2. Solar thermal power generation
3. Solar furnace
4. Water desalination
5. Solar photo voltaic power generation- solar cell- principles and IV characteristics
6. Solar cooker (Box type only)

Unit- II: Renewable energy sources

Bio mass- Photo synthesis- wind energy- ocean thermal energy- open and closed cycle- tidal energy- Classification of Tidal Power Plants -geothermal energy- (Basic ideas only).

Unit- III: Fundamentals of Thin films & Smart Materials

Introduction – Advantages of thin film devices- Film growth stages (Nucleation stage- Island stage- Coalescence stage- Channel stage- hole stage and continuous film stage) – properties(optical, electrical) - Applications (Electrical electronic, and opto-electronic devices) – Metallic glass and its applications – Fiber reinforced metals –Conducting Polymers.

Unit – IV: Nanomaterials

Introduction- Special features of Nano phase Materials – Different forms of Nano material – Synthesis of Nanomaterials – Preparation of Nano tubes – Pulsed Laser Deposition – Chemical Vapor deposition – Properties of Nano phase Particles – Applications of Nano phase materials.

Unit – V: Characterization techniques for thin films and Nano materials

Structural Studies: X-ray diffraction-Powder diffraction technique for polycrystalline thin films - Electrical Studies: Sheet resistance - Four probe method- Optical Studies: UV-vis-NIR spectrophotometer- Surface Studies: Scanning Electron Microscope – Transmission Electron Microscope.

Books for study

1. Solar energy utilization – G.D. Rai (Khanna Publishers Delhi 2004)
2. Introduction to Thin films- K. Ravichandran, B. Sakthivel, K. Swaminathan, Research India Publications, Delhi.
3. Engineering Physics II – Dr. P Mani (Dhanam Publications, 2013)
4. Energy Physics- K.Karupannan, V.N.Suganthi (Priya Publications, 2006)
5. Characterization of nanomaterials and Thin films- K. Ravichandran, B. Sakthivel, K. Swaminathan, C.Ravidhas Research India Publications, Delhi.

Books for reference

1. Material Science - Dr.Arumugam
2. Solar energy- S.P. Sukhatme Tata Mcgraw Hill Publisher Company 1999
3. Non Conventional Energy Sources – G.D.Rai (Khanna Publishers Delhi 1999)

ALLIED PHYSICS FOR MATHEMATICS-I

Unit –I: Properties of Matter and Mechanics

Stress – Strain – Different Moduli of Elasticity – Relation between the Elastic Moduli – Bending of Beam – Expression for bending moment – determination of Young’s modulus by Non – Uniform bending pin and microscope method.

Center of Gravity – Determination of center of gravity of solid hemisphere – Solid cone.

Unit –II: Thermal Physics

Thermometer – Types of Thermometers – centigrade and Fahrenheit scales – Relation between Celsius, Kelvin, Fahrenheit – Determination of thermal conductivity of bad conductor by Lee’s disc method – Newton’s law of cooling – Determination of specific heat capacity of a liquid by cooling – black body – Stefan’s law – Distribution of energy in the spectrum of the black body.

Unit -III: Optics

Electromagnetic Spectrum – Laws of Reflection and Refraction – LASER – Spontaneous emission – Stimulated emission – Population Inversion – Pumping – Optical and Electrical pumping – Types of LASER – Ruby LASER – Helium-Neon LASER – Applications of LASER(list of fields only).

Unit - IV: Semiconductor Physics

Theory of energy band in crystals – Distinction between conductors, Insulators, and Semiconductors – Intrinsic and Extrinsic Semiconductor N – type and P- type semiconductor – Junction Diode –Zener Diode – V-I Characteristics – PNP and NPN transistor – Transistor action – DC Characteristics of CE configuration- FET – N channel and P channel FET – Performance – Characteristics – Comparison of Transistor and FET.

Unit – V: Digital Electronics

Number System – Conversions – Binary : Addition, Subtraction, Multiplication, and Division – 8421 Code – BCD Code – Excess 3 Code – Gray Code – Binary to Gray and Gray to Binary conversion – ASCII Code – Basic and Derivation Gates: AND, OR, NOT,NAND,NOR, EX-NOR –NAND & NOR as Universal gates

Books for Study and Reference

- 1. Properties of matter - R. Murugesan (S. Chand & Co.2010)**
- 2. Heat and Thermodynamics – Brijila and Subrahmanyam (S.Chand& Co. 2007)**
- 3. Modern Physics -R.Murughesan (S. Chnad& Co.2010)**
- 4. Allied Physics I - A. Sundravelusamy (Priya publications, 2011)**
- 5. Digital Principles & their application – Malvino& Leach (Tatta McGraw Hill, 2005)**
- 6. Allied Physics II - A. Sundravelussamy (Priya publications, 2011)**

ALLIED PHYSICS PRACTICAL FOR MATHEMATICS– II
(ANY 12)

1. Surface Tension of a liquid – Drop Weight Method
2. Interfacial Surface Tension of a liquid – Drop Weight Method
3. Co-efficient of Viscosity – Graduated Burette Method
4. Specific heat capacity of liquid by cooling method
5. Compound Pendulum -g&k
6. Sonometer – verification of first Two laws
7. Metre bridge – Determination of Specific Resistance
8. Potentiometer - Calibration of low range voltmeter
9. Characteristics of Zener Diode
10. Characteristics of Junction Diode
11. Verification of Truth Tables of Logic Gates (AND,OR,NOT,NAND,NOR & EX-NOR) using IC.
12. Verification of Universal gates using NAND gates
13. Verification of Universal gates using NOR gates
14. Full Adder using Gates
15. Verification of Demorgan's theorem

ALLIED PHYSICS FOR MATHEMATICS– III

UNIT I: Electrostatics

Coulomb's inverse square law – Gauss theorem and its PROOF-Field due to a charged sphere-Field at a point due to a charged cylinder

Capacitance – Capacity of a conductor – Energy of a charged capacitor – Loss of energy due to sharing of charge between two charged conductors- Capacitors in series and parallel

UNIT II: Current Electricity and Nuclear Physics

Kirchhoff's Law – Wheatstone bridge – Metre Bridge – Carey foster's bridge – measurement of specific resistance – Potentiometer – Calibration of low range voltmeter.Nucleus – Nuclear Size – Charge – Mass and Spin –Shell model – Nuclear fission and fusion – Liquid drop model – Binding energy – Mass defect.

Unit – III : Opto Electronic Devices

Photo Electric Effect – Lawa of Photo Electric Emission – Photo Conduction – Photo diode – Photo transistor – LED – Construction – Working – Solar cell – Working – Characteristics – Uses.

Unit – IV: Operational Amplifier

Ideal Op-Amp – Op-Amp Parameters (Qualitatively): Input offset voltage , Input impedance, Output impedance, CMRR, Slew Rate – Inverting – Non inverting Amplifier – Adder – Subtractor – Differentiator – Integrator.

Unit – V: Boolean algebra

Basic laws of Boolean algebra-De Morgan's theorem-verification of Boolean expression using Boolean laws-Half adder-Full adder-Half subtractor-Full Subtractor-Encoder-Decimal to BCD encoder-Decoder-BCD to decimal decoder

Books for Study and Reference

1. Electricity and Magnetism– Brijilal and Subrahmanyam. (RatanPrakashanMandir, 1995.)
2. Modern Physics - Murughesan . R (S. Chnad& Co.2010)
3. Allied Physics II - A. Sundravelusamy (Priya publications, 2011)
4. Applied Physics II - A. Sundravelussamy (Priya publications, 2011)
5. Solid State Physics - M. Arumugam (Anuradha Agencies, 2004)
6. Solid State Physics - Gupta & Kumar (K. Nath& Co. Meerut)
7. Engineering Physics - Dr. P. Mani (Dhanam Publication. 2013)

ALLIED PHYSICS FOR CHEMISTRY –I**Unit –I: Properties of Matter and Mechanics**

Stress – Strain – Different Moduli of Elasticity – Relation between the Elastic Moduli – Bending of Beam – Expression for bending moment – determination of Young’s modulus by Non – Uniform bending pin and microscope method.

Center of Gravity – Determination of center of gravity of solid hemisphere – Solid cone.

Unit –II: Thermal Physics

Thermometer – Types of Thermometers – centigrade and Fahrenheit scales – Relation between Celsius, Kelvin, Fahrenheit – Determination of thermal conductivity of bad conductor by Lee’s disc method – Newton’s law of cooling – Determination of specific heat capacity of a liquid by cooling – black body – Stefan’s law – Distribution of energy in the spectrum of the black body.

Unit - III: Optics

Electromagnetic Spectrum – Laws of Reflection and Refraction – LASER – Spontaneous emission – Stimulated emission – Population Inversion – Pumping – Optical and Electrical pumping – Types of LASER – Ruby LASER – Helium-Neon LASER – Applications of LASER (list of fields only).

Unit - IV: Semiconductor Physics

Theory of energy band in crystals – Distinction between conductors, Insulators, and Semiconductors – Intrinsic and Extrinsic Semiconductor N – type and P- type semiconductor – Junction Diode – Zener Diode – V-I Characteristics – PNP and NPN transistor – Transistor action – DC Characteristics of CE configuration- FET – N channel and P channel FET – Performance – Characteristics – Comparison of Transistor and FET.

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Number System – Conversions – Binary : Addition, Subtraction, Multiplication, and Division – 8421 Code – BCD Code – Excess 3 Code – Gray Code – Binary to Gray and Gray to Binary conversion – ASCII Code – Basic and Derivation Gates: AND, OR, NOT,NAND,NOR, EX-NOR –NAND & NOR as Universal gates – De Morgan’s theorem – Half adder – Full adder – Half subtractor – Full subtractor (using basic gates).

Books for Study and Reference:

- 1. Properties of matter - R. Murugesan (S. Chand & Co.2010)**
- 2. Heat and Thermodynamics – Brijila and Subrahmanyam (S.Chand & Co. 2007)**
- 3. Modern Physics -R. Murughesan (S. Chnad & Co.2010)**
- 4. Allied Physics I - A. Sundravelusamy (Priya publications, 2011)**
- 5. Digital Principles & their application – Malvino & Leach (Tatta McGraw Hill, 2005)**
- 6. Allied Physics II - A. Sundravelussamy (Priya publications, 2011)**

ALLIED PHYSICS PRACTICAL FOR CHEMISTRY – II
(ANY 12)

1. Surface Tension of a liquid – Drop Weight Method
2. Interfacial Surface Tension of a liquid – Drop Weight Method
3. Co-efficient of Viscosity – Graduated Burette Method
4. Specific heat capacity of liquid by cooling method
5. Thermal conductivity of a bad conductor – Lee’s disc
6. Sonometer – verification of first Two laws
7. Metre bridge – Determination of Specific Resistance
8. Potentiometer - Calibration of low range voltmeter
9. Characteristics of Zener Diode
10. Characteristics of Junction Diode
11. Verification of Truth Tables of Logic Gates (AND,OR,NOT,NAND,NOR & EX-NOR) using IC.
12. Verification of Universal gates using NAND gates
13. Verification of Universal gates using NOR gates
14. Full Adder using Gates
15. Verification of Demorgan’s theorem

ALLIED PHYSICS FOR CHEMISTRY – III**Unit – I: Current Electricity and Nuclear Physics**

Kirchhoff's Law – Wheatstone bridge – Metre Bridge – Carey foster's bridge – measurement of specific resistance – Potentiometer – Calibration of low range voltmeter.

Nucleus – Nuclear Size – Charge – Mass and Spin –Shell model – Nuclear fission and fusion – Liquid drop model – Binding energy – Mass defect.

Unit – II: Opto Electronic Devices

Photo Electric Effect – Lawa of Photo Electric Emission – Photo Conduction – Photo diode – Photo transistor – LED – Construction – Working – Solar cell – Working – Characteristics – Uses.

Unit – III: Operational Amplifier

Ideal Op-Amp – Op-Amp Parameters (Qualitatively): Input offset voltage , Input impedance, Output impedance, CMRR, Slew Rate – Inverting – Non inverting Amplifier – Adder – Subtractor – Differentiator – Integrator.

Unit – IV: Bonding in solids

Introduction – Inter atomic forces – Bond energy – Cohesive energy – Types of bonds in solids – Primary bond – Ionic bond – Covalent bond – Metallic bond – Secondary bonds – Dispersion bond – Dipole bond – Hydrogen bond.

Unit – V: Elementary Crystallography

Introduction – Fundamental definitions in crystallography – Unit cell – Primitive cell – Seven Classes of crystal – Simple cubic structure – Body centered cubic structure – Face centered cubic structure – Hexagonal closed packed structure – Sodium chloride structure – Miller indices – Diffraction of X-rays by crystals – Bragg's law in one dimension – Experimental method in X-ray diffraction (Laue method).

Books for Study and Reference:

1. Electricity and Magnetism– Brijilal and Subrahmanyam. (Ratan PrakashanMandir, 1995.)
2. Modern Physics - Murughesan . R (S. Chnad & Co.2010)
3. Allied Physics II - A. Sundravelusamy (Priya publications, 2011)
4. Applied Physics II - A. Sundravelussamy (Priya publications, 2011)
5. Solid State Physics - M. Arumugam (Anuradha Agencies, 2004)
6. Solid State Physics - Gupta & Kumar (K. Nath & Co. Meerut)
7. Engineering Physics - Dr. P. Mani (Dhanam Publication. 2013)

APPLIED PHYSICS – I**Unit – I: Current Electricity**

Ohm's Law- Verification of Ohm's Law-Kirchhoff's law- Applications of Kirchhoff's law- Wheatstone's bridge-Metre bridge- Carey foster's bridge- Potentiometer-Measurement of Current and Resistance- Calibration of low range Voltmeter.

Unit – II: Alternating Current

Root Mean Square (RMS) value of an alternating current-Average value of an alternating current-Alternating EMF applied to a circuit containing L,C,R, Land R, C and R, LCR- Parallel and Series resonant circuits- Q factor.

Unit – III: Number Systems, Codes and Logic gates

Number Systems - Conversions - Binary: Addition, Subtraction, Multiplication, Division-8421 Code - BCD Code - Excess 3 code - Gray code - Binary to Gray and Gray to Binary Conversion - ASCII code – Basic and Derivative Gates: AND, OR, NOT, NAND, NOR, EX-OR - NAND & NOR as Universal Gates.

Unit –IV: Boolean algebra and Arithmetic Circuits

Basic laws of Boolean algebra- De Morgan's theorem- Verification of Boolean expression using Boolean laws- Half-adder- Full adder - Half-subtractor- Full subtractor (using basic gates).

Unit –V: Semiconductor Memories

Introduction – ROM – using diodes and transistors – ROM in terms of digital circuits – Building memory of larger capacity – PROM – EPROM – EEPROM – ROM as a unit in microcomputers – RAM – Static RAM – Dynamic RAM.

Books for Study

1. Applied Physics Paper I & II - A.Sundravelusamy (Priya Publications, Karur, 2011)
2. Electricity and Magnetism – Brijlal& Subramanian, (RatanPrakashanMandir, 1995.)
3. Digital Principles and Applications – Malvino& Leech (Tata McGraw Hill. 2005)
4. IntroductiontoIntegrated Electronics – V. Vijayendren, V. Subramanian(S. Viswanathan Pvt Ltd., Chennai 2012.)

Books for Reference

1. Electricity and Magnetism - Narayanamurthi and Nagarathinam, (The National Publishing Company, Madras, 1994.)
2. Electricity and Magnetism- D. L. Sehgal and K. L. Chopra, (Sultan Chand and Sons, New Delhi, 1996.)

APPLIED PHYSICS PRACTICAL-II

(Any 12)

1. Semi-Conductor diode- Characteristics.
 2. Zener diode – Characteristics.
 3. FET- Characteristics.
 4. Transistor- Characteristics in CE configuration.
 5. Meter Bridge – Specific Resistance.
 6. Potentiometer – Low range Voltmeter Calibration
 7. Potentiometer- Low range Ammeter Calibration
 8. Carey Foster’s Bridge- Specific Resistance.
 9. Verification of De-Morgan’s Theorem.
 10. Series resonance circuit
 11. Parallel resonance circuit
 12. Adder and Subtractor Using Op-Amp.
 13. Logic Gates (AND,OR, NOT, NAND, NOR and EX-OR) Using IC.
 14. NAND and NOR as Universal Gates.
 15. Half –Adder and Half –Subtractor using logic gates
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APPLIED PHYSICS – III

Unit – I: Semiconductor Physics

Theory of energy bands in crystals- Distinction between conductors, Insulators and Semiconductors – Intrinsic and Extrinsic semiconductors – Junction diode – Zener diode – PNP and NPN Transistors – CE configuration – FET: N channel and P channel – Characteristics of FET.

Unit II: Lasers and Opto-Electronic Devices

Basic concepts of Stimulated emission – Population Inversion and Meta Stable state – He –Ne Laser – Photo electric effect – Laws of photo electric emission – Applications – Photo Transistors – LED – Seven Segment Display.

Unit III: Operational Amplifiers

The basics of Operational Amplifier – Inverting and Non-inverting Operational Amplifier – CMRR – Basic uses of Operational Amplifier as sign and scale changer, Phase shifter – Adder – Subtractor – Comparator – Integrator – Differentiator.

Unit IV: IC Fabrication

Basics of IC – Merits & Demerits of IC's - SSI, MSI, LSI & VLSI –Basic Monolithic Integrated circuit Fabrication Processes- Epitaxial Growth-Masking and Etching–Transistor for Monolithic circuits.

UNIT – V: Fibre Optics

Fibre optic communications – Optical fibre – Principle and propagation of light in optical fibre – Acceptance angle- Numerical aperture – Types of optical fibres – Block diagram of fibre optic communication – Fibre optic sensors- Displacement sensor.

Books for Study and Reference

1. Microelectronics - Jacob Millman, (McGraw Hill. 1985)
2. Electronics Devices & Circuits – Jacob Millman& Christos C. Halkias(TMh 1991.)
3. Applied physics Paper II - A. Sundravelusamy, Priya Publications 2011)
4. Basic Electronics solid state - B.L.Theraja (S.Chand& Co. 2009)
5. Principles of Electronics – V.K.Mehta (S.Chand& Co. 2010)

**NON MAJOR ELECTIVE – I
LASER PHYSICS**

Unit I: Light

Electromagnetic Spectrum-Light-Rectilinear propagation of light-Laws of Reflection and Refraction – Dispersion –Interference-Diffraction-Polarization-Scattering (Basic definitions only).

Unit II: Interaction of Light

Introduction- Difference between ordinary and laser light-Interaction of light with materials-Stimulated absorption-Spontaneous emission-Stimulated emission.

Unit III:Laser principle

Introduction of Laser- Characteristics-High directionality-High Intensity-Highly monochromatic-Highly Coherent-Concept of Laser-Population Inversion –Condition for population Inversion-Methods for pumping action-optical pumping-Electrical discharge-Direct conversion-Active medium-Meta stable state-Basic components of a laser system.

Unit IV: LASER Types

Types of LASER - Ruby LASER - Helium-Neon LASER- CO₂ LASER –Semiconductor LASER.

Unit V: Applications

- 1. Surgical**
- 2. Metallurgical**
- 3. Military**
- 4. Physical**
- 5. Holography**

Books for Study

- 1. A Text Book of Optics – Brijlal and Subrahmanyam (S. Chand & Co. 2004)**
- 2. An Introduction to LASERS Theory and Applications – M. N. Avadhanulu (S. Chand & Co., 2004)**

Books for Reference

- 1. Engineering Physics- G. Vijayakumari, (Vikas Publications 2013)**
- 2. Engineering Physics I – Dr. P. Mani (Dhanam Publications, 2013)**

**NON MAJOR ELECTIVE – II
SOLAR ENERGY**

Unit I: Structure of Sun

Thermonuclear reactions- Structure of Sun- Solar Constant- Electromagnetic Spectrum- Beam and diffuse radiations- Basic Earth Sun angles- Determination of Solar time.

Unit II: Solar Collectors

Liquid flat plate Collector- General Characteristics of Flat plate Collectors- Focusing Collectors- General Characteristics of Focusing Collectors.

Unit III: Photo Voltaic Power

Principle of Photo Voltaic Power - Photo voltaic Effect- Solar Cell- Types of Solar Cells- Applications of Solar Cells.

Unit- IV: Renewable energy sources

Bio mass- Photo synthesis- wind energy- ocean thermal energy- open and closed cycle- tidal energy- geothermal energy. (Basic ideas only).

Unit V: Applications of Solar Energy Utilization

- 1) Crop Drier
- 2) Solar Cooker
- 3) Solar Distillation(Solar Stills)
- 4) Solar Green Houses

Books for Study and Reference

- 1) Solar Energy utilization - G. D. Rai.(Khanna Publishers 2012)
- 2) Solar Energy- S.P.Sukhatme (TMH 1999)

DOMESTIC SKILL MANAGEMENT

Unit – I: Communications

Basic communications of Radio, Television, Telephone, Cellular Mobile Phone .

Unit – II: Lighting, Heating and Cooling Appliances

Design, working and Safety tips of Fluorescent lamp , Electric Iron, Fan, Refrigerator .

Unit - III: Kitchen Appliances

Working and Safety tips of Wet – Grinder, Mixie, Solar Cooker, Microwave Oven.

Unit – IV: Home Repair and Safety tips

How electricity works- home repair safety tips – Electrical safety – General dangers from Electricity – Causes, Symptoms, First Aid and prevention tips.

Unit – V: Fire Prevention and Protection

**Introduction – Fundamentals of fires – Types and uses of fire equipment’s First Aid.
Practicals**

- 1. To make Fuse connection.**
- 2. To practice electrical circuit connection – one lamp from one switch.**

Books for Study

- 1. Cyclostyled text, Department of Physics, K.N.Govt. Arts College for Women (Autonomous), Thanjavur.**

Question Pattern for Self Study Papers – 2015 onwards

Time: 3hrs

Maximum: 100 Marks

Part - A (8 x 5 = 40marks)

Answer any Eight questions (out of 10)

Part - B (6 x10 =60marks)

Answer any Six questions (out of 8)

COMMUNICATION SYSTEMS

Unit - I: Radio transmission and reception

Transmitter – Modulation- Types of modulation – Amplitude modulation – Frequency modulation – Block diagram of AM and FM transmitter.

Receiver – Demodulation – Block diagram of AM and FM receivers.

Unit - II: Television and Radar

Introduction – Principle of Television – Iconoscope – CRO – Scanning – Block diagram of TV transmission and receiving system – Radar: Principle – Block diagram – Range equation – Applications

Unit - III: Satellite Communications

Introduction – History of Satellites – Classification of Satellites – types of Satellites – General structure of Satellite Communication – Advantages and Applications of Satellite communication

Unit- IV: Fibre Optic Communications

Introduction – Optical fibre –Determination of Acceptance angle and Numerical aperture – Coherent Bundle - Fibre optic communication systems – Advantages- Fibre optic sensors – Types – Displacement sensor.

Unit - V: Tele Communication Systems

GSM – Mobile Services –radio system- protocols – localization and calling – Handover - authentication – encryption – GPRS – architecture.

Books for study

1. Principles of Electronics – V.K Metha
2. Introduction to Electronics- A.Ambrose and T.VincentDevaraj
3. Mobile Communications - John Schiler,, Addison Wesley
4. Allied physics paper I – A.Sundaravelusamy (Priya publications, 2011)

Question Pattern for Self Study Papers – 2015 onwards

Time: 3hrs

Maximum: 100 Marks

Part - A (8 x 5 = 40marks) Answer any Eight questions (out of 10)

Part - B (6 x10 =60marks) Answer any Six questions (out of 8)

**DEPARTMENT OF PHYSICS
PG SYLLABUS 2018**

Core Course 1

MATHEMATICAL PHYSICS

Unit 1: Vector Analysis

Concept of vector and scalar fields – Gradient, divergence, curl and Laplacian – Vector identities – Line integral, surface integral and volume integral – Gauss theorem, Green's Theorem, Stoke's theorem and Applications .

Unit 2: Tensors And Matrix Theory

Transformation of coordinates – Summation convention – Contravariant, covariant and mixed tensors – Rank of a tensor – Symmetric and antisymmetric tensors – Characteristic equation of a matrix – Eigen values and eigen vectors – Cayley – Hamilton theorem – Jacobi method.

Unit 3: Complex Analysis

Functions of complex variables – Differentiability -- Cauchy-Riemann conditions –Complex integration – Cauchy's integral theorem and integral formula – Taylor's and Laurent's series – Residues and singularities - Cauchy's residue theorem .

Unit 4: Special Functions

Gamma and Beta functions – Transformation of Gamma Functions-Different forms of Beta Functions-Relation between Beta and Gamma Function-Properties of Beta and Gamma Function.

Unit 5: Group Theory

Basic definitions – Multiplication table – Sub groups, Cosets and Classes – Direct Product groups – Point groups -- Space groups – Representation theory – Homomorphism and isomorphism– Reducible and irreducible representations.

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Books for Study

1. Mathematical Physics by B.D Gupta
2. Mathematical Physics by H.K.Dass
3. I. A.W. Joshi, Matrices and Tensors in Physics, Wiley Eastern Ltd., New Delhi (1975)
4. A.K. Ghatak, T.C.Goyal and S.J. Chua, Mathematical Physics, Macmillan, New Delhi (1995)

Books For Reference

1. Eugene Butkov, Mathematical Physics, Addison Wesley, London (1973)
2. L.A.Pipes and L.R. Harvill, Applied Mathematics for Engineers and Physicists, McGraw Hill Company, Singapore (1967)
3. P.K.Chattopadhyay, Mathematical Physics, Wiley Eastern Ltd., New Delhi (1990)
4. G.Arflen and H.J.Mathematical Methods for Physicists, 4th ed. Physicists (PrismBooks, Banagalore, 1995).
5. M.D.Greenberg, Advanced Engineering Mathematics, 2nd ed. International ed., Prentice – Hall International, NJ, (1998)

CLASSICAL DYNAMICS AND RELATIVITY**UNIT I: Fundamental Principles and Lagrangian Formulation**

Mechanics of a particle and a system of particles – Conservation laws – Constraints – Generalized coordinates – D'Alembert's principle and Lagrange's equation – Hamilton's principle – Lagrange's equations of motion – Applications of Lagrangian formulation – Motion of one particle using Cartesian coordinates and plane polar coordinates – Atwood's machine.

Unit II: Motion under Central Force

Conservation of energy and angular momentum – Inverse square law – Kepler's problem – Virial theorem – Scattering in a central force field – Rutherford Scattering - Artificial satellites – Geo stationary satellites.

Unit III: Rigid Body Dynamics and Small Oscillations

Euler's angles – Moments and products of inertia – Euler's equations – Symmetrical top – Theory of small oscillations – Normal modes and frequencies – Linear triatomic molecule – Wave equation and motion – Phase velocity – Group velocity - Dispersion.

Unit IV: Hamilton's Formulation

Hamilton's canonical equations of motion – Hamilton's equations from variational principle – Principle of least action – Canonical transformations – Poisson bracket – Hamilton--Jacobi method – Action and angle variables – Kepler's problem in action angle variables.

Unit V: Relativity

Reviews of basic ideas of special theory of relativity – Energy and momentum four -vector – Minkowski's four-dimensional space – Lorentz transformation as rotation in Minkowski's space – Thomas precession – Elements of general theory of relativity.

Books for Study

1. H. Goldstein, C.P. Poole and J.L. Safko, *Classical Mechanics* (Pearson Education and Dorling Kindersley, New Delhi, 2007).
2. S.L. Gupta, V. Kumar and H.V. Sharma, *Classical Mechanics* (Pragati Prakashan, Meerut, 2001).
3. N.C. Rana and P.S. Joag, *Classical Mechanics* (Tata McGraw-Hill, New Delhi, 1991).

Books for Reference

1. V.B. Bhatia, *Classical Mechanics* (Narosa, New Delhi, 1997).
2. J.C. Upadhyaya, *Classical Mechanics* (Himalaya Publishing House, 2005)

STATISTICAL MECHANICS

Unit 1 : Thermodynamics

Energy and First law of thermodynamics -heat content and heat capacity-Specific heat-entropy and the second law of thermodynamics-thermodynamic potential and the reciprocity relation-thermodynamic equilibrium -Nernst heat theorem.

Unit 2: Kinetic Theory

Distribution function and its evolution-Boltzmann transport equation and its validity- Boltzmann's theorem-Maxwell-Boltzmann's distribution-Transport phenomena-Mean free path.

Unit 3:Classical Statistical Mechanics

Introduction-Phase space and ensembles-Density function-Liouville's theorem- Maxwell-Boltzmann distribution law-Micro canonical ensemble-Ideal gas-Entropy-Partition function-Principle of equipartition of energy-Canonical and grand canonical ensemble.

Unit 4:Quantum Statistical Mechanics

Basic concepts- Bose-Einstein and Fermi-Dirac Statistics- Distribution laws-Equations of state-Bose-Einstein condensation.

Unit 5:Application of Q.S.M

Ideal Bose gas :Photons-Black body and planck gas Properties-Degeneracy-Electron gas-Pauli paramagnetism.

Books For Study:

- 1.Statistical Mechanics-Gupta kumar & Sharma
- 2.Statistical Mechanics-Sathya prakash & Agarwal
- 3.Statistical Mechanics(Wiley Eastern Limited,New Delhi,1994)-B.K.Agarwal and M.Eisner
- 4.Thermal and Statistical physics(New Age International(P) limited,New Delhi,2010)- R.B.Singh

Books For Reference

- 1.Statistical Physics,Thermodynamics & Kinetic theory.(Vishal Publicating Co.,Jalandhar,2010)Bhatia.
- 2.Fundamentals of Statistical Mechanics(New Age International(p) Limited,New Delhi,2009)-Laud.
- 3.Introduction to Statistical Mechanics(Narosa Publishing House New Delhi,2011)-Sinha.
- 4.Statistical Mechanics on Introduction (Nrosa Pubicating House New Delhi,2009)-Evelyn Guha.

Practical I and II

Select At Least Six Experiments From Each Of Two Groups And Minimum Of Twelve Experiments For Each Semester (I And II)

Group A - GENERAL EXPERIMENTS

1. Determination of Young's modulus (q), Rigidity modulus (n), Poisson's ratio (σ) by elliptical fringes method.
2. Determination of Young's modulus (q), Rigidity modulus (n), Poisson's ratio (σ) by hyperbolic fringes method.
3. Determination of Stefan's constant
4. Rydberg's constant using spectrometer
5. Four Probe method – Determination of resistivity
6. Determination of carrier concentration and Hall coefficients in semiconductors
7. Spectrometer using Narrow Angle Prism
8. Determination of magnetic susceptibility of liquid by Quincke's method
9. Determination of Bohr's magnetron (e/m) of an electron by magnetron method
10. Determination of magnetic susceptibility of liquid by Guoy method
11. Determination of magnetic susceptibility of Solid by Guoy method
12. Determination of the Compressibility of a Liquid by Ultrasonic Interferometer
13. Determination of the Wavelength using Laser grating
14. Photoelectric effect - determination of Planck's constant
15. Determination of thermal conductivity by forbe's method

Group B - ELECTRONICS EXPERIMENTS

1. Emitter follower
2. Dual power supply-Construction
3. Construction of transistorized power supply using bridge rectifier.
4. Design and study of monostable multivibrator
5. Design and study of bistable multivibrator.
6. Design and study of Wein bridge Oscillator (Transistor)
7. Design and study of Phase shift Oscillator (Transistor)
8. Characteristics of FET.
9. Characteristics of UJT.
10. Characteristics of SCR.
11. Characteristics of LDR.
12. FET oscillator.
13. Transistor power amplifier.
14. Relaxation oscillator using UJT.
15. Study of a feedback amplifier – Determination of band width, input and output impedance.
16. Regulated PS – Zener and IC
17. K- map simplification – implementation basic and universal gates by SOP & POS
16. Design of Asynchronous Counter
17. Op-amp: Solving I order Simultaneous Equation
18. Analog to Digital Converter
19. BCD Adder and Subtractor
20. Shift Registers using Flip-Flop & ICs
21. Parity Checker / Generator & Comparator by gates
22. Encoder and Decoder

ANALOG AND DIGITAL ELECTRONICS

Unit I: Semiconductor Devices

Tunnel, LASER, LED and photo diodes – Hall effect in a semiconductor -- Depletion and enhancement type MOSFET – Characteristics of UJT and SCR – Power control DIAC and TRIAC.

Unit II: Operation Amplifier

phase-shift oscillators – saw-tooth and square waves Generators – Schmitt trigger – Voltage control oscillator - Weighted resistor and binary R-2R ladder digital to analog converters - Counter type and successive approximation analog to digital converters .

Unit III: Digital Circuits-I

Digital comparator – Parity generator/checker – Data selector -- BCD to decimal decoder – Seven segment decoder – Encoders – RS, JK, D and JK master slave flip flops

Unit IV :Digital Circuits-II

Serial-in serial-out, serial-in parallel-out and parallel-in serial-out shift registers – Synchronous, asynchronous, ring and up / down (using mod 10) counters - Multiplexers - Demultiplexers.

Unit V :IC Fabrication and IC Timer

Basic monolithic ICs – Epitaxial growth – Masking –Etching– Fabricating monolithic resistors, transistors, capacitors – 555 timer: Description of the functional diagram, operation and applications of astable operations –Missing pulse detector

Books for Study:

1. T.F. Schubert, E.M. Kim, Active and Nonlinear Electronics (John Wiley, New York, 1996).
2. D. Roy Choudhury and S.B. Jain, Linear Integrated Circuit (New Age International Publications, New Delhi, 2010).
3. L. Floyd, Electronic Devices (Pearson Education, New York, 2004).
4. J. Millman, C. Halkias and C.D. Parikh, Integrated Electronics, Analog and Digital Circuits and Systems (TMGH, 2010).
5. D.P. Leach and A.P. Malvino, Digital Principles and Applications (Tata McGraw-Hill, New Delhi, 2006).
6. R.A. Gayakwad, Op-Amps & Linear Integrated Circuits (Printice Hall, New Delhi, 1999).

Books for Reference:

1. R.L. Geiger, P.E. Allen and N.R Strader, VLSI Design Techniques for Analog and Digital Circuits (McGraw–Hill, Singapore, 1990).
2. T.F. Schubert, E.M. Kim, Active and Nonlinear Electronics (John Wiley, New York, 1996).
3. D. Chattopadhyay and P.C. Rakshit, Electronics Fundamentals and Applications (New Age International Publications, New Delhi.

ELECTROMAGNETIC THEORY

Unit 1: Electrostatics

Electric charge density - Coulomb's law – Electric Intensity – Electric Potential - Gauss's law – Application of Gauss's law – Straight uniformly charged wire - Poisson and Laplace equations - Multipole Expansion of a Charge Distribution – Electrostatic Energy .

Unit 2: Boundary Value Problems in Electrostatics:

Electrostatic boundary conditions - Method of separation of variables in Cartesian and Cylindrical Coordinates - Application to parallel Plate Capacitor and Cylindrical shell – Method of Images – Applications – Point Charge near an infinite Grounded Conducting Plane.

Unit 3: Magnetostatics

Ampere's Force law - Biot-Savart law – Applications - Long straight wire, Circular coil, Solenoid - Ampere's circuital law - applications - B due to long straight wire, Solenoid, Toroid, Force between two parallel wires, Force on a charge in magnetic field - Magnetic scalar and vector potential - Multipole expansion of a current distribution - Magnetic susceptibility and permeability – Symmetries and Correspondences in Electrostatics and Magnetostatics.

Unit 4: Electromagnetism

Displacement current –equation of continuity - energy in the electromagnetic field, Poynting's theorem, Poynting vector, Maxwell's equations and its derivation – Electromagnetic Potentials - Gauge transformations - Lorentz gauge.

Unit 5: Electromagnetic Waves and Wave Propagation

Plane electromagnetic waves in free space, propagation of electromagnetic waves in isotropic dielectrics and anisotropic dielectrics - propagation of electromagnetic waves in conducting media and in ionized gases, Reflection and refraction of electromagnetic waves, Fresnel formulae, Brewster's Law and polarization of electromagnetic waves - total internal reflection and critical angle.

Books for Study

1. K.K. Chopra and G.C. Agarwal, *Electromagnetic Theory* (K. Nath & Co., Meerut).
2. J.D. Jackson, *Classical Electrodynamics* (John-Wiley, New York, 1999) 3rd edition.
2. Satyaprakash *Electromagnetic Theory and Electrodynamics* (Kedarnath & Ramnath & Co Meerut, 2005).

Books for Reference

1. D.J. Griffiths, *Introduction to Electrodynamics* (Pearson, Essex, 2014) 4th edition.

SPECTROSCOPY

Unit I : Microwave and Infra-Red Spectroscopy

Microwave Spectroscopy - Rotation of molecules – Rotational spectra of rigid diatomic molecules – Spectrum of a nonrigid rotator – Experimental technique – Polyatomic molecules – Linear, symmetric top molecules- microwave spectrometer - Infrared Spectroscopy - Vibrating diatomic molecule – Diatomic vibrating rotator – Vibration-rotation spectrum of carbon monoxide – Influence of rotation on the spectrum of polyatomic molecules – Linear and symmetric top molecules – IR spectrometer

Unit II Raman Spectroscopy

Raman effect – Quantum theory of Raman effect – Pure rotational Raman spectra – Linear molecules – Symmetric top molecules - Vibrational Raman spectra - Raman spectrometer.

Unit III Electronic Spectroscopy of atoms and molecules

Shape of atomic orbitals – energies of atomic orbitals – fine structure of hydrogen atom spectra – electric spectra of diatomic molecules – Born – Oppenheimer Approximation – Franck – Condon Principle – Electronic spectra of polyatomic molecules – Re-emission of energy by an excited molecule – Photo electron Spectrometer.

Unit IV Nuclear Magnetic Resonance Spectroscopy

Magnetic properties of nuclei – Resonance condition – Bloch equations – Shielding and deshielding effects – Chemical shift – Spin lattice and spin-spin relaxation time – Coupling constants- NMR instrumentation.

Unit V ESR and Mossbauer Spectroscopy

Theory of ESR – Resonance conditions – Experimental study – ESR spectrometer – ESR spectra of free radicals in solution - Mossbauer Spectroscopy - Recoilless emission and absorption – Mossbauer spectrometer – Application of Mossbauer spectroscopy – chemical shift.

Books for Study

1. C.N. Banwell, *Fundamentals of Molecular Spectroscopy* (McGraw Hill, New York, 1981).
2. G. Aruldas, *Molecular Structure and Spectroscopy* (Prentice Hall, New Delhi, 2006).
3. D.N. Sathyanarayana, *Vibrational Spectroscopy* (New Age International, New Delhi, 2015).

Books for Reference

1. B.P. Straughan and S. Walker, *Spectroscopy Volumes I--III* (Chapman and Hall, New York, 1976).

NUMERICAL METHODS

Unit 1: Methods of Curve Fitting

Curve Fitting-Principle of least Square method – Fitting a straight line, Fitting a parabola, Fitting an exponential curve-Linear regression-Co-efficient for Linear regression

Unit 2: Solution of Algebraic and Transcendental Equation

Bisection method – successive approximation – Regular Falsi method-Newton Raphson method – convergence of Newton Raphson method and Geometrical interpolation .

Unit 3: Interpolation

Newton forward interpolation – Backward interpolation formula – Error in Newton forward interpolation formula – Gauss forward interpolation formula – Backward interpolation formula.

Unit 4: Numerical Integration and Differentiation

Newton forward difference formula and Newton backward difference formula. Trapezoidal rule – Simpson rule – Extended Simpson's rule – Simpson's 1/3 rule and 3/8 rule – Applications of Simpson's rule.

Unit 5: Numerical Solution of ordinary Differential Equation

Solution by Taylor series – Euler's method- Runge Kutta method – Second order and fourth order equation.

Books For Study:

- 1. Numerical Methods in Science and Engineering - vengatraman. M.K, (1970), National Publishing Company, Chennai.**
- 2. Numerical Methods – Singaravelu .A, (Meenakshi Agency,2012)**
- 3. Introductory methods of Numerical Analysis – Shastry S.S, (Prentice, Hall Ltd., 1977)**

Books for Reference:

- 1. Numerical Methods in science and Engineering – Vengatraman. M.K, (1977),National Publishing Company, Chennai.**

QUANTUM MECHANICS

Unit I: Schrödinger Equation and General Formulation

Postulates of quantum mechanics - Derivation of Schrödinger wave equation – Physical meaning and conditions on the wave function – Expectation values – Ehrenfest theorem, Heisenberg uncertainty relation.

Unit II: Exactly Solvable Systems

Linear harmonic oscillator: Solving the one-dimensional Schrödinger equation and abstract operator method – Particle in a box -- Rectangular barrier potential – Rigid rotator – Hydrogen atom.

Unit III: Approximation Methods

Time-independent perturbation theory: Non-degenerate (first-order) and degenerate perturbation theories -- Stark effect – WKB approximation and its application to tunneling problem and quantization rules.

Time-dependent perturbation theory: Constant and harmonic perturbations - Transition probability – Sudden approximation.

Unit IV: Quantum theory of scattering

The Scattering cross section – scattering amplitude – Green's function approach -- Born approximation and its application to square-well and screened- Coulomb potentials – Rutherford's scattering formula – partial wave analysis – scattering in hard sphere

Unit V: Relativistic Quantum Mechanics

Klein--Gordon equation for a free particle and its solution – Dirac equation for a free particle and Dirac matrices -- Charge and current densities – Plane wave solution – Negative energy states – Zitterbewegung – Spin of a Dirac particle – Spin-orbit coupling.

Books for Study:

1. P. M. Mathews and K. Venkatesan, *A Text Book of Quantum Mechanics* (Tata McGraw Hill, New Delhi, 1987).
2. Satya Prakash *Quantum Mechanics* (Pragati Prakashan Meerut, 2013).

Books for Reference:

1. Dr.V.Devanathan, *Quantum Mechanics* (Narosa Publishing House, New Delhi, 2005).
2. A.K. Ghatak and S. Lokanathan, *Quantum Mechanics: Theory & Applications* (Macmillan, Chennai, 2004) 5th edition.

NUCLEAR AND PARTICLE PHYSICS

UNIT : I BASIC NUCLEAR PROPERTIES

Basic ideas of Nuclear size – mass – charge distribution – spin and parity – Binding energy – semi empirical mass formula – Nuclear stability – Mass parabola – Ground state of Deuteron – Magnetic dipole moment of Deuteron – Neutron – Neutron scattering at low energies – Meson theory of Exchange forces.

UNIT : II: RADIOACTIVE DECAYS

Alpha emission – Geiger – Nuttall law – Gamow's theory – Neutrino hypothesis – Fermi theory of beta decay- Energies of beta spectrum selection rules – Gamma emission selection rules – Internal conversion – Nuclear isomerism.

UNIT : III: NUCLEAR MODELS

Conservation of energy – Q-values of nuclear reaction – Energetics of nuclear reaction – Reciprocity theorem – Breit Formula – Compound nucleus – Resonance theory – Shell model – Liquid drop model.

UNIT :IV NUCLEAR REACTORS

Characteristics of fission – Mass distribution of fragments – Radioactivity decay process – Fission cross section – Energy in fission – Bohr Wheeler theory of nuclear fission – Fission reactors – Generation of electric power – Fast Breeder reactor – Basic fusion process – Laser fusion – Plasma confinement.

UNIT : V ELEMENTARY PARTICLES

Building blocks of nucleus – Classification of fundamental forces and elementary particles – Basic conservation laws – Quantum numbers – Gell-Mann- Nishijima formula – invariance under time reveals (T) charge conjugation (C) and parity (P) – TCP theorem – Parity and conservation in weak interaction.

BOOKS FOR STUDY:

1. Introductory Nuclear Physics – K.S. Krane, John – Wiley, New York, 1987
2. Basic Nuclear Physics – D.C. Tayal -Himalaya Publishing House
3. Basic Nuclear Physics – D.N. Srivastava, Pragati Prakashan,, Meerut
4. Concepts of Nuclear Physics – B.L. Cohen, Tata McGraw Hill, New Delhi, 1998
5. Nuclear physics and Particle Physics, – Satiya prakash, Sultan Chand and sons, First edition 2005.

BOOKS FOR REFERENCE:

1. Nuclear Physics an introduction – S.B. Patem, Wiley Eastern, New Delhi, 1991
2. Nuclear Physics - H.S. Hans, New Age international Publishers, New Delhi
3. Elementary Particle Physics an introduction – D.C Cheng & G.K. O'Neill, Addison – Wesley, 1979
4. Introduction to elementary Particles – D. Giffits, Wiley particles international New York 1978
5. The Atomic Nucleus – R.D. Evans, Tata McGraw Hill

Practical III and IV

(Select At Least Three Experiments From Each Of Four Groups And A Minimum Of Fifteen Experiments For Each Semester (III & IV))

Group A-Analog Experiments

1. Construction of dual power supply for IC experiment 0-5V,9-0-9V.
2. Characteristics of Op-amp, open loop, closed loop gain, input impedance, output impedance,C.M.R.R.
3. Op-amp – Adder, subtracter, sign changer, differentiator and integrator
4. Op-amp Low pass, high pass filters.
5. Op amp- band pass and all pass filters.
6. Op-amp Frequency divider and Schmitt trigger.
7. Op-amp-sine wave –Wien’s oscillator
8. Op amp- square, triangular & ramp wave generator.
9. Op-amp log, antilog and II order transfer function amplifier.
10. One-Shot multivibrator – using ICs – determination of pulse width.

Group B-Digital Experiments

1. IC-Universal gates NAND and NOR.
2. Half adder and full adder using NAND gates.
3. Half and Full subtractors.
4. Multiplexer .
5. Study of Flip-Flops.
6. Verification of De Morgan’s theorem using NAND gates and simplification of Boolean expressions.
7. Digital comparator – 4 bit using ICs.
8. One bit digital comparator using EXOR and NAND gates
9. Frequency divider using IC 555.
10. Study of counter using IC 7490 (0-9 and 0-99).
11. Study of 7 segment display decoders- 7447.
12. Shift registers using IC.
13. D/A conversion – R- 2R and weighted resistor network.
14. A/D conversion – successive and dual slope.
15. Study of memory circuits – RAM, ROM, EPROM, PROM
16. Study of modulation and demodulation using IC.
17. Demultiplexer.

Group C-Microprocessor 8085 Experiments

1. 8-bit addition , subtraction, multiplication and division using 8085/ z80
2. 16 bit addition, 2’s complement and 1’s complement subtraction
3. Conversion from decimal to octal, hexa decimal system.
4. Conversion from octal, hexa to decimal system.
5. Interfacing hexa key board (IC 8212)
6. Study of seven segment display add on board.
7. Study of DAC interfacing (DAC 0800)
8. Study of ADC interfacing (ADC 0809)
9. Study of timer interfacing (IC 8253)
10. Study of programmable interrupt controller (IC 9259)
11. Traffic control system using Microprocessor.
12. Microprocessor as digital clock.
13. Generation of square, triangular, saw tooth staircase and sine waves using DAC 0800.

14. Microprocessor interface as digital thermometer.
15. Control of stepper motor using microprocessor.
16. Microcontroller – Mathematical operations.
17. Microcontroller – Ascending and Descending.
18. Microcontroller- smallest and biggest.

Group D-Computer C Programme

1. Solving equations by Newton – Raphson's method.
2. Solving equations by Successive approximation method.
3. Solution of simultaneous linear algebraic equations by Gauss elimination method.
4. Solution of simultaneous linear algebraic equations by Gauss-Seidal method.
5. Interpolation and Extrapolation of data using Least square curve fitting method.
6. Interpolation and Extrapolation of data using Lagrange and Newton Method.
7. Numerical Integration by Simpson method.
8. Numerical Integration by trapezoidal Method.
9. Numerical differentiation by Euler Method.
10. Numerical differentiation by Runge Kutta method (II order)
11. Numerical Integration by Gauss – Lagrange Quadrature.

COMMUNICATION ELECTRONICS

Unit 1: Transmission Systems

Non resonant antenna – loop antenna – Radiation fields – Polarization – Isotropic radiator – Power gain – Effective parameters of an antenna – Dipole arrayed antenna – VHF, UHF and Microwave antennas – Thin linear antenna.

Unit 2: Microwaves and Colour Television Microwave Generation and Applications

Klystron – Magnetron – Microwave propagation through wave guides – Crystal detection – measurement of SWR – Transmitters and receivers.

Introduction – Perception – Three colour theory – Luminescence – TV camera – Image Orthicon – Vidicon – LCD Colour Television.

Unit 3: Fiber Structure and Properties

Fiber structure – Fiber materials – Fiber fabrication – Mechanical properties of fibers – Attenuation – Single distortion in optical waveguides – mode coupling.

Unit 4: Satellite Communications

Ground station – Antenna angle of elevation and transmission path – Height of Geostation orbits – Problems – Satellite works – Frequency allocation and polarization – Various blocks of equipment about the satellite –Blockdiagram of network control station (NCS).

Unit 5: Cellular Communications

Basic ideas of Cellular network – Operational principles of WDM – 2*2 fiber Coupler – Fiber grating filters – Erbium Doped fiber Amplifiers – Amplication mechanism – EDFA architecture – Performance of WDM+EDFA system – Link Bandwidth .

BOOKS FOR STUDY :

- 1.Optical fiber Communication – G. Keiser, McGraw Hill – New Delhi 1991**
- 2.Understanding of fiber optics – J. Heeht, Sams Publishing BPB, 1997**
- 3.Optical fiber Communication – Principles and practice – J.M. Senior, Prentice Hall, New Delhi 1996**

BOOKS FOR REFERENCE:

- 1.Fiber Optics technology and applications – S.D. Personick, Khanna Publishers, New Delhi 1996**
 - 2.Communication systems and techniques – M. Schwarits, W.R. Bannet**
 - 3.Electronic devices and circuits – J. Millman & C. Halkias. McGraw Hill Singapore 1972**
 - 4.Electronic communication system – G. Kennedy, Tata McGraw Hill – New Delhi 1995**
- Electronic communication – D. Roddy and Coolen**

MICROPROCESSOR AND MICROCONTROLLER

Unit I: Microprocessor architecture and instruction set

Intel 8085 Microprocessor Architecture - Pin configuration - Instruction cycle - Timing Diagram - Instruction and data formats - Addressing modes - Status flags - Intel 8085 instruction set - Address Space partitioning - Memory and I/O Interfacing.

Unit II: Microprocessor programming

Assembly language Programming – addition-subtraction –complement- shift –mask-look-uptable- Largest and mallest number in a data array- Sum of a series - Multiplication- Division- Multi-byte addition and subtraction.

Unit III: Microcontroller

Introduction to Microcontroller – Comparison of Microcontrollers andMicroprocessor – Architecture of 8051 - Pin description of 8051 – Registers – Counters/Timers – Memory organisation - ROM & RAM space – Stack and PSW - Basics of serial communication – Serial communication registers – Serial communication – Interrupts - Addressing modes.

Unit IV: 8051 Instruction Set And Programming

Instruction set –Data transfer instructions – Arithmetic and Logic Instructions – Program and machine control instruction - Bit Instructions – Assembly Language Programming – simple programs – Addition of two eight bit and sixteen bit numbers – Subtraction of two eight bit numbers – Sum of a set of numbers.

Unit V: Applications

Microprocessor interfacing and applications:

Interfacing 7 segment LED display - Temperature measurement – Measurement of frequency, voltage and current – Traffic control interfacing.

Microcontroller interfacing and applications:

Interfacing – Interfacing of Stepper motor- Keyboard Interface.

Books for Study:

1. B. Ram, Fundamentals of Microprocessors and Microcomputers, Dhanpat Rai Publications (P) Ltd., New Delhi (2005).

2. Muhammad Ali Mazidi, Janice GillispieMazidi – The 8051 Microcontroller and Embedded Systems, Pearson Education, Delhi, Seventh Indian Reprint 2004.

Books for Reference

1. A.P.Godse and D.A.Godse, Microprocessors and its applications (First edition), Technical Publications, Pune, 2006.

2. A.NagoorKani, Microprocessors & Microcontrollers, 1st edition, RBA Publications, Chennai, 2006.

3. DoughlasV.Hall, “Microprocessors and Interfacing, Programming and Hardware, TMH, 2012.

NANOPHYSICS

Unit I Introduction to Nano and Types of Nanomaterials

Nano and nature – Top-down and bottom-up approaches– Introductory ideas of 1D, 2D and 3D nano structured materials -- Quantumdots -- Quantum wire – Quantum well -- Exciton confinement in quantum dots.

Unit II Carbon Nanostructures

Nano Materials –Fullerenes synthesis and purification –Conductivity and Super conductivity in doped fullerenes- Carbon Nano Tubes (CNT) - Synthesis - purification – properties (electronic mechanical and physical properties) - Applications (electro chemical sensors)

Unit III : Synthesis of Nanomaterials

Micro emulsion – based Methods for Nanomaterials- Solvothermal Synthesis- Magnetic Nano materials – Inert gas condensation- Anisotropic nano materials- Gold silver nano rods

Unit IV Characterization of Nanomaterials

Principles, experimental set-up, procedure and utility of scanning electron microscopy (SEM), transmission electron microscopy (TEM), scanning tunneling microscopy (STM) and Atomic Force microscopy (AFM).

Unit V Applications

Molecular electronics and nanoelectronics – Nanorobots –Nano tribology – Head Disk Capacity- Micro electromechanical Systems(MEMS)- Nano Materials in Biology – Therapeutic Applications- Polimers- Diagnostic Applications – Gold Nano particles for imaging

Books for Study:

1. T.Pradeep et al., A Textbook of Nanoscience and Nanotechnology (Tata McGraw Hill, New Delhi, 2012).
- 2.T.Pradeep et al., A Textbook of Nanoscience and Nano essential (Tata McGraw Hill, New Delhi, 2012).
2. R.W. Kelsall, I.W. Hamley and M. Geoghegan, Nanoscale Science and Nanotechnology (John-Wiley & Sons, Chichester, 2005).
3. G. Cao, Nanostructures and Nanomaterials (Imperial College Press, London, 2004).
4. C.P. Poole and F.J. Owens, Introduction to Nanotechnology (Wiley, New Delhi, 2003).

Books for References:

1. H.S. Nalwa, Nanostructured Materials and Nanotechnology (Academic Press, San Diego, 2002).
2. M. Wilson, K. Kannangara, G. Smith, M. Simmons, B. Raguse, Nanotechnology: Basic Science and Emerging Technologies (Overseas Press, New Delhi, 2005).

THIN FILM PHYSICS**Unit 1: Basics of thin film**

Nucleation – Different kinds of nucleation – Formation of crystal nucleus – Energy formation of a nucleus – Classical theory of nucleation - Gibbs Thomson equations for vapour and solution-spherical and cylindrical nucleus – Thin films: Advantages of thin film devices over their bulk counterparts-Film growth stages- Nucleation stage - Island structure stage-Coalescence stage- Channel stage and continuous film stage.

Unit II: Thin films deposition techniques

Physical deposition methods: Vacuum evaporation- Thermal evaporation – Electronbeam evaporation- Pulsed laser deposition -Sputtering techniques.

Chemical deposition methods: chemical vapour deposition- Spray pyrolysis – Chemical bath deposition –Electro-less plating- Electro chemicaldeposition – Sol-gel technique – Spin coating- SILAR method.

Unit III: PROPERTIES OF THIN FILMS

Thickness measurement: Weight gain method- Surface profilometer- Optical interference method.

Structural properties:X-ray diffraction- Powder diffraction technique for polycrystalline thin films- Determination of structural parameters.

Electrical properties: Electrical resistivity- Sheet resistance - Four point probe method–van der Pauw technique - Hall probe method to find mobility, Carrier concentration and resistivity.

Unit IV: PROPERTIES OF THIN FILMS

Optical properties: UV-vis-NIR spectrophotometer- Transmission and absorptionspectra of thin films- Optical band gap - absorption co-efficient- Photoluminescencespectroscopy.

Surface morphological properties: Scanning Electron Microscopy (SEM)- Atomic Force Microscopy (AFM)- Transmission Electron Microscopy (TEM).

Unit V: APPLICATIONS

Active devices- Integrated circuits and other applications- Anti-reflection coatings – Spintronics -Thin film gas sensors- Solar cell applications.

Books for study:

- 1.Thin film fundamentals- A. Goswami (New Age, New Delhi, 1996)**
- 2.Introduction to thin films- K. Ravichandran, K. Swaminathan, B. Sakthivel (Research India Publication, New Delhi, 2013)**
- 3. Thin film phenomena- K. L.Chopra (Robert E. Krieger Publishing company, 1979)**

Books for reference:

- 4. Hand book of thin film technology - L. T. Maissel& Gang (McGraw Hill, New York, 1983)**
- 5. Hand book of Deposition technologies for films and coatings- R. F. Bunshah (Noyes Publications, New Jersey, USA, 1994)**

MEDICAL PHYSICS

Unit I: Mechanics of human body

Static, Dynamic and Frictional forces in the Body – Composition, properties and functions of Bone – Heat and Temperature – Temperature scales – Clinical thermometer – Thermography – Heat therapy – Cryogenics in medicine – Heat losses from body – Pressure in the Body – Pressure in skull, Eye and Urinary Bladder.

Unit II: Physics of respiratory and cardiovascular system

Body as a machine – Blood and Lungs interactions – Measurement of Lungs volume – Structure and Physics of Alveoli – Breathing mechanism – Components and functions of cardiovascular systems – Work done by heart – Components and flow of Blood – Laminar and Turbulent flow – Blood Pressure – Direct and indirect method of measuring blood pressure – Heart sounds.

Unit III: Electricity in the body

Nervous system and Neuron – Electrical potentials of Nerves – Electric signals from Muscles, Eye and Heart – Block diagram and working to record EMG – Normal ECG wave form – Electrodes for ECG – Amplifier and Recording device – Block diagram and working of ECG – Patient monitoring – Pace maker.

Unit IV: Sound and light in medicine

General properties of sound – Stethoscope – Generation, detection and Characteristics of Ultrasound – Ultrasound imaging technique – A scan and B scan methods of ultrasound imaging – Applications of visible UV, IR light, and Lasers in medicine.

Unit V: Diagnostic x- rays and nuclear medicine

Production and properties of X- rays – Basic Diagnostic X-ray Machine – X-ray image - Live X-ray image – X-ray computed Tomography – Characteristics of Radio activity- Radioisotopes and Radio nuclides – Radioactivity sources for nuclear medicine – Principles of Radiation Therapy- Nuclear medicine imaging devices – Radiation sources.

Books for Study:

1. Medical Physics by Department of Physics, St. Joseph's College., Trichy-2.

Books for reference:

1. John R. Cameron and James G. Skofronick, John Wiley & Sons – Medical Physics, Wiley – Interscience Publications, 1978.
2. R.S. Khandpur – Handbook of Biomedical Instrumentation, Tata McGraw Hill Publication Co., Delhi, 1987.

DEPARTMENT OF CHEMISTRY
B.Sc Chemistry Major - Syllabus
(From the year 2018-2019 onwards)
Core Course 1 - Inorganic, organic and Physical Chemistry - I

Code: 18K1CH01

Hours : 90

Credit: 5

Marks:100

Inorganic Chemistry

UNIT – I

- 1. Atomic Structure and Periodic Properties (18 Hrs)**
- 1.1 Atomic Structure –Atomic orbitals, shapes of s, p, d orbitals, quantum numbers and their significance, Pauli's exclusion principle, Aufbau principle, (n+1) rule, Hund's rule of maximum multiplicity, Electronic configuration of the elements and their stability, inert pair effect.**
- 1.2 Periodic properties – Atomic and ionic radii, atomic volume, ionization energy, electron affinity and electro negativity- trends in periodic table and applications in explaining the chemical behavior.**
- 1.3 Alkali Metal - comparative study of alkali metals and their preparation, properties and uses of lithium aluminium hydride. Alkaline earth metals – comparative study of alkaline earth metals and their compounds. Diagonal relationship between lithium and magnesium.**
- 1.4 Principles of Qualitative Analysis – Solubility product, common ion effect, precipitation reactions, insoluble hydroxides and sulphides.**

Organic Chemistry

UNIT – II

(18 Hrs)

- 2. Theoretical Principles of Organic Chemistry:**
- 2.1 Hybridization and geometry of molecules- methane, ethane, ethylene and acetylene, Polar effects – inductive, inductomeric, electromeric, mesomeric, Resonance, Hyper conjugation and steric effects.**
- 2.2 Nomenclature of Organic Compounds – IUPAC naming of simple Aliphatic, Aromatic and Alicyclic compounds.**

UNIT – III

- 3. Aliphatic Hydrocarbons: (18 Hrs)**
- 3.1 Alkanes: General methods of preparation of alkanes, physical and chemical properties of alkanes - halogenation, nitration, sulphonation, oxidation and thermal decomposition, isomerism in alkanes.**
- 3.2 Alkenes: General methods of preparation of alkenes involving dehydration of alcohol and dehydrohalogenation of alkyl halides, Wittig reaction, addition reaction with hydrogen and hydrogen halides, Markownikoff's rule, anti Markownikoff's rule, hydroboration, ozonolysis, hydroxylation and oxidation with KMnO_4 . Isomerism of alkenes.**
- 3.3 Alkynes- general methods of preparation of alkynes, chemical reactions and acidity of alkynes, Mechanisms of electrophilic and nucleophilic addition reactions, hydroboration, metal ammonia reductions, oxidation and polymerization**

Physical Chemistry

UNIT –IV

(18 Hrs)

4. Gaseous State:

- 4.1 Postulates of kinetic theory of gases, kinetic gas equation – derivation of Boyle's law, Charles's law and Avogadro's law from it, deviation from ideal behaviour, PV-P isotherms of real gases, relationship between critical constants and Vander Waals constants, the law of corresponding states, reduced equation of state, the value of 'R' in different units.
- 4.2 Maxwell's distribution of molecular velocities – average velocity, most probable velocity and root mean square velocity – collision diameter, collision number, collision frequency and mean free path.

UNIT – V

5. Colloidal State:

(18 Hrs)

- 5.1 Classification of colloids, preparation, properties, sols – electrical properties, electrical double layer - Helmholtz double layer - Zeta potential, coagulation and protection, Hardy – schultz law, gold number, electro kinetic properties – electrophoresis, electro osmosis, Liquid in liquids (emulsions) – types of emulsion, preparation, emulsifier, Liquid in solid (gels) classification, preparation and properties.
- 5.2 General applications of colloids – Reverse osmosis – desalination of sea water, separation of proteins, Donnan – membrane equilibrium- surfactants and micelles

References:

1. Text Book of Inorganic Chemistry, P.L.Soni, Sultan chand & Sons, New Delhi.
2. Modern Inorganic Chemistry, R.D.Madan, S.Chand and Company Ltd., New Delhi.
3. Principles of Inorganic Chemistry, B.R.Puri & L.R.Sharma, Vishal Publications, New Delhi.
4. Text Book of Organic Chemistry, P.L. Soni, H.M.Chawla, Sultan Chand & Sons, New Delhi.
5. Principles of Reaction Mechanism in organic chemistry, V.S.Parmar, H.M.Chawla, Sultan Chand & Sons, New Delhi.
6. Advanced Organic Chemistry, B.S.Bahl, Arun Bahl, S.Chand & company Ltd., New Delhi
7. Organic Chemistry Volume I, The Fundamental Principles, I.L.Finar, English Language Book Society Longman.
8. Principles of physical Chemistry, B.R.Puri, L.R.Sharma and Madan S.Pathania, Soban Lal Nagin Chand & Co., New Delhi.
9. Physical Chemistry, R.P.Varma, Pradeep Publications, Jalandhar.
10. A Text Book of Organic Chemistry, K.S.Tewari, S.N.Mehrotra, N.K.Vishroi, Vikas Publishing House Pvt. Ltd.

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DEPARTMENT OF CHEMISTRY

B.Sc Chemistry - Syllabus
(From The Year 2018-2019 onwards)
Core Course 2- Chemistry Practical I
Inorganic Qualitative Analysis

Code: 18K2CH02P

Hours: 90(3+3)

Credit: 5

Marks: 100

Qualitative Analysis – Semi-micro technique to be used

Analysis of mixtures containing two cations and two anions, one of the anions being an interfering one.

Anions to be given:

Non-interfering: Carbonate, sulphide, sulphate, nitrate, chloride, bromide & iodide

Interfering: Fluoride, Borate, Phosphate and Oxalate.

Cations to be given: Lead, bismuth, copper, cadmium, antimony, iron, aluminium, manganese, zinc, cobalt, nickel, calcium, strontium, barium, magnesium and ammonium.

DEPARTMENT OF CHEMISTRY
B.Sc Allied Chemistry- Syllabus
(From the year 2018 -2019 onwards)

Allied Course 1 – Allied Chemistry - I
(For Botany, Physics and Zoology Majors)

Code: 18K3B/P/ZACH1

Hours: 60
Credits: 3
Marks: 100

UNIT I

(12 Hrs)

- 1. Nuclear Chemistry**
- 1.1 Composition of the nucleus- nuclear forces- mass defect- binding energy- nuclear stability.**
- 1.2 Natural Radioactivity- comparison of properties of α , β and γ rays- Soddy's group displacement law- law of radioactive disintegration- disintegration constant- half-life period- radioactive series.**
- 1.3 Nuclear fission and fusion- definition - chain reaction- energy released during fission and fusion- stellar energy- principles of atom bomb and hydrogen bomb (elementary treatment only)- comparison of fission and fusion.**

UNIT II

- 2. Molecular Orbital Theory and Fertilizers** **(12 Hrs)**
- 2.1 Important basic concepts of Molecular Orbital Theory – LCAO – bonding and anti bonding molecular orbitals – bond order- application of Molecular Orbital theory to H₂, He₂, N₂ and O₂ molecules**
- 2.2 Fertilizers: Nitrogenous, phosphate and potash fertilizers. Urea, Super phosphate, Bone meal and potassium nitrate.**

UNIT III

- 3. Polar Effects and Isomerism** **(12 Hrs)**
- 3.1 Inductive effect- relative strengths of aliphatic mono carboxylic acids- aliphatic amines- electromeric effect- mesomeric effect and resonance- conditions for resonance- consequences of resonance- basic property of aniline and acidic property of phenol.**
- 3.2 Optical isomerism- cause of optical isomerism- examples- Racemic mixtures- diastereo isomers- (lactic acid and tartaric acid).**
- 3.3 Geometrical isomerism- examples- (maleic and fumaric acids only in detail).**

UNIT IV

(12 Hrs)

4. Synthetic Polymers and Chemotherapy

4.1 Preparation and uses of Teflon, alkyd and epoxy resins, polyester and bakelite.

4.2 Sulpha drugs- sulpha pyridine, sulpha thiazole and sulpha diazine- preparation, therapeutic uses and mode of action- Antibiotics- penicillin G and chloromycetin- uses only

UNIT V

(12 Hrs)

5. Photo Chemistry, Chemical Kinetics and Catalysis

5.1 Laws of photo chemistry- Lambert- Beer's law- Grothus- Draper law- Einstein's law- quantum yield- definition- comparison between thermal and photo chemical reactions- photosensitization- photosynthesis- chemiluminescence.

5.2 Definition of order and Molecularity of First, second, third and zero order reactions (Derivation not necessary).

5.3 Catalysis Homogeneous and heterogeneous catalysis and industrial application – Enzyme catalysis examples and applications.

References:

1. Text Book of Inorganic Chemistry, P.L.Soni, Mohan Katyal, Sultan Chand.
2. Text Book of Organic Chemistry, P.L.Soni & H.M.Chawla, Sultan Chand.
3. Principles of Physical Chemistry, B.R.Puri & L.R.Sharma, Shoban Lal Nagin Chand & Co.

DEPARTMENT OF CHEMISTRY

**B.Sc Allied Chemistry- Syllabus
(From the Year 2018-2019 onwards)**

Allied Course 2 – Allied Chemistry II Practical

Code: 18K4B/P/ZACH2P

Hours:90(3+3)

Credit: 3

Marks: 100

I.VOLUMETRIC ANALYSIS

1. Acidimetry and Alkalimetry

- a. Strong acid versus strong base**
- b. Weak acid versus strong base**
- c. Determination of hardness of water**

2. Permanganimetry

- a. Estimation of ferrous sulphate using KMnO_4
- b. Estimation of Oxalic acid using KMnO_4

3. Iodometry

- a. Estimation of copper using thiosulphate
- b. Estimation of $\text{K}_2\text{Cr}_2\text{O}_7$ using thiosulphate
- c. Estimation of KMnO_4 using thiosulphate

II. ORGANIC ANALYSIS

A study of reactions of the following organic compounds

- 1. Carbohydrate 2. Amide 3. Aldehyde 4. Ketone
- 5. Acid 6. Amine 7. Phenol

The students may be trained to perform the specific reactions like –
Test for element (nitrogen only), Aliphatic or aromatic. Saturated or
Unsaturated and functional group present and record their observation
as and when they proceed.

DEPARTMENT OF CHEMISTRY
(Form the year 2018 – 2019 onwards)
Part IV
Value Education

Code: 18K1VE

Hours: 30

Credit: 2

Marks: 100

UNIT I

- 1.1 Introduction: Definition of Value Education – Need for Value Education – Teachings of values by various religions like Hinduism, Buddhism, Christianity, Jainism, Islam etc.**

UNIT II

2 Living & Social Values

- 2.1 Living Values: Peace, respect, co-operation, freedom, happiness, honesty, humility, love, responsibility, simplicity, tolerance, optimism and positive thinking**
- 2.2 Social values: Love and Compassion, Sharing and Generosity, Politeness and Courtesy, Gratitude, Duty and Responsibilities towards Society, Tolerance and Unity.**

UNIT III

- 3.1 Role of Visionaries and Leaders in Social Reforms: Rajaram Mohan Roy, Mahatma Gandhi, Swami Vivekananda, EVR Periyar, Mother Therasa.**
- 3.2 Value Crisis: Religious Fundamentalism and Terrorism – Corruption in Society– commerce without Ethics – Education without Character – Wealth without efforts**
- 3.3 Time Management**

UNIT IV

- 4. Yoga: Teaching yoga – Manavalakkalai- by Qualified Yoga Teachers – The aim is to acquire Physical Health – Mental Acuteness- Strength of Life Forces and Wisdom – to achieve a holistic way of life- to take up and get involved in Social Welfare Activities – to learn their commitment to society.**

UNIT V

- 5.1 Human Rights : Child Labour – Womens Rights – Bonded Labour – Problems of Refuges.**
- 5.2 Role of State Public service Commission:Constitution provisions and formation-methods of recruitment – rules and notification , syllabi for different exams – written and oral – placement.**

References:

11. Radhakrishna, "Religion and Culture"(1968), Orient paperbacks, New delhi.
12. Das,M.S.&Guptha,V.K.(1995),"Social Values among Youth Adults: A Changing Scenario",
New Delhi.
13. Venkataiah. M(ed.), (1998), "value Education New Delhi, A PH Publishing Corporation.
14. Sharma.O.P.,(1997),"value Education in Action" New Delhi, University Book House.
15. Chakraborti, Mohit.,(1997)"value Education:Changing Perspectives", New Delhi,kanishka
Publishers, Distributors,
16. C.S.Devnoth(1996) "Adipodai manitha urimaigal" Narmadha Publishers.
17. D.Kulanthaiyaya "Evai manitha urimaigal " Narmadha Publishers.

DEPARTMENT OF CHEMISTRY
B.Sc Chemistry Major - Syllabus
(From the year 2018– 2019onwards)
Core Course 3 - Inorganic , Organic and Physical Chemistry - II

Code: 18K2CH03

Hours: 90
Credit: 6
Marks: 100

Inorganic Chemistry

UNIT – I Chemical Bonding

(18 Hrs)

- 1.1 Ionic Bond – Formation of ionic bond and factors favouring its formation - lattice energy, Born- Haber cycle, transition from ionic to covalent character and vice-versa -Fajan's rule.
- 1.2 Covalent Bond –Valence bond theory and its limitations, M.O. theory – Criteria for forming molecular orbitals from atomic orbitals, M.O. diagram for H₂, He₂, O₂, N₂, CO and NO.
- 1.3 Hybridization and shapes of simple inorganic molecules and ions- Valence shell electronpair repulsion (VSEPR) theory - Shapes of NH₃, H₃O⁺, SF₄ and ClF₃.

UNIT – II

(18 Hrs)

- 2.1 General characteristics of p – block Elements – size of atoms and ions, ionization energy, electron affinity, electro negativity, oxidation state, metallic character, diagonal relationship.
- 2.2 Boron Family – Comparative study of Boron family elements, Compounds of Boron - Chemistry of borax, diborane and borazole.
- 2.3 Carbon Family – Comparative study of carbon family elements and their compounds hydrides, halides and oxides. Chemistry of cyanogens – hydrocyanic acid , thiocyanic acids and carbon disulphide. Structure of graphite and diamond.
- 2.4 Nitrogen Family – Comparative study of Nitrogen family elements and their compounds - hydrides, halides, oxides and oxy acids. Chemistry of hydrazine – hydrazoic acid , hydroxyl amine and sodium bismuthate.

Organic Chemistry

UNIT – III

(18 Hrs)

- 3.1 Dienes - Nomenclature and classification of dienes, methods of formation, -1,2 and 1,4 addition reactions, kinetic control and thermodynamic control, Diels-Alder reaction, Preparation and properties of isoprene and chloroprene.
- 3.2 Polymers - Preparation of polymers types of polymerization-free radical, cationic and anionic polymerization. Addition polymers (Polyethylene, PVC, Teflon and Polystyrene), Condensation polymers (Nylon 6,6., Terelene) Synthetic Rubbers, (Buna, Butyl rubber, SBR and Neoprene), Natural Rubber.
- 3.3 Cycloalkanes- methods of formation – chemical reactions – Bayer's strain theory and it's limitations- Ring strain in small rings- theory of strainless rings.

Physical Chemistry
UNIT- IV

- 4.1 Definition of thermodynamic terms: Systems and surrounding- isolated, closed and open systems-Homogeneous& Heterogeneous systems, State of the system- intensive and extensive variables. Thermodynamic processes – cyclic processes, reversible and irreversible, isothermal and adiabatic processes-State and Path functions- exact and inexact differentials- concept of heat and work- sign convention- Work of expansion at constant pressure and free expansion.**
- 4.2 Laws of Thermodynamics: First law of thermodynamics-Statements- Definition of internal energy (U), enthalpy (H) and Heat capacity (C). U and H as thermodynamic properties. Relation between C_p and C_v for ideal and real gases- adiabatic processes- calculation of W, Q, dU and dH for expansion of ideal and real gases under isothermal and adiabatic conditions for reversible processes. The zeroth law of thermodynamics and absolute scale of temperature.**

UNIT - V

(18 Hrs)

- 5.1 Liquid State - Intermolecular forces-Dipole – dipole attraction, London forces, Hydrogen bonding – nature, types and effects on properties. Structural differences between solids, liquids and gases.**
- 5.2 Solid state-Definition of space lattice, unit cell, laws of crystallography, symmetry elements in crystals, X-ray diffraction by crystals – derivation of Bragg equation, methods of crystal structure analysis – Laue’s method and powder method, determination of crystal structure of NaCl, KCl, ZnS and CsCl.**
- 5.3 Liquid crystals – classification, structure, properties and applications.**

References

- 1. Text Book of Inorganic Chemistry, P.L.Soni, Sultan chand & Sons, New Delhi.**
- 2. Modern Inorganic Chemistry, R.D.Madan, S.Chand and Company Ltd., New Delhi.**
- 3. Principles of Inorganic Chemistry, B.R.Puri & L.R.Sharma, Vishal Publications, New Delhi.**
- 4. Text Book of Organic Chemistry, P.L. Soni, H.M.Chawla, Sultan Chand & Sons, New Delhi**
- 5. Principles of Reaction Mechanism in organic chemistry, V.S.Parmar, H.M.Chawla, Sultan Chand & Sons, New Delhi.**
- 6. Advanced Organic Chemistry, B.S.Bahl, Arun Bahl, S.Chand & company Ltd., New Delhi.**
- 7. Organic Chemistry Volume I : The Fundamental principles I.L. Finar, English Language Book Society, Longman, London.**
- 8. Principles of physical Chemistry, B.R.Puri, L.R.Sharma and Madan S.Pathania, Soban Lal Nagin Chand & Co., New Delhi.**
- 9. Physical Chemistry, R.P. Varma, Predeep Publications, Jalandhar.**
- 10. Physical Chemistry, B.D.Khosla, R. Chand & Co., New Delhi.**
- 11. Principles of Physical Chemistry, B.R.Puri & L.R. Sharma, Vishal Publication, New Delhi.**
- 18. Principles of Inorganic chemistry, Puri, Sharma & Kalia, vishal publishing Co, Jalandhar, Delhi.**

DEPARTMENT OF CHEMISTRY
B.Sc Allied Chemistry Syllabus
(From the year 2018-2019 onwards)
Allied Course 3 – Allied Chemistry III
(For Botany, Physics and Zoology Majors)

Code: 18K4B/P/ZACH3

Hours: 45
Credit: 3
Marks: 100

UNIT I

(9 Hrs)

1. Coordination Chemistry

Nomenclature of mononuclear complexes- ligands types- Werner, Sidgwick and Pauling's theories- chelation and its industrial importance with particular reference to EDTA- Biological role of Hemoglobin and chlorophyll.

UNIT II

(9 Hrs)

2.1 Carbohydrates: Classification- Glucose and Fructose- preparation and properties- elucidation of structure of glucose. Sucrose- manufacture, properties and structure (elucidation of structure not required). Starch and Cellulose- properties and uses only.

2.2 Amino acids and Proteins: Amino acids- classification- preparation - peptides linkage (elementary treatment only). Proteins- classification based on physical properties and biological functions- properties of proteins (isoelectric point, denaturation and tests for proteins)- structure of proteins- primary and secondary structures (elementary treatment only).

UNIT III

(9 Hrs)

3 Fuel gases and Some Named Organic Reactions

3.1 Fuel gases- natural gas, water gas, semi water gas, carburetted water gas, producer gas, LPG and oil gas-composition, manufacture(elementary idea) and uses.

3.2 Biuret reaction- Benzoin condensation- Perkin's reaction- Cannizzaro reaction- Claisen's reaction- haloform reaction and diazonium coupling reaction.

UNIT IV

(9 Hrs)

4 Solid State

Typical crystal lattices- elements of symmetry- unit cell- types of cubic unit cells- Weiss and Miller indices- number of crystal units per unit cell- Avogadro number calculation- structure of NaCl crystal- Bragg equation.

UNIT V

(9 Hrs)

5 Electrochemistry and Chromatography

Types of electrical conductors- conductance- specific and equivalent conductance- their determination- effect of dilution on conductance- weak and strong electrolytes- Ostwald's dilution law- Kohlrausch law- application of the law (determination of λ_{∞} of weak electrolytes, solubility of sparingly soluble salts)- conductometric titrations- acid-base titrations- (SA Vs SB, SA Vs WB, WA Vs SB & WA Vs WB).

References:

1. **Text Book of Inorganic Chemistry, P.L.Soni, Mohan Katyal, Sultan Chand.**
2. **Text Book of Organic Chemistry, P.L.Soni & H.M.Chawla, Sultan Chand.**
3. **Principles of Physical Chemistry, B.R.Puri & L.R.Sharma, Shoban Lal Nagin Chand & Co.**

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DEPARTMENT OF CHEMISTRY
(From the year 2018-2019 onwards)
Part –IV-Environmental studies

Code: 18K2ES

Hours: 30
Credit: 2
Marks: 100

UNIT-I

Definition, Scope and importance-Need for Public Awareness.

UNIT-II

Natural Resources- Forest resources- water Resources-Mineral Resources-Food Resources-Energy Resources-Land Resources.

UNIT-III

Ecosystems Meaning-Forest Ecosystems-grass Land Eco systems-Desert Eco Systems-Aquatic Ecosystems-Bio geographical classification of India- Hot-spots of Biodiversity.

UNIT-IV

Environmental pollution- Air pollution- Water Pollution- Soil pollution – Noise Pollution-Thermal Pollution- Nuclear Hazards- Pollution Case studies.

UNIT-V

Human Population and Environment-Population Explosion- Family Welfare Programme -Environment and Human health-Human Rights-HIV/AIDS-Women and Child Welfare.

References:

1. N.Arumugam-Concept of ecology.
2. N.Arumugam-Environmental Studies.
3. N.Arumugam-Survey of Environmental.
4. B.Chandra sekaran-Environmental studies.
5. V.Kumaresan-Plant Ecology and Phyto Geography

DEPARTMENT OF CHEMISTRY
B.Sc Chemistry Major - Syllabus
(From the Year 2018 – 2019 onwards)
Core Course 4 - Inorganic, Organic and Physical Chemistry – III

Code: 18K3CH04

Hour: 90

Credits: 5

Marks : 100

Inorganic Chemistry

UNIT – I

(18 Hrs)

- 1.1 Acids & Bases- Arrhenius, Lowry-Bronsted & Lewis concept of acids & bases- Hard & Soft Acids and Bases- Usanovich concept- Relative strengths of acids and bases
- 1.2 Transition Elements – General Characteristics of d-block elements - Comparative study of oxides, halides, hydrides, carbides, hydroxides and oxyacids - Complexes of Titanium and Vanadium.
- 1.3 Volumetric analysis – methods of expressing concentrations of solutions (Molality, Molarity, Formality, Mole Fraction, Normality weight and volume percent), Equivalent weight of oxidizing and reducing agents, Primary and secondary standards, types of titrimetric reaction – acid - base, redox titration and precipitation titration, indicators – neutralization and fluorescent indicators.

Organic Chemistry

UNIT – II

(18 Hrs)

- 2.1 Reactive Intermediates- Generation & Stability of Carbocations, carbanions, free radicals and carbenes with examples.
- 2.2 Alkyl halides and Aryl halides – Nomenclature and classes of alkyl halides, methods of formation, chemical reactions, polyhalogen compounds (chloroform, carbon tetrachloride), Methods of formation of Aryl halides- relative reactivities of alkyl halides Vs allyl and aryl halides.
- 2.3 Grignard Reagents – Preparations and their synthetic Uses.

UNIT – III

(18 Hrs)

- 3.1 Aliphatic Nucleophilic Substitution reactions: Mechanism of SN_1 , SN_2 , SN_i reactions, effect of solvents, leaving groups, nucleophiles and structure of substrates.
- 3.2 Elimination Reactions: Mechanism of E_1 and E_2 reactions , factors governing E_1 and E_2 eliminations – concentration of the base, polarity of the solvent, effect of leaving group, nature of alkyl group, Hofmann's rule and Saytzeff's rule of elimination.

Physical Chemistry

UNIT – IV

(18 Hrs)

- 4.1 Elementary Quantum Mechanics- Wave particle dualism Heisenberg's uncertainty principle, -wave character of electrons-Davisson and Germer experiment; Schrodinger wave equation for a particle wave-physical interpretation of Ψ and Ψ^2 . Operators, eigen function and eigen value. Postulates of Quantum Mechanics – application: Particle in one dimensional box – solution of Shrodinger's wave equation.
- 4.2 Elementary treatment of electrical Properties:
Dipolemoment-determination by temperature,refractivity and dilute solution methods. Application of dipole moment – shapes of simple molecules (BCl_3 , H_2O , CO_2 , NH_3 , CCl_4)
- 4.3 Magnetic Properties of matter:
Diamagnetism, Paramagnetism, ferro and anti-ferro magnetism-Curie Temperature (Determination not necessary)

UNIT - V

(18 Hrs)

- 5.1 Dilute Solutions- Colligative properties – Dilute solutions- colligative properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination, Osmosis, law of osmotic pressure and its measurements, determination of molecular weight from osmotic pressure.
- 5.2 Elevation of boiling point and depression of freezing point, Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes.

References

1. Text Book of Inorganic Chemistry, P.L.Soni, Sultan chand & Sons, New Delhi.
2. Modern Inorganic Chemistry, R.D.Madan, S.Chand and Company Ltd., New Delhi.
3. Principles of Inorganic Chemistry, B.R.Puri & L.R.Sharma, Vishal Publications, New Delhi.
4. Text Book of Organic Chemistry, P.L. Soni, H.M.Chawla, Sultan Chand & Sons, New Delhi
5. Principles of Reaction Mechanism in organic chemistry, V.S.Parmar, H.M.Chawla, Sultan Chand & Sons, New Delhi.
6. Advanced Organic Chemistry, B.S.Bahl, Arun Bahl, S.Chand & company Ltd., New Delhi.
7. Organic Chemistry Volume I : The Fundamental principles I.L. Finar, English
8. Text Book of Physical Chemistry, Samuel Glasstone, Macmillan India Limited, New Delhi
9. Principles of physical Chemistry, B.R.Puri, L.R.Sharma and Madan S.Pathania, Soban Lal Nagin Chand & Co., New Delhi.
10. Physical Chemistry, R.P.Varma, Pradeep Publications, Jalandhar.
11. Physical Chemistry, P.W.Atkins, W.H. Freeman and Company San Francisco.
12. Elements of Physical Chemistry, Samuel Glasstone, David Lewis, London Macmillan & Co Ltd.
13. Physical Chemistry, B.D.Khosla, R.Chand & Co, New Delhi.
14. A Text Book of Organic Chemistry, K.S.Tewari, S.N.Mehrotra, N.K.Vishroi, Vikas Publishing House Pvt. Ltd.
15. Modern organic chemistry M.K. Jain & S.C. Sharma vishal Publishing Co. Jalandhar, Delhi.

Kunthavai Naacchiyaar Govt. Arts College for Women (Autonomous) Thanjavur- 613 007
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Department of Chemistry
B.Sc Chemistry – Syllabus
(From the Year 2018– 2019 onwards)
Non -Major Elective Course 1 – Agro Chemistry

Code: 18K3CHEL01

Hours: 30
Credit: 2
Marks: 100

UNIT I: (6 Hrs)

Soil Science

- 1.1 Soil formation – factors influencing soil formation, Soil forming processes. Definition of soil.
- 1.2 Soil Physical properties – Soil texture and structure – Bulk density, particle density, Porespace, soil air, soil temperature, soil water, soil consistence – significance of Physical properties to plant growth.

UNIT II: (6 Hrs)

Fertilizers

- 2.1 Application -Nitrogenous, phosphatic and potash fertilizers. Urea, Super phosphate, Bone meal and potassium nitrate.
- 2.2 Secondary and micro nutrient fertilizers- mixed fertilizers - role in plant life – methods of applying solid fertilizers and liquid fertilizers- economic value of fertilized crop.

UNIT III: (6 Hrs)

Manures

- 3.1 Nutrient potential of different organic manures – Agricultural, industrial and urban Wastes, Green manures, bulky organic manures- farm yard manures, zinc enriched organics.
- 3.2 Methods of composting, Enriched organics-Oil cakes, blood meal, fish manure, horn and hoof meal and proteins.

UNIT IV: (6 Hrs)

Pesticides and Insecticides

- 4.1 Pesticides - Classification of pesticides. Fate of pesticides in soil and plants. Impact of pesticides on environment. Safety measures in the analysis and handling of pesticides. First Aid precautions.
- 4.2 Insecticides – Plant products – Nicotine, pyrethrum, rotenone, petroleum oils. Natural pesticides – Neem oil, Panchakaviya.

UNIT V: (6 Hrs)

Fungicides and Herbicides

- 5.1 Fungicides – Bordeaux mixture, Dithiocarbamates, antibiotics as systemic fungicides.
- 5.2 Herbicides – classification, 2,4-D compounds, Picloram, Urea herbicides, Alachlor and butachlor.

References:

1. **The nature and properties of soils, Brady N.C., Eurasia Publishing House, (P) Ltd. 9th Ed. 1984.**
2. **Text book of soil science, Biswas, T.D. and Mukherjee S.K. 1987**
3. **Soil fertility and fertilizers, Tisdale S.L., Nelson W.L., and Beaton J.D. Macmillan Publishing Company, NewYork , 1990.**
4. **Commercial fertilizers, Colling G.H., McGraw Hill Publishing Co., New York, 1955.**
5. **Chemistry of pesticides, Buchel K.H., John Wiley & Sons, New York, 1983.**
6. **Chemistry of pesticides, Melnikov N.N., Vol.36 of Residue Review-springer verlac, New York, 1971.**
7. **Chemistry of Insecticides and Fungicide, Sree Ramula U.S., Oxford and IBH publishing Co., New Delhi, 1979.**

Kunthavai Naacchiyaar Govt Arts College for women (Autonomous)Thanjavur- 613 007
(Affiliated to Bharathidasan University)
DEPARTMENT OF CHEMISTRY
B.Sc Extra Disciplinary Course- Syllabus
(From the Year 2018-2019 onwards)
Self Study Course 1 - Food Chemistry

Code: 18K3SSCH1

Credit: 5
Marks: 100

UNIT I

- 1.1** Food groups and nutritive values of Foods- cereals and millets- pulses, nuts and oilseeds, vegetables- Fruits, Milk and milk products, eggs, meat, fish and other animal foods, fats and oils, sugar and carbohydrate foods, spices.
- 1.2** Nutritional classification of foods
- 1.3** Planning of balanced diets
- 1.4** Nutritive value of some food products
- 1.5** Recommended dietary allowances (RDA) calories, proteins, fat, calcium, Phosphorous, iron, vitamin A, Thiamine, Riboflavin, Nicotinic acid, folic acid, Vitamin B12, Vitamin D, Fortification of foods, food and its function. Deficiency diseases, Anaemia caused by dietary deficiencies, suggestion for a healthy diet (RDA).

UNIT II

- 2.1** Sources of water for the body, Mineral elements & Trace elements.
- 2.2** Cooking and Diet
Methods of Cooking, effect of cooking (on vegetable foods, on animal foods) and heat processing on the nutritive values of foods.
- 2.3** Food spoilage – Preservation and Hygiene
Microbiological food spoilage- Preservation and Nutritive Value- Food Poisoning- Food Hygiene.
- 2.4** Food additives and contaminants
Classes of food additives, Risks and benefits of additives

UNIT III

- 3.1** Therapeutic Nutrition and Diets
Needs for Modification of Diets in different diseases, peptic ulcer, Diarrhoea, Constipation, Diseases of liver- Jaundice, chronic renal failure, hyper & hypo tension- Diabetes Mellitus.
- 3.2** Nutrition during pregnancy and lactation.
- 3.3** Nutrition during infancy
- 3.4** Nutrition for children and teenagers
- 3.5** Nutrition in Later Maturity

UNIT – IV

- 4.1 Obesity – Occurrence, Complications due to obesity, Treatment, Prevention**
- 4.2 Diet and Dental Health**
- 4.3 Under nutrition and Malnutrition- causes, signs of under & malnutrition, Nutritional requirements.**
- 4.4 Milk and Milk Products**
The Constituents of Milk, Physical properties of milk, Stability of milk- Denaturation & fermentation- Market Milk, Pasteurization, Sterilization, Standardization, homogenization, toning, condensing and drying processes- nutritive values of dairy products (Cheese, ice cream, yoghurt, butter milk, whey water)

UNIT IV

- 5.1 Food adulteration and detection**
Definition of adulterated food, Food standards, Common food adulterants, contamination of foods with harmful Micro- Organisms, Chemical contaminants, detection of adulteration
- 5.2 Beverages – Coffee, Tea, Cocoa, Carbonated Non – alcoholic beverages, fruit beverages & miscellaneous beverages**
- 5.3 Fermented Foods – Fermented foods, Therapeutic value**
- 5.4 Food Standards**

References:

- 1. Fundamentals of Normal Nutrition, Corinne H. Robinson, Macmillan Publishing Co., Inc. New York.**
- 2. Milk and Milk products, Clarence Henry Eckles, Willes Barnes combs, Harold Macy, Tata McGraw Hill Publishing Company Ltd., New Delhi.**
- 3. Food Science and Experimental Foods, M. Swaminathan, Ganesh and Company, Madras.**
- 4. Food Science- A Chemical Approach, Brian A Fox, Allen G Cameron, Hodder and Stoughton. London Sydney, Auckland Toronto.**
Food and Nutrition Vol. II- Applied Aspects, M. Swaminathan, D.Sc, F.N.A II edition BAPCO.

unthavai Naacchiyaar Govt. Arts College for Women (Autonomous) Thanjavur- 613 007
(Affiliated to Bharathidasan University)
DEPARTMENT OF CHEMISTRY
B.Sc Chemistry- Syllabus
(From the Year 2018-2019 onwards)
Core Course 5- Chemistry Practical - II
Volumetric Analysis

Code: 18K4CH05P

Hours: 90(3+3)

Credit: 5

Marks: 100

Quantitative Volumetric Analysis:

A double titration involving the making-up of solution to be estimated and the preparation of a primary standard (10% of the marks to be awarded for writing the procedure)

1. Acidimetry & Alkalimetry:
 - a) Strong Acid Vs Weak Base
 - b) Weak Acid Vs Strong Base.

2. Redox Titrations:
 - a) Permanganimetry:
 - i. Estimation of Ferrous Ion
 - ii. Estimation of Oxalic Acid
 - iii. Estimation of Calcium
 - b) Dichrometry:
 - i. Estimation of Ferrous Ion

3. Iodometry & Iodimetry:
 - a) Estimation of Copper
 - b) Estimation of Potassium Dichromate
 - c) Estimation of Arseneous Oxide

4. Complexometric Titrations Using EDTA
 - a) Estimation of Magnesium
 - b) Estimation of Calcium
 - c) Determination of Hardness of water.

DEPARTMENT OF CHEMISTRY
B.Sc Chemistry Major - Syllabus
(From the Year 2018 – 2019 onwards)

Core Course 6 - Inorganic, Organic and Physical Chemistry – IV

Code: 18K4CH06

Hour: 75
Credit : 5
Marks : 100

Inorganic Chemistry

UNIT – I

(15 Hrs.)

- 1.1 Halogen Family- comparative study of halogens and their compounds, structures of oxides and oxyacids of halogens, estimation of available chlorine in bleaching powder, Interhalogen compounds- preparation, properties structure and uses. Pseudo halogens – preparation, properties and uses. Chemistry of Astatine.
- 1.2 Zero group elements - position in the periodic table – isolation and uses. Compounds of xenon – XeF_2 , XeF_4 , XeF_6 , XeO_3 , XeOF_4 - preparation, properties, uses

Organic Chemistry

UNIT - II

(15 Hrs.)

- 2.1 Alcohols : Monohydric alcohols - General methods of preparation and properties of alcohols, Manufacture of ethanol, absolute alcohol and methylated spirit, distinction between primary, secondary and tertiary alcohol, Dihydric alcohols - chemical reactions of vicinal Glycols- oxidative cleavage. Trihydric alcohols- methods of formation, chemical reactions of glycerol- nitroglycerine- Thioalcohols- preparation, properties and uses of ethyl mercaptan.
- 2.2 Ethers- preparation of aliphatic and aromatic ethers, reactions of ethers- estimation of number of methoxy groups- Zeisel's method.

UNIT –III Aromatic Hydrocarbons

(15 Hrs.)

- 3.1 Arenes and Aromaticity -Structure and stability of Benzene, Naphthalene and Anthracene , Resonance in Benzene (M.O.Picture), Huckel's rule of aromaticity.
- 3.2 Aromatic Electrophilic Substitution - general mechanism of electrophilic substitution reactions, orientation - ortho , para and meta directing group, o/p ratio, mechanism of nitration, sulphonation, halogenation, Friedel-Craft's alkylation and acylation reactions, nuclear and side chain halogenation.

Physical Chemistry

UNIT - IV

(15 Hrs.)

4.1 Phase-rule:

Meaning of the terms phase, component, and degree of freedom. Derivation of Gibbs phase rule- Phase equilibria of one component systems –water, CO₂ and sulphur systems.

4.2 Phase equilibria of two component systems – Solid-Liquid equilibria- Simple Eutectic systems – Bi-Cd and Pb–Ag systems –Desilverisation of Lead-compound formation with congruent melting points (Mg-Zn) and incongruent melting points (Na-K) - NaCl–water and FeCl₃–water systems – Freezing mixtures. Gas – Solid equilibria- (CuSO₄ –water system)- efflorescence and deliquescence.

UNIT – V

(15 Hrs.)

5.1 Ideal Liquid mixtures (Benzene and Toluene) – Raoult’s law and Henry’s law –Deviation from Raoult’s law and Henry’s law.Activity and activity coefficient. Duhum–Margule’s equation-its application to fractional distillation of binary miscible liquids.

Non ideal systems. Azeotropes - (HCl –water & Ethanol –water systems). Applications of Azeotropes in organic chemistry.

5.2 Partially miscible liquid pairs - Phenol-Water, Triethanol amine - Water and Nicotine-Water Systems- Lower and Upper CSTs- Effect of impurities on CST. Immiscible liquids - principle and applications of steam distillation- Nernst Distribution Law - Derivation and Applications.

References:

1. Text Book of Inorganic Chemistry, P.L.Soni, Sultan chand & Sons, New Delhi.
2. Modern Inorganic Chemistry, R.D.Madan, S.Chand and Company Ltd., New Delhi.
3. Principles of Inorganic Chemistry, B.R.Puri & L.R.Sharma, Vishal Publications, New Delhi.
4. Text Book of Organic Chemistry, P.L. Soni, H.M.Chawla, Sultan Chand & Sons, New Delhi
5. Principles of Reaction Mechanism in organic chemistry, V.S.Parmar, H.M.Chawla, Sultan Chand & Sons, New Delhi.
6. Advanced Organic Chemistry, B.S.Bahl, Arun Bahl, S.Chand & company Ltd., New Delhi.
7. Organic Chemistry Volume I : The Fundamental principles I.L. Finar, English
8. Elements of Physical Chemistry Puri, sharma and Pathana
9. Physical Chemistry, P.W.Atkins, W.H. Freeman and Company San Francisco.

B.Sc Chemistry – Syllabus
(From the year 2018 -2019 onwards)
Non - Major Elective Course 2 – Hydro Chemistry

Code: 18K4CHEL02

Hours: 30

Credit:2

Marks:100

UNIT-I

1. Introduction

(6 Hrs)

Sources of water- Surface sources and ground sources. Hydrology- precipitation, rain and snowfall water and runoff water.

Water as universal solvent- classification of water- Soft water and hard water.

Water pollution- Causes for water pollution (Natural and Anthropogenic processes). Effects of water pollution- prevention of pollution and water pollution control (Brief treatment Only).

UNIT-II

2. Water Quality Parameters:

(6 Hrs)

Physical parameters- Characteristics of water depending on source- colour, taste, odour, turbidity, Total Dissolved Solids (TDS) and Electrical conductivity.

Chemical parameters- pH, Total Alkalinity, Total Hardness- permissible quantities and tests for sodium, potassium, chloride, chlorine, fluoride, calcium, magnesium, iron, manganese, ammonia, nitrite, nitrate, phosphate and sulphate.

Biological Parameters- Bacteria, Algae, Fungi and Protozoa.

UNIT-III

3. Quality of water:

(6Hrs)

Water quality Standards- WHO- standard of water quality for domestic and industrial purposes.

Ground water quality and Surface water quality- Significance and Health effects of water quality.

Impurities in water- suspended impurities, colloidal impurities and dissolved impurities. Water contaminants- organic, inorganic, microbiological and biological contaminants.

UNIT-IV

4. Water Demand and Treatment of water:

(6 Hrs)

Domestic water demand- Chemical and industrial demand- Factors affecting the water demand.

Disadvantages of Hard water- indomestic use- in industrial use and in boilers, Removal of colour, odour and taste, reverse osmosis process and desalination of sea water. Disinfecting water- by boiling, by UV ray, with Iodine and Bromine, with ozone, by excess lime, by potassium permanganate and by chlorine.

UNIT-V

(6 Hrs)

5. Water Analysis: physical test- Nephelometric Method of measurement of turbidity and tests for colour, taste and odour. Chemical test- COD and BOD. Biological test- Total count of Bacteria- Membrane Filter Technique- E.Coli test- MPN and Gram stain technique.

Infectious Diseases: Water borne diseases- By Bacterial organisms, Bacteriophage and by Protozoa. Water washed diseases, water-based diseases, water-related diseases and preventive measures.

References:

1. **Water pollution, Tripathi A.K, Pandey S.N, Ashish Publishing House, New Delhi (1990).**
2. **Water Pollution, Goel P.K, New Age International Private Limited, New Delhi (1997).**
3. **Environmental Chemistry, Kudesia V.P, Pragati Prakashan Publication, Meerut, First Edition (2000)**
4. **Pollution Conservation and Forestry, Siddiqui K.A, Kitab Mahal Publication, Allahabad, Second Edition (2002).**
5. **Environmental Chemistry, De A.K, New Age International Private Ltd, New Delhi, Fourth Edition (2000).**
6. **Water supply and Sanitary Engineering, Birdie G.S, Birdie J.S, Dhanpat Rai Publishing Company, New Delhi.**
7. **Chemtech I, Venkateswarlu & Co., S. Chand and Company Ltd.**

DEPARTMENT OF CHEMISTRY
(Form the year 2018 – 2019 onwards)
Skill Based Elective Course 1- Life skills

Code: 18K4SBEC1

Hours: 30
Credit: 2
Marks:100

UNIT-I : Accounting, Banking and Marketing (6 Hrs)

Accounting: Meaning – Process – Users – Branches. Accounts: Kinds – Rules – Final Accounts. Banking: Meaning – Deposits – Opening an account – Cheque – Demand Draft – Internet Banking. Marketing: Consumer Rights and Duties.

UNIT-II : Economics (6 Hrs)

National Income: Percapita Income – National Income Accounting – Methods of calculating National Income. Indian Money Market: Functions – Capital Market - Sensex. Planning: Long-term objectives – Employment Generation Programmes.

UNIT-III : Vital Statistics and Computer (6 Hrs)

Vital Statistics: Meaning – Uses – Rate of vital events. Measurement of fertility – Crude Birth Rate – General Fertility Rate – Specific Fertility Rate – Total Fertility Rate – Gross Reproduction Rate – Net Reproduction Rate. Measurement of Mortality: General/Crude Death Rate – Age Specific Death Rate.

Measures of Central Tendency: Objectives of Averaging – Types: Arithmetic Mean – Weighted Arithmetic Mean. Interest: Simple Interest – Compound Interest.

Computer: Introduction – Components – Communication Systems – Internet – World Wide Web – E-mail – E-Commerce.

UNIT-IV : Home Repairs and Safety Tips (6 Hrs)

Working of Electricity – Static Electricity – Electric Circuit – Electrical Grounding – Uses of Electricity – Commercial Electrical Building – Electrical Safety – Dangers from Electricity – Electric Fire – First Aid for Electric injury – Prevention tips.

Acid in Eye – Alkali in Eye – Acid Burns – Alkali Burns – Poisoning – Inhalation of Gases – Cut by glasses – Heat Burns.

LPG Safety Measures at home.

UNIT-V : Health, House Plants and Disaster (6 Hrs)

Health Care System: Safety Education – Definition – Need – Safety at Home – Fire Safety in Living Room, Dining room, Kitchen and Bed Room.

House Plants as Hygenics: Introduction – Need – House Plants, Hydroponics – Health reasons such as Air Purification. Plants: *ACALYPA HISPIDA*, *AGAVE AMERICANA*, *BOUGAINVILLE GLABRA*, *BAMBUSA AURINDINACEA*, *EUPHORBIA SPLENDENSIS* and *SANSIVIERA TRIFASCIATA*.

Disaster: Flood and Deforestation – Cause Effect and Controlling Measures.

References:

Unit I

1. Vinayagam.N, Mani.P.L, Nagarajan.K, *Principles of Accountancy*, S.Chand & Co., New Delhi.
2. Gordon & Natarajan, *Banking Theory Law and Practice*, Himalaya Publishing House, New Delhi.

Unit II

1. Dutt & Sundaram, *Indian Economy*, S.Chand & Company, New Delhi.
2. Dr.S.Sankaran, *Indian Economy*, Margham Publications, Chennai.

Unit III

1. Pillai.R.S.N, Bagavathi, *Statistics*, S.Chand & Company, New Delhi.
2. Vital.P.R, *Business Mathematics*, Margham Publications, Chennai.
3. Alexis Leon, Mathews Leon, *Information Technology*, Vikas Publishing House, New Delhi.

Unit IV

1. Gopalan.R, Subramanian.P.S and Rengarajan.K, *Elements of Analytical Chemistry*, Sultan Chand and Sons, New Delhi.
2. Theraja.B.L, *Basic Electronics Solid State*, S.Chand & Co., New Delhi.

Unit V

1. Periyaya, *Safety Education and First Aid*, Sri Susee Data Processing Centre, Coimbatore.
2. Day. S.C, *Indoor Gardening*, Agrobios Publications, India.
3. Savindra Singh. 2009, *Environmental Geography*, Arti Printers, Allahabad.

Kundavai Naacchiyaar Govt. Arts College for Women (Autonomous), Thanjavur 613007
(Affiliated to Bharathidasan University)
DEPARTMENT OF CHEMISTRY
B.Sc Chemistry – Major Syllabus
(From the year 2018 -2019 onwards)
Self Study Course 2 – Dairy Chemistry

Code: 18K4SSCH2

Credit: 5
Marks:100

UNIT – I

Introduction- Milk – Definition – General characteristics – composition of milk and nutritive value – constituents of milk – lipids, phosphor lipids, Proteins, carbohydrates, Vitamins and Minerals, Cholesterol pigments – Enzymes of milk. Factors affecting composition of milk.

UNIT – II

Properties of milk – Physical properties of milk – Colour – Taste – Odour – Acidity – Specific gravity – Viscosity and conductivity. Freezing point – Effect of freezing on milk – Boiling point – Effect of heat on milk.

UNIT – III

Processing of milk – Microbiology of milk – destruction of microorganisms in milk – physic chemical changes taking place in milk due to processing – boiling – Pasteurization – Types of pasteurization – HTST (High temperature short time) – Vacuum pasteurization – Ultra high temperature pasteurization.

UNIT – IV

Purity of milk – Milk grades – Adulterants – Analysis of adulterants – Analysis of milk and milk products – determination of total solids – determination of lactose.

UNIT – V

Milk products – Skimmed milk – Sweetened condensed milk, dry milk, Khoa, Curd and cream. Ice cream, Cheese, Butter – Functions of ingredients and manufacture.

Reerences:

1. Clarence Hendry Eckles, Willes Barnes combs, Harold macy, Milk and milk products., TMH Edition.
2. S.A.Iqbal, Y.Mido, Food Chemistry, Discovery publishing house, New Delhi.
3. B.Sivasankar, Food processing and preservation, Prentice – Hall of India private limited, New Delhi.
4. Alex V.Ramani, Food Chemistry, MJP publishers, Chennai.
5. B. Srilakshmi, 'Food Science', 3rd edition, New Age International (P) Ltd.,

DEPARTMENT OF CHEMISTRY
B.Sc Chemistry – Major Syllabus
(From the year 2018-2019 onwards)
Core Course 7 – Inorganic Chemistry - I

Code: 18K5CH07

Hours: 60
Credit: 4
Marks: 100

UNIT I

(12 Hrs)

- 1.1 Lanthanides and Actinides: Electronic configuration and position in the periodic table, Lanthanide Contraction, Isolation of Lanthanides and Thorium from Monazite by Ion Exchange and complexation Methods.**
- 1.2 Coordination chemistry- Introduction- types of ligands, unidentate, bidentate and polydentate ligands- chelation, IUPAC nomenclature of coordination compounds, methods of detecting complex formation.**
- 1.3 Isomerism in coordination compounds- Ionization, Hydrate, Linkage and coordination isomerism, Stereoisomerism-Geometrical and Optical Isomerism in Square planar and octahedral compounds**

UNIT II

(12 Hrs)

- 2.1 Theories of Coordination Compounds- Werner, Sidgwick, Valence bond theories, Crystal Field Theory- splitting of d orbitals in octahedral, tetrahedral and square planar fields, crystal field stabilization energy (CFSE), factors affecting CFSE, colour, geometry and magnetic properties of coordination compounds, Jahn- Teller distortion (an elementary idea). MOT and ligand field theory (an elementary treatment only).**
- 2.2 Stability of Complexes- Thermodynamic and Kinetic stability, Factors affecting the stability of complexes.**

UNIT III

(12 Hrs)

- 3.1 Substitution reactions in Co-ordination Chemistry- Unimolecular and Bimolecular substitution reactions in Octahedral and square planar complexes, Trans Effect.**
- 3.2 Application of Coordination compounds- Detection of Potassium ions, Separation of Copper and Cadmium, Estimation of Nickel using DMG and Aluminium using Oxine.**
- 3.3 Biologically important compounds-Chlorophyll, Hemoglobin and Vitamin B₁₂.**

UNIT IV

(12 Hrs)

- 4.1 Metal carbonyls- mono and binuclear carbonyls of Ni, Fe, Cr, Co and Mn- preparation, reactions, uses and structure and structure and bonding, structure and bonding in π -metal alkenyl and π -metal alkynyl complexes- ferrocene, $[\text{PtCl}_3(\text{C}_2\text{H}_4)]^-$ and $[\text{Co}(\text{CO})_6(\text{RC}\equiv\text{CR})]$
- 4.2 Nitrosyl compounds- classification, nitrosyl chloride and sodium nitroprusside- preparation, properties, structure and uses.

UNIT V

(12 Hrs)

- 5.1 Binary compounds: Hydrides, Borides, Carbides and Nitrides- classification, preparation, properties and uses
- 5.2 Gravimetric analysis- characteristics of precipitating agents – specific and selective precipitant-Condition of precipitation-Types of precipitates-Purity of precipitates. Co-precipitation & Post precipitation- Precipitation from homogenous solution. Digestion and Washing of precipitate –ignition of precipitate.

References:

1. *Basic Inorganic Chemistry*, F. A. Cotton, G. Wilkinson and P. L. Gaus, Wiley
2. *Concise Inorganic Chemistry*, J. D. Lee, ELBS
3. *Principles of Inorganic Chemistry*, L .R. Puri, B. R. Sharma and Kalia, ShobanlalNagin Chand & Co.
4. *Textbook of Inorganic Chemistry*, P. L. Soni, Sultanchand& Sons
5. *Modern Aspects of Inorganic Chemistry*, H. J. Emeleus and A. G. Sharpe, ELBS.
6. *Vogel's Textbook of Quantitative analysis* (Revised), J. Bassett, R. C. Denney G.H. Jeffery and J. Mendham, ELBS.

Kunthavai Naacchiyaar Govt. Arts College for Women, (Autonomous) Thanjavur 613007
(Affiliated to Bharathidasan University)
DEPARTMENT OF CHEMISTRY
B.Sc Chemistry- Syllabus
(From the year 2018-2019 onwards)
Core Course 8 – Organic Chemistry- I

Code: 18K5CH08

Hours: 60
Credit: 4
Marks: 100
(12 Hrs)

UNIT I

1. Stereo Isomerism I

- 1.1 Concept of Isomerism-** Types of isomerism – structural isomerism, chain isomerism, Position isomerism, functional isomerism and metamerism.
- 1.2 Optical isomerism-** Optical activity –optical and specific rotation – conditions for optical activity. Asymmetric center- chirality- achiral molecule- D & L notations- elements of symmetry – racemization – methods of racemization (by substitution and tautomerism). Resolution – methods of resolution (Mechanical separation, chemical method, seeding, biochemical method)- Asymmetric synthesis- Partial and absolute asymmetric synthesis – Walden Inversion, Vant’ Hoff rule of superposition – Freudenberg’s rule of shift.
- 1.3 Notations for optical isomers -** Cahn Ingold- Prelog rules (R & S notations) for optical isomer with one asymmetric carbon - erythro and threo representation.

UNIT-II

- 2. Stereo Isomerism II and Alicyclic compounds** (12 Hrs)
- 2.1** Optical activity of Lactic acid and tartaric acid - Optical activity in compounds containing no asymmetric carbons-Biphenyls, Allenes and spiranes.
- 2.2 Geometrical isomerism-** cis-trans, syn-anti, E-Z notations –Geometrical isomerism in maleic and fumaric acids and in unsymmetrical ketoximes- methods of distinguishing geometrical isomerism.

UNIT –III

(12 Hrs)

3. Carbonyl Compounds and Tautomerism

- 3.1 Aldehydes & Ketones:** Nomenclature, structure- reactivity of the carbonyl group– acidity of alpha hydrogen. General methods of preparation & properties of aldehydes and ketones.
- 3.2 Mechanisms** of Aldol, Perkin, Knoevenagel and Benzoin Condensation, Mechanisms of Claisen, Reformatsky and Cannizzaro reactions.
- 3.3 Tautomerism-** Definition-Keto enol tautomerism -Identification, acid and base catalyzed inter conversion mechanism. Amido-imido and nitro –acinitro tautomerisms (Problems and conversions.)

UNIT –IV

(12 Hrs)

- 4. Carboxylic acids
- 4.1 Mono Carboxylic acids: Nomenclature, Structure and bonding, physical properties, acidity of Carboxylic acids, effects of substituents on acid strength of substituted benzoic acid- Hammett equation- Preparation and reactions of carboxylic acids
- 4.2 Dicarboxylic acids- preparation and properties of Oxalic, malonic, succinic, glutaric and adipic acids.
- 4.3 Tricarboxylic acids- preparation, properties and uses of citric acids.
- 4.4 Malonic and acetoacetic esters- Characteristics of reactive methylene group- synthetic uses of malonic and acetoacetic esters.

UNIT V

- 5. Heterocyclic Compounds (12 Hrs)
- 5.1 Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine- Methods of synthesis and chemical reactions - electrophilic substitution- nucleophilic substitution reactions - Comparison of basicity of pyridine, piperidine and pyrrole.
- 5.2 Introduction to condensed five and six membered heterocycles- Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher Indole, Skraup and Bischler Napieralski synthesis- electrophilic substitution reactions of indole, quinoline and isoquinoline.

References:

1. B.S.Bahl and Arun Bahl, *Advanced Organic Chemistry*, S.Chand & Co, New Delhi. (1998).
2. P.L.Soni and H.M. Chawla, *Text book of Organic Chemistry-28th Edition*(1999)
3. Ravi Bhushan, *Stereo Isomerism of Carbon Compounds* –CBS –Publishers , Delhi –Revised edn(1998).
4. P.S.Kalsi, *Stereochemistry, Conformation and Mechanism*, Willey Eastern Limited, New Delhi
5. O.P.agarwal, *Chemistry of Natural Products*, Volume 1& 2.
6. D.Nasipuri, *Stereochemistry of Organic Compounds*, Willey Eastern Ltd., New Delhi (1992).
7. I.L.Finar, *Organic Chemistry Volume 1*, E.L.B.S., London, (1998).

DEPARTMENT OF CHEMISTRY
B.Sc Chemistry Major - Syllabus
(From the Year 2018 – 2019 onwards)
Core Course 9 - Physical Chemistry - I

Code: 18K5CH09

Hours : 60
Credits: 4
Marks : 100

UNIT I

(12 Hrs)

- 1.1 Joule Thomson Effect: Joule-Thomson Experiment- Joule- Thomson Coefficient for ideal and real gases- Inversion Temperature- Cooling by JT effect.
- 1.2 Thermo Chemistry: Standard States- Standard enthalpy of formation –Hess’s law and its applications. - enthalpy of neutralization, integral and differential heats of solution and dilution, Bond dissociation energy – its calculation from thermochemical data, Temperature dependence of ΔH - Kirchoff’s equation.

UNIT II

(12 Hrs)

- 2.1 Second law of thermodynamics: Need for the second law .Different statements of the law, Heat engine –Carnot’s cycle and its efficiency, Refrigeration cycle-Carnot’s theorem – Thermodynamic scale of temperature.
- 2.2 Concept of entropy: Entropy as a state function – Entropy as a function of P, V and T. Entropy changes in Physical state-Clausius inequality – entropy as a criterion of spontaneous and equilibrium processes in isolated systems.
- 2.3 Gibbs and Helmholtz Functions: Gibbs function (G) and Helmholtz’s function (A) as thermodynamic quantities- ΔA and ΔG as criteria for thermodynamic equilibrium and spontaneity – their advantage over entropy change, Variation of ΔA and ΔG with P, V and T. – Maxwell’s relations.

UNIT III

(12 Hrs)

- 3.1 Applications of II law of thermodynamics: Equilibrium constants and free energy change, Thermodynamic Derivation of Law of Mass Action- Thermodynamic interpretation of Le-Chatelier’s principle (concentration, temperature, pressure and addition of inert gases).
- 3.2 Equilibrium between different phases- System of variable composition- Partial molar quantities –Chemical Potential of component in an ideal mixture – Gibbs-Duhem equation - Variation of chemical potential with T, P and X (mole fraction)
- 3.3 Clapeyron equation and Clausius - Clapeyron equation –Application.

UNIT IV

(12 Hrs)

- 4.1 Chemical Kinetics: Rate of reactions -rate laws, rate constant, order and molecularity of reactions. Derivation of Rate equations for zero, first , second and and fractional order reactions . Half life period- Pseudo first order reactions- examples, methods of determining the order of reactions: Integration, graphical, half-life and Oswald’s isolation methods.
- 4.2 Temperature dependence of reaction rates –Arrhenius parameters, and calculations.

- 4.3 Theories of reaction rates –simple collision theory –limitations- steady state approximation –Elementary treatment of Lindemann’s hypothesis of unimolecular reactions-Theory of absolute reaction rates.
- 4.4 Catalysis: Types of catalysis – mechanism of catalytic reactions, Industrial applications, Enzyme catalysis- effect of temperature, effect of pH and applications.

UNIT- V

(12Hrs)

- 5.1 Photochemistry: Laws of photochemistry- Quantum yield- determination of quantum efficiency - actinometry. Kinetics of photochemical reactions (H_2-Cl_2 , H_2-Br_2 , Decomposition of HI and dimerisation of Anthracene).
- 5.2 Photosensitization, Chemiluminescence, Fluorescence and quenching of fluorescence- Stern-Volmer equation.

References:

1. *Principles of Physical Chemistry*, B.R.Puri & Sharma.
2. *Text Book of Physical Chemistry*, P.L.Soni.
3. *Advanced Physical Chemistry*, Gurdeep Raj
4. *Essentials of Physical Chemistry*, B.S.Bahl, G.D.Tuli & Arun Bahl, S. Chand & Co., New Delhi.(1999).
5. *Thermodynamics for Chemists*, Samuel Glasstone. East-West Press Pvt. Ltd. New Delhi.
6. *Simplified Course in Physical Chemistry*, R.L. Madan, G.D. Tuli, S. Chand & Co., N.Delhi.(1999).
7. *Thermodynamics for Students of Chemistry*, Rajaram and Kuriacose. Shoban Lal Nagin Chand & Co., Jalandhar.
8. *Thermodynamics-A Core Course*, Srivastava. R.C., Subit K. Saha & Abhay K. Jain,(2005) Prentice-Hall of India Pvt. Ltd., N. Delhi.
9. *Thermodynamics*, Arora. C. P.,(2005), Tata McGraw-Hill Publishing Company Ltd., N.Delhi.
10. *Chemical Kinetics*, Keith J. Laidler
11. *Kinetics & Mechanism of Chemical Transformation*, Rajaram J. & Kuriacose
12. *Fundamentals of Photochemistry*, Rahotgi K. K & Mukherjee
13. *Photochemistry*, Gurdeep & Harish.

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(Affiliated to Bharathidasan University)
DEPARTMENT OF CHEMISTRY
B.Sc Chemistry- Syllabus
(From the Year 2018-2019 onwards)
Core Course 10 - Chemistry Practicals III
Gravimetric and Organic analysis

Code: 18K6CH10P

Hours: 120 (4+4)

Credit: 6

Marks: 100

Gravimetric Analysis:

1. Determination of percentage of water of hydration in Barium Chloride
2. Estimation of Barium as Barium Sulphate
3. Estimation of Sulphate as Barium Sulphate
4. Estimation of Barium as Barium Chromate
5. Estimation of Lead as Lead Chromate
6. Estimation of Calcium as Calcium Oxalate Monohydrate.
7. Estimation of Lead as Lead Sulphate

Organic Analysis:

1. Analysis of organic substances containing the following functional groups:
Acid, phenol, aldehyde, ketone, nitro compound, amine (primary, secondary or tertiary), amide, diamide and monosaccharide- glucose and fructose (Report should contain the presence or absence of elements, saturated or unsaturated, aromatic or aliphatic and the functional group/ groups present- which should be confirmed by the preparation of a solid derivative)
2. Determination of melting or boiling point of the given organic compound.
3. Organic preparation involving
 - a) nitration
 - b) bromination
 - c) hydrolysis
 - d) oxidation
 - e) condensation (eg. Glucosazone from glucose)
 - f) benzylation
 - g) diazotization &
 - h) esterification.

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DEPARTMENT OF CHEMISTRY
B.Sc Chemistry- Syllabus
(From the Year 2018-2019 onwards)
Core Course 11- Chemistry Practical IV
Physical Chemistry Practical

Code: 18K6CH11P

Hours: 90(3+3)

Credit: 4

Marks: 100

1. **Kinetics:** Determination of rate constant of acid catalyzed hydrolysis of an ester.
2. **Partition Experiment:** Determination of distribution coefficient of iodine between water and carbontetrachloride
3. **Phase equilibria:**
 - a) Construction of phase diagram of a simple eutectic system
 - b) Determination of Critical Solution Temperature of phenol-water system
 - c) Effect of impurity and determination of concentration of a salt solution (NaCl sol.) through miscibility temperature measurement of phenol-water system
4. **Transition Temperature:** Determination of transition temperature of a salt hydrate by thermometric method
5. **Rast's Method:**
 - a) Determination of K_f of a solvent by Rast's macro method
 - b) Determination of molecular weight of a solute by Rast's macro method
6. **Conductivity Measurements:**
 - a) Determination of cell constant of a conductivity cell
 - b) Determination of λ_∞ of a strong electrolyte
 - c) Conductometric titration of a strong acid Vs a strong base

Anthavai Naacchiyaar Govt. Arts College for Women, (Autonomous) Thanjavur-613 007
(Affiliated to Bharathidasan University)
Department of Chemistry
B.Sc Chemistry – Syllabus
(From the Year 2018 – 2019 onwards)
Elective Course 1 (Major) – Analytical Chemistry

Code: 18K5CHELCH1

Hours: 75
Credit: 5
Marks: 100

UNIT I: (15 Hrs)

1.1 Error analysis

Errors in chemical Analysis, classification of errors - Determinate errors, Instrumental errors, personal errors, constant errors and proportional errors- Correction of determinate errors and random errors- Precision, accuracy and Rejection of data questioned- Significant figures, mean deviation and standard deviation- Curve fitting- Method of least squares.

1.2 Laboratory Hygiene

Storage and handling of corrosive-flammable, explosive, toxic, carcinogenic and poisonous chemicals.

1.3 Simple First-Aid Procedures

Acid in eye, alkali in eye, acid burns, alkali burns, bromine burns, poisoning, inhalation of gases, cut by glasses and heat burns.

UNIT II: (15 Hrs)

2.1 Separation and Purification techniques

Principles of separation by precipitation and solvent extraction.

2.2 Chromatography

Principles involved in adsorption, partition and ion exchange, paper, thin layer, column, gas liquid chromatography. Electrophoresis - Applications.

UNIT III: (15 Hrs)

3.1. Analytical Electrochemistry

Redox potential – Measurement and application. Interpretation of chemical behaviour, Electrolytic separations, principles of electrodeposition. Electrogravimetry - estimation of Cu and Ag.

3.2 Polarography

Principles – residual current, migration current, diffusion current- Half wave Potential- Concentration polarisation- Instrumentation- Determination of Cd by direct comparison method- Amperometric titrations.

UNIT IV: (15 Hrs)

4.1 Thermoanalytical methods

Principles involved in thermogravimetric analysis and differential thermal analysis. Instrumentation. Characteristics of TGA curves of Calcium oxalate monohydrate & Copper sulphate penta hydrate and DTA curves of Calcium acetate monohydrate.

4.2 Analytical chemistry in consumer protection

4.1 Analytical chemistry in consumer protection

Detection of adulteration in some common food items – milk, meat, oils, ghee, coffee powder, asafoetida, chilli powder, turmeric powder, pulses. Food additives – sweeteners, preservatives, flavours, colourants. Pesticide residues in food. Natural food poisons- Industrial visit recommended.

UNIT V:

(15 Hrs)

5.1 Colorimetric analysis

Laws of colorimetry, Nessler's and photo electric colorimetric method, Instrumentation, operation and applications, Estimation of Ni, Cu and Fe.

5.2 Principles and applications of atomic adsorption, Flame emission, Nephelometry & Turbidometry analysis .

References:

1. R. Gopalan, P.S. Subramanian and K. Rengarajan, *Elements of Analytical Chemistry*, Sultan Chand & Sons, New Delhi (1995)
2. B.K. Sharma, *Instrumental Methods of Chemical Analysis*, Goel Publishing House, Meerut (1999)
3. S.M. Koptar, *Basic concepts of Analytical Chemistry*, New Age International (P) Limited, New Delhi (1998)
4. A.I. Vogel, *Text Book of Quantitative Inorganic Analysis*, Longmass (1984)
5. D.A. Skoog & D.M. West, *Fundamentals of Analytical Chemistry*, W.B. Saunders, New York, (1982)
6. Gurdeep Chatwal, Sham Anand, *Instrumental Methods of Chemical Analysis*, Himalaya Publishing House, Mumbai (1998)
7. Instrumental methods of analysis Milard merit.
8. Food and Nutrition , Swaminathan.

Kunthavai Naacchiyaar Govt. Arts College for Women (Autonomous) Thanjavur- 613 007
DEPARTMENT OF CHEMISTRY
B.Sc Chemistry – Syllabus
(From the year 2018-2019 onwards)
Core Course 12– Inorganic Chemistry - II

Code: 18K6CH12

Hours: 75
Credit: 5
Marks: 100

UNIT I: (15 Hrs)

1. Nuclear Chemistry I

- 1.1** Introduction, nuclear structure- composition of the nucleus, subatomic particles, nuclear forces, nuclear stability- mass defect and binding energy, whole number rule and packing fraction, n-p ratio, odd-even rules, nuclear models- liquid drop and shell model, isobars, isotones and isomers.
- 1.2** Isotopes- determination of atomic mass- Aston's mass spectrograph and separation methods of isotopes.

UNIT II: (15 Hrs)

2. Nuclear Chemistry II

- 2.1 Natural radioactivity**-Theory of Radioactive disintegration, Radioactive decay, Group displacement law, Rate of disintegration and half life period- disintegration series, detection and measurement of radioactivity- Wilson cloud chamber, Geiger- Muller counter
- 2.2 Artificial radioactivity**- Nuclear transformation, classification of nuclear reactions, fission- atom bomb, nuclear reactor, fusion- hydrogen bomb, stellar energy- atomic power projects in india.
- 2.3** Applications of radioisotopes, hazards of radiations.

UNIT III (15 Hrs)

3. Metallic Bonding

- 3.1** Packing of atoms in metals-CCP, HCP, BCC arrangement.
- 3.2** Theories of metallic bonding-Electron gas model, Pauling's and Band Theories.
- 3.3** Hume-Rothary ratios, Interstitial and Substitutional solid solutions.
- 3.4** Defects in Crystals-Semiconductors,Extrinsic, Intrinsic N and P types-Composition, Properties and uses in electronic industries.

UNIT IV: (15 Hrs)

4. Industrial Chemistry

- 4.1** Safety matches, Fireworks and Explosives, Paints and Varnishes.
- 4.2** Fertilizer – Definition, fertilizer recommendation based on soil testing, classification. Nitrogenous, phosphate and potash fertilizers. Urea, Super phosphate, Bone meal and potassium nitrate.
- 4.3** Glass- composition, manufacture, types and uses.
- 4.4** Cement- manufacture- wet and dry processes, composition and setting of cement.

UNIT V:

(15 Hrs)

- 5. Inorganic Polymers**
- 5.1 Silicones- Composition, Manufacture, Structure, Properties and Uses.**
- 5.2 Silicate- Classification, Zeolites and Ultramarines.**
- 5.3 Phosphonitrilic compound- Manufacture, Structure, Properties and Uses.**

References:

1. *Concise Inorganic Chemistry*, J. D. Lee, ELBS
2. *Principles of Inorganic Chemistry*, L .R. Puri, B. R. Sharma and Kalia, Shobanlal Nagin Chand & Co.
3. *Textbook of Inorganic Chemistry*, P. L. Soni, Sultanchand & Sons
4. *Advanced Inorganic Chemistry*, G. R. Chatwal and Harish Mehra, Goel Publishing House, Meerut.
5. *Inorganic Chemistry*, J. Huheey, Harper International Edition.
6. *Bio Inorganic Chemistry*, I. Bertini, H. B. Gray, S. J. Lippard and J. S. Valentine, University Science book.
7. *Soil fertility and fertilizers*, Tisdale S.L., Nelson W.L., and Beaton J.D. Macmillan Publishing Company, NewYork , 1990.
8. *Commercial fertilizers*, Colling G.H., McGraw Hill Publishing Co., New York, 1955.
9. *Chemistry of pesticides*, Buchel K.H., John Wiley & Sons, New York, 1983.
10. *Essential of Nano Chemistry*, Pradeep.
11. *Industrial chemistry* B.K.Sharma.
12. *Pharmaceutical Chemistry*, Jayashree ghose.
13. *Pharmaceutical Chemistry*, Lakshmi

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DEPARTMENT OF CHEMISTRY
B.Sc Chemistry- Syllabus
(From the year 2018 – 2019 onwards)
Core Course 13 – Organic Chemistry – II

Code: 18K6CH13

Hours: 90

Credit: 6

Marks: 100

(18 Hrs)

UNIT I

- 1.1 Nitro Compounds:** General methods of preparation and properties- Conversion of nitrobenzene to ortho, para and meta dinitro benzenes- TNT- Aromatic nitro compounds, reduction in neutral, acidic and alkaline media.
- 1.2 Amines:** Relative basic characters of aliphatic and aromatic amines- ring substitution in aromatic amines- Diazotisation and its mechanism. Synthetic application of diazonium salts- Diazomethane and diazo acetic ester. Preparation, structure and their synthetic uses of Phenylene diamines- Sulphanilic acid, sulphanilamide, saccharin, chloramine-T and dichloramine-T.
- 1.3 Dyes:** Colour and constitution, Classification according to structure and application.
- Azodyes –methyl orange and Bismark brown.
 - Triphenylmethane dyes-Malachite green.
 - Phthalein dyes-Phenolphthalein and fluorescein.
 - Vat dye-Indigo
 - Anthraquinone dye- Alizarin

UNIT II

(18 Hrs)

- 2.1 Phenols:** Acidic character of phenols. Explanation on the basis of resonance stabilization, ring substitution in phenols – orientation of phenolic group towards electrophiles- esterification, nitration, sulphonation, halogenation and coupling with diazonium salts. Kolbe's reaction- Reimer – Tiemann reactions and Lederer Manasse. Di and trihydric phenols, alpha & beta naphthols- preparations and properties.
- 2.2 Amino acids and Proteins:** Classification of amino acids- essential and non essential amino acids- preparation of amino acids- Properties and reactions. Zwitterions- isoelectric point. Structure determination of polypeptides- end group analysis. Proteins- classification based on physical and chemical properties and based on physiological function. Primary and secondary structure of proteins. Helical and sheet structure (elementary treatment only), denaturation of Proteins.
- 2.3 Nucleic acids:** Types of nucleic acid – DNA and RNA poly nucleotide chain components –biological function.

UNIT III

(18 Hrs)

3. Carbohydrates

3.1 Classification, constitution of glucose and fructose, reactions of glucose and fructose- osazone formation, muta rotation and its mechanism, cyclic structure-pyranose and furanose forms- determination of ring size, Haworth projection formula, configuration of monosaccharides, epimerisation, chain lengthening and chain shortening of aldoses- Interconversion of aldoses and ketoses.

Disaccharides- reactions and structure of maltose and sucrose. Starch and cellulose (structural elucidation not necessary)

UNIT IV

(18 Hrs)

4. Natural Products

4.1 Terpenes: Introduction and classification - structural elucidation of Geranial, Nerol, Menthol and terpineol

Alkaloids: General methods of isolation and structural determination. Conine, Piperine and Nicotine.

Vitamins: Thiamin, Riboflavin, Pyridoxine and ascorbic acid. Occurrence and biological importance. Structural elucidation of pyridoxine and ascorbic acid.

UNIT V

(18 Hrs)

5. Molecular Rearrangement

5.1 Classification: anionotropic, cationotropic- intermolecular and intra molecular Pinacol-Pinacolone rearrangement- (mechanism, evidence for carbonium ion intermediate formation- migratory aptitude), Beckmann, Benzidine, Hofmann, Curtius, Benzilic acid rearrangements (mechanism only)- Claisen rearrangement (sigmatropic rearrangement)- Evidence for intermolecular nature and allylic carbon attachment- para Claisen rearrangement- Cope and Oxy Cope rearrangements- Fries rearrangement (Two mechanisms).

References:

Organic Chemistry, Volume I, I.L.Finar, Pearson Edition, Asia.

Organic Chemistry, Volume II, I.L.Finar, Pearson Edition, Asia.

Text Book of Organic Chemistry, P.L.Soni and H.M.Chawla

Text Book of Organic Chemistry, Tewari, Vikas Publishing House.

Principles of reaction mechanism in Organic Chemistry ,V.S.Parmar and H.M.Chawla.

Chemistry of Natural products VolI & Vol II, Subash Chandra Rastogi, Satis Kumar Agarwala Ashok Kumar Sharma.

Stereochemistry of Carbon Compounds, Ernest L Eliel. Organic Chemistry ,M.K.Jain

Modern organic chemistry, M.K.Jain and S.C.Sharma vishal publishing Co, New Delhi.

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DEPARTMENT OF CHEMISTRY

B.Sc Chemistry – Syllabus

(From the Year 2018-2019 onwards)

Elective Course 2 (Major) - Electro Chemistry

Code: 18K6CHELCH2

Hours: 90

Credit: 6

Marks: 100

UNIT I

(18 Hrs.)

1. Electrical conductance:

- 1.1** Conductors- Electrolytic & metallic- Electrolysis- Faraday's Laws-Electrical transport and ohm's law, conduction in metals and in electrolyte solutions. Specific conductance and equivalent conductance- Measurement of equivalent conductance using Kohlrausch's bridge, Variation of equivalent conductance with concentration.
- 1.2** Migration of ions- Kohlrausch's law and its applications, Arrhenius theory of electrolytic dissociation and its limitations. Weak and strong electrolytes - Oswald's dilution law, its uses and limitations, Theory of strong electrolytes-the elementary treatment of the Debye -Huckel-Onsager equation for strong electrolytes, Evidence for ionic atmosphere.

UNIT II

(18 Hrs.)

- 2.1** Transport number and Hittorf's rule – determination by Hittorf's method and moving boundary method
- 2.2** Application of conductance measurements- Determination of λ_{∞} of a strong electrolyte and weak electrolytes- Determination of K_a of acids and degree of dissociation of weak electrolytes- Determination of solubility product of a sparingly soluble salt- Common ion effect- Conductometric titrations.
- 2.3** PH- determination- buffers- pH of buffers-Henderson's Equation- Acid-base indicators- theories of acid-base indicator.

UNIT III

(18 Hrs.)

- 3.1** Salt Hydrolysis- Salts of weak acid(WA) & strong base(SB), WB & SA and WA & WB- Relation between K_h , K_w , K_a & K_b - Determination of degree of hydrolysis-by conductance method.
- 3.2** Electrolytic and galvanic cells- Reversible and irreversible cells- Conventional representation of Electrochemical cells. Electromotive force of a cell and its measurements-standard cell- Weston Cadmium Cell- Computation of cell e.m.f.- Calculation of thermodynamic quantities of cell reactions. (ΔG , ΔH , ΔS and K). Applications of Gibbs - Helmholtz equation, Effect of concentration on E.M.F- Nernst equation.

UNIT IV

(18 Hrs.)

- 4.1** Types of reversible electrodes –Gas/metal ion, metal/metal ion, metal/insoluble salt/anion, Redox electrodes and amalgam electrodes- Electrode reactions- Nernst equation –single electrode potential- derivation of EMF and single electrode potentials- Standard hydrogen electrode- reference electrodes –standard electrode potentials –sign conventions –Electrochemical series and its significance.

- 4.2 Concentration cell with and without transport- Liquid junction potential- determination- Application of concentration cells –Valency of ions, solubility product and activity coefficient- potentiometric titrations- acid-base, red-ox & precipitation titrations- Determination of pH using hydrogen, quinhydrone and glass electrodes, Determination of Pk_a of acids by potentiometric methods. Redox Indicators in volumetric analysis.

UNIT V

(18 Hrs.)

- 5.1 Irreversible Electrode phenomenon- Over voltage- determination and applications- Corrosion- theories of corrosion- prevention of corrosion.
- 5.2 Polarisation and Passivity- chemical & electrochemical passivity- Polarographic technique- polarogram- determination of half-wave potential- applications: analysis of mixtures.

References:

1. *Principles of physical chemistry*, B.R.Puri & L.R.Sharma.Shobanlan & Nagin Chand & Co, Delhi
2. *Physical chemistry* R.P.Varma & Pradeep
3. *Essentials of Physical Chemistry*, Bahl. B. S., Arun Bahl & Tuli. T. D., S. Chand & Company Ltd. N.Delhi
4. *Electrochemistry*, Samuel Glasston, MacMillan (India) Ltd., N.Delhi.
- 5.. *Modern Electrochemistry*,Bockris. (1970) J. O. M., & Reddy, Volume I & II, Plenum Press, New York
6. *Physical Chemistry*, Moore. W. J., Prentice –Hall, N.Jersey.

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DEPARTMENT OF CHEMISTRY

B.Sc Chemistry – Syllabus
(From the Year 2018 – 2019 onwards)

Elective Course 3 (Major)- Molecular Spectroscopy

Code: 18K6CHELCH3

Hours: 75

Credit: 5

Marks: 100

(15 Hrs.)

UNIT I

- 1.1 Classification of electromagnetic radiation, Electromagnetic radiation- interaction of electromagnetic radiation with molecules and quantization of different forms of energies in molecules. (translational, rotational, vibrational and electronic)- Regions of spectrum-representation of spectra- basic features of a spectrometer.
- 1.2 **Microwave spectroscopy** : Rotation of molecules- moments of inertia -theory of microwave spectroscopy- rotational spectra of diatomic molecules- rigid rotor-selection rule-Effect of isotopic substitution -calculation of moment of inertia and bond length of diatomic molecules- rotational spectrum of non-rigid rotor- rotational spectrum of linear polyatomic molecules (COS only). Instrumentation- basic features only.

UNIT II

(15 Hrs.)

- 2.1 **IR spectroscopy** –condition-molecular vibration of linear and non-linear molecules, modes of vibration of diatomic, tri atomic linear (CO_2) & non-linear tri atomic (H_2O) molecules-Stretching & bending vibrations-selection rules, expression for vibrational frequency (derivation not needed). Calculation of force constant –isotope effect – Applications of IR spectra (group frequencies, finger print region and Hydrogen bonding only)

UNIT III

(15 Hrs.)

- 3.1 **Raman spectroscopy** –condition –Rayleigh and Raman scattering –stokes and anti stokes lines-Difference between Raman and I.R. spectroscopy-Rotational Raman spectra and vibrational Raman spectra of simple diatomic molecules, Application to covalent compounds- Mutual exclusion principle.
- 3.2 **UV –Visible spectroscopy** –condition –theory of electronic spectroscopy –types of electronic transitions-Frank –Condon principle –Pre dissociation –Applications.

UNIT IV

(15 Hrs.)

- 4.1 **N.M.R.Spectroscopy** –magnetic and non-magnetic nuclei-condition –principle of nuclear magnetic resonance-ring current effect-shielding mechanism-chemical shift – Number of signals- Spin–Spin Coupling –coupling constant (J)-splitting of signals – NMR spectra of simple organic compounds.NMR spectrum of ethylalcohol in detail.

UNIT V

(15 Hrs.)

- 5.1 **E.S.R.Spectroscopy** – condition –theory of ESR spectra –Hyperfine splitting –ESR spectra of simple radicals. (H- Hydrogen, CH_3 . methyl, naphthalene negative ion only).
- 5.2 **Mass spectroscopy** – Basic principles of mass spectroscopy, molecular ion peak, base peak, Isotopic peak and meta stable peak –Nitrogen rule and ring rule, Mass

spectrum of simple organic compounds. (Acetaldehyde, Methyl alcohol, CH_3NH_2 & Toluene).

References

1. B.R.Puri & L.R.Sharma, *Principles of physical chemistry*.
2. R.P.Varma & Pradeep, *Physical chemistry*.
3. C.N.Banwell, *Fundamental molecular spectroscopy* .Tata McGraw Hill publications, New Delhi 11 th reprint 1991.
4. William Kemp, *Organic spectroscopy*, ELBS, Second Edition 1987.
5. Dr.S.Jain & S.P.Jankar, *Physical Chemistry, Principles & Problems*, Tata McGraw Hill, New Delhi,1990.
6. B.K.Sen, *Quantum Chemistry & Spectroscopy*.
7. K.V.Raman, *Spectroscopy and Mathematics of Quantum Chemistry*.
8. R.Chang, *Basic Principles of Spectroscopy*
9. Dyer, *Organic Application of Spectroscopy*.
10. Y.R.Sharma, *Elementary Organic Spectroscopy, Principles and Applications*.
S.Chand. New Delhi(1992).

DEPARTMENT OF CHEMISTRY

**M.Sc Chemistry- Syllabus
(From the Year 2018-2019 onwards)**

Core Course 1- Inorganic Chemistry-I

Code: 18KP1CH01

Hours: 90

Credit: 5

Marks: 100

UNIT-I

(18 Hrs)

1. Acid- Base and Ionic bonds

1.1 Usanowich concept —steric and solvation effects— measure of acid-base strength- HSAB principle- classification of acids and bases as hard and soft- acid base strength- hardness and softness- E and C parameters- symbiosis- theoretical basis of hardness and softness.

1.2 Ionic bonding- Lattice energy – derivation of Born lande equation- Kapustinski equation- high Tc super conductors- Solid state reactions.

1.3 Radius ratio rules- calculation of some limiting radius ratio values for CN. 3 (planar triangle) CN. 4 (tetrahedral) and CN.6 (Octahedral) Ionic structures –Fluorite , Rutile, Zinc sulphide.

UNIT-II

(18 Hrs)

2. Co-ordination Chemistry

2.1 Stability of complexes- factors affecting stability of complexes, thermodynamic aspects of complex formation, stepwise and overall formation constants, stability correlation, statistical and chelate effects, determination of stability constant- polarographic, photometric and potentiometric methods.

2.2 Crystal field theory- splitting of d-orbitals under various geometries- factors affecting the magnitude of splitting- CFSE and its evidences (structural and thermodynamic effects)

2.3 Spectrochemical series- Jorgensen relation, Jahn- Teller distortion- spectral and magnetic properties of complexes- site preferences, limitations of CFT, Nephelauxetic effects- the angular overlap model.

UNIT-III

(18 Hrs)

3. Reaction Mechanisms of Transition Metal Complexes

3.1 Inert and labile complexes-kinetic application of valence bond and crystal field theories- kinetics of octahedral substitution- acid hydrolysis- factors affecting acid hydrolysis-base hydrolysis- conjugate base (S_N1 , S_N2 & S_N1_{CB} mechanism)- direct and indirect evidences in favour of conjugate mechanism.

3.2 Substitution reactions in square planar complexes- the trans effect- mechanism of substitution reaction.

3.3 Redox reactions- electron transfer reactions- mechanism of one electron transfer reactions- outer sphere type reactions-cross reactions and Marcus-Hush theory- inner sphere type reactions.

UNIT – IV

(18 Hrs)

4. Nuclear Chemistry

4.1 Nuclear properties- modes of radioactive decay- orbital electron capture, nuclear isomerism, internal conversion, detection and determination of activity- cloud chamber, G.M, scintillation counter.

4.2 Nuclear reactions- types, reaction cross section, Q-value, threshold energy, compound nuclear theory, high energy nuclear reactions, nuclear fission and fusion reactions as energy sources, stellar energy, synthesis of elements, Nuclear reactors – neutron activation and isotope dilution analysis.

UNIT – V

(18 Hrs)

5. Metal Clusters & Inorganic Polymers

5.1 Metal clusters- compounds with metal–metal multiple bonds- bonding in metal clusters- Wade Model- Luhar Model, Capping rule, carbide cluster- clusters having interstitial main group elements. Applications of organo metals C-C and C-N cross coupling reaction.

5.2 Isopoly anions – basic building units of Vanadates, Molybdates, Tungstates ions- Heteropoly anions- structure only.

5.3 Higher boranes- carboranes- metalboranes- metalloboranes - metallocarboranes

References

1. G.Friendlander, J.W.Kennedy and J.M.Miller, *Nuclear and radiochemistry* (unit IV)
2. E.Huheey, *Inorganic chemistry: Principles of structure and reactivity*.
3. F.A.Cotton and G.Wilkinson, *Advanced Inorganic chemistry*.
4. Sisler, *Chemistry in Non-aqueous solvents*.
5. J.D.Lee – fourth edition, *Precise Inorganic chemistry*.
6. K.C.Day and J.Selbin, *Theoretical Inorganic chemistry*.
7. T.Moeller, *Inorganic chemistry*.
8. D.F.Shriven and P.W.Atkins, *Inorganic Chemistry*, Oxford.

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry- Syllabus
(From the Year 2018-2019 onwards)

Core Course 2- Organic Chemistry-I
Code: 18KP1CH02

Hours:90
Credit: 5
Marks: 100

UNIT-I

(18 Hrs)

1. Nomenclature of Organic Compounds and Reaction Intermediates

1.1 Nomenclature of Organic Compounds

IUPAC nomenclature of heterocycles having not more than two hetero atoms such as oxygen, nitrogen and sulphur. Nomenclature of alicyclic, bicyclic and tricyclic compounds.

1.2. Reaction Intermediates.

Free radicals, carbenes, nitrenes, carbanions, carbocations, nitrenium ions and arynes – generation, stability, structure and reactivity- non-classical carbocations.

1.3 Molecular Rearrangement

Carbocation rearrangements- Wagner- meerwein and related 1,2 shifts, Dienone-Phenol, Favorskii, Wolf, Baeyer- Villiger, Stevens, Sommelet- Hauser, Benzidine, Fries and Hofmann rearrangements.

UNIT –II

(18Hrs)

2. Thermodynamic and Kinetic Aspects of Organic Reactions

Energy profiles diagrams – intermediate versus Transition State – Isotope effects. Non kinetic methods – product analysis and its importance. Trapping, testing and detection of intermediates. Evidence from reaction catalysis, cross over experiments, isotope labelling and stereo chemical studies. correlation analysis – Linear Free Energy relationships- Hammett, Taft equations. Significance of σ and ρ - applications.

UNIT – III

(18Hrs)

3. Aliphatic Nucleophilic Substitution

3.1 S_N1 , S_N2 , S_Ni and neighbouring group mechanisms-substitution at an allylic carbon-aliphatic trigonal carbon and vinyl carbon. Effect of substrate, structure, leaving group, attacking nucleophile and solvent. Substitution in norbornyl and bridge head systems. Substitution by ambident nucleophiles. Typical nucleophilic substitution reactions Williamson's Menshutkin, Finkelstein, Von Braun and Wurtz reactions.

3.2 Aliphatic Electrophilic Substitution:

SE_1 , SE_2 , SE_i mechanism. Effect of substrate structure, leaving group attacking electrophile and solvent. Typical reactions to include migration of double bonds, keto-enol tautomerism, halogenation of carbonyl compounds, Friedel – Craft's acylation at olefinic carbon, Stark – Enamine reaction, reactions involving metals as electrophiles and as leaving groups- Decarboxylation of aliphatic acids- aliphatic diazonium coupling.

UNIT – IV

(18 Hrs)

4.1 Aromatic Nucleophilic Substitution

S_NAr , S_N1 , benzyne, SR_N1 mechanisms. Effect of substrate structure, leaving group, attacking nucleophile and solvent. Selected reactions – Ziegler alkylation, Chichibabin reaction- Reactions involving diazonium group as leaving group, Cine substitution – Von Richter reaction.

4.2 Aromatic Electrophilic Substitution:

Arenium ion mechanism- Orientation, Reactivity and mechanism based on transition state theory with suitable reaction, substituents effects- origin of Hammett equation- Principles of Hammett correlation- modified forms of Hammett equation.

UNIT – V

(18Hrs)

5.1 Aromaticity

Concept of aromaticity- Huckel's and Craig's rule- aromatic character in benzene- 5,6,7 and 8 membered rings- heterocyclic systems- (18)annulenes, cyclic propenium Cation, Syndones and fullerenes.

5.2 Heterocyclic Compounds

Synthesis and reactions of Azoles- Pyrazole, Imidazole, Oxazole and thiazole synthesis and reactions of azepine, oxazine, thiazine, pyridazine, pyrimidine and pyrazine.

References :

1. R.Panico, W.H.Powell, L.Jean, C.Richer, *A guide of IUPAC nomenclature of Organic compounds*. (1993)
2. R.S.Cahn and O.C.Dermer, *Introduction to chemical Nomenclature* 5th edn. Butterworths. 1979.
3. M.Harris, *Fundamentals of Organic reactions mechanisms*, John-wiley.
4. R.K.Bansal, *Organic reactions mechanisms*, Tata McGraw Hill,1962.
5. I.L.Finar, *Organic Chemistry Vol-II*, 5th edn. ELBS 1975.
6. Jerry march, *Advanced Organic Chemistry – Reaction Mechanism and Structure*, 4th edn., Wiley 1999.
7. F.A.Carey and R.J.Sundburg, *Advanced Organic Chemistry, Parts A and B*, Plenum, 3rd edn., 1984 vol I & II.
8. H.O.House, Benjamin, *Modern Organic Reactions*.
9. Peter Sykes, Longman, *A Guide Book to Mechanism in Organic Chemistry*.
10. Hetero cyclic Chemistry Acheson

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry- Syllabus
(From the year 2018-2019 onwards)

Core Course 3 - Inorganic Chemistry Practical - I

Code: 18KP1CH03P

Hours: 90

Credits: 4

Marks: 100

- 1. Semi micro qualitative analysis of a mixture containing two common cations and two ions containing the following less familiar elements- Ti, W, Se, Tl, Mo, Ce, Th, Zr, V, Be, U, Li etc.**

- 2. Colorimetric Estimation of Copper, Ferric, Nickel, Chromium and Manganese using photoelectric colorimeter.**

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry- Syllabus
(From the year 2018-2019 onwards)
Core Course 4 - Organic Chemistry Practical - I

Code: 18KP1CH04P

Hours: 90
Credits: 5
Marks: 100

- 1. Qualitative analysis of an Organic mixture containing two components. Pilot separation, bulk separation, analysis and derivatization.**
- 2. Preparation of organic compound (single stage)**
 - a) Methyl-m-nitrobenzoate from methyl benzoate (nitration)**
 - b) Glucose pentaacetate from glucose (acetylation)**
 - c) Benzophenone oxime from benzophenone (addition)**
 - d) O-chlorobenzoic acid from anthranilic acid (Sandmeyer Reaction)**
 - e) Phenylazo-2-naphthol from aniline (diazotisation)**
- 3. Paper Chromatography- separation of amino acids (anthranilic acid and n-methyl anthranilic acid) and carbohydrates (glucose and fructose)**

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry Major - Syllabus
(From the Year 2018 – 2019 onwards)
Elective course 1 (Major) - Green Chemistry

Code: 18KP1CHELCH1

Hours:90
Credits :4
Marks: 100
(18 hrs)

Unit – I

UNIT-I Introduction to green chemistry:

Green chemistry Need for Green chemistry, Anastas' twelve principles of green chemistry - Tools of green chemistry: alternative starting materials, reagents, catalysts, solvents and processes with suitable examples.

UNIT-II Microwave mediated organic synthesis (MAOS): (18 hrs)

Microwave activation – advantage of microwave exposure- specific effects of microwave- Neat reactions- solid supports reactions- Functional group transformations- condensations reactions- oxidations- reductions reactions- multi-component reactions.

UNIT III Ionic liquids and PTC (18 hrs)

Introduction- synthesis of ionic liquids- physical properties- applications in alkylation- hydroformylations- epoxidations- synthesis of ethers- Friedel-craft reactions- Diels-Alder reactions- Knoevengal condensations- Wittig reactions- Phase transfer catalyst- Synthesis- applications.

UNIT IV Supported catalysts and bio-catalysts for Green chemistry (18 hrs)

Introduction- the concept of atom economy- supported metal catalysts- mesoporous silicas- the use of Biocatalysts for green chemistry- modified bio catalysts- fermentations and biotransformations- fine chemicals by microbial fermentations- vitamins and amino acids- Baker's yeast mediated biotransformations- Bio-catalyst mediated Baeyer-Villiger reactions- Microbial polyester synthesis.

UNIT V Alternative synthesis, reagents and reaction conditions: (18 hrs)

A photochemical alternative to Friedel-crafts reactions - Dimethyl carbonate as a methylating agent- the design and applications of green oxidants- super critical carbon dioxide for synthetic chemistry.

References:

- 1. Green Chemistry – Environmentally benign reactions – V. K. Ahluwalia. Ane Books India (Publisher). (2006).**
- 2. Green Chemistry – Designing Chemistry for the Environment – edited by Paul T. Anastas & Tracy C. Williamson. Second Edition, (1998).**
- 3. Green Chemistry – Frontiers in benign chemical synthesis and processes- edited by Paul T. Anastas & Tracy C. Williamson. Oxford University Press, (1998).**
- 4. Green Chemistry – Environment friendly alternatives- edited by Rashmi Sanghi & M. M. Srivastava, Narora Publishing House, (2003).**

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry- Syllabus
(From the year 2018 – 2019 onwards)
Core Course 5 – Organic Chemistry – II

Code: 18KP2CH05

Hours: 90
Credit: 5
Marks:100

Unit – I

(18 Hrs)

1. Stereochemistry I

- 1.1 Principles of Symmetry – Stereo isomerism –Optical isomerism – definitions – conventions used in Stereo chemistry – Perspective formula (wedge formula) Newman, Sawhorse and Fischer notations, inter conversions and representations.**
- 1.2 Optical activity and Chirality, types of molecules exhibiting optical activity-creation of chiral centre at carbonyl group, configuration – D&L notation, R & S notation. Molecules with more than one chiral centre- molecular chirality- Atropisomerism – Stereo Chemistry of Biphenyls, Allenes and Spirans. Configurations in mono and bicyclic ring systems. E & Z isomers.**

Unit – II

(18 Hrs)

2. Stereochemistry II

- 2.1 Methods of determining configuration- Absolute and Relative configuration. Racemic modification- properties and resolution of Racemic compounds.**
- Walden inversion – Asymmetric synthesis based on Cram’s Rule- Prolong rule.**
- Determination of Configuration of Geometrical isomers. Enantiotropic behaviour and Prochiral centres.**
- 2.2. Stereochemistry of Overcrowded molecules – Ansa Compounds, Cyclophanes and Hexahelicane.**
- 2.3. Conformations of cyclic and bicyclic ring systems – cis and trans, Nomenclature of substituted Cyclohexanes, Conformation of Cyclohexane, mono and disubstituted Cyclohexanes, Decalins.**

Unit - III**(18 Hrs)****3. Organic photo chemistry**

Fundamental concepts –Jablonski diagram- energy transfer characteristics of photo reaction and photooxidation- photoreaction of ketones and enones- Norrish type I & II reactions- photochemistry of alkenes, dienes and aromatic compounds- photo sensitization- photo additions - Barton reaction- Paterno- Buchi reaction.

Unit –IV**(18 hrs)****4. Pericyclic Reactions**

Molecular Orbital Symmetry - Frontier Orbital of Ethylene, 1,3 Butadiene, 1,3,5 Hexatrienes and Allyl system. Classification of Pericyclic Reactions. Woodward – Hofmann Correlation diagram - FMO and PMO approach. Electrocyclic reactions - Conrotatory and Disrotatory motions- $4n$, $4n+2$ and allyl systems, Cyclo additions – antarafacial and suprafacial additions, $4n$ and $4n+2$ systems, 2+2 addition of ketenes. Sigmatropic rearrangements – Suprafacial and antarafacial shifts of H, sigmatropic shifts involving carbon moieties, 3,3– sigmatropic rearrangements- Claisen, Cope and Aza – Cope rearrangements. Fluxinonal tautomerism –Ene reaction.

Unit -V**(18 hrs)****5. Natural Products.**

5.1 Alkaloids: Structural elucidation and synthesis of Papaverin and Morphine.

5.2 Terpenoids: Structural elucidation and Synthesis of α -Pinene, Camphor and Zingiberene.

5.3 Steroids: Structural elucidation and Synthesis of Cholesterol, conversion of Cholesterol to Progesterone and cortisone.

5.4 Antibiotics: Structure and synthesis of Pencillin, Streptomycin and Cephalosporin.

References

- 1. Advanced Organic Chemistry, Reactions, Mechanisms and Structure, Jerry March, John Wiley & Sons.**
- 2. Stereochemistry of Carbon Compounds, E.L. Eliel, McGraw Hill.**
- 3. Organic Chemistry ,I.L. Finar, Vol.I & II, ELBS.**
- 4. Chemistry of organic natural products Vol I & II , O.P. Agarwal, 1997 Goel Publications.**
- 5. Advanced Organic chemistry, Parts A and B, Plenum, 3rd. edn., F.A. Carey and R.J. Sundburg, 1984.**
- 6. Photochemistry & Pericyclic reactions- Jagadambasingh, Jayasingh- New Inte**

DEPARTMENT OF CHEMISTRY

**M.Sc Chemistry- Syllabus
(From the year 2018-2019 onwards)**

Core Course 6 - Physical Chemistry – I

Code: 18KP2CH06

**Hours: 9
Credits: 4
Marks: 100**

UNIT I

(18 Hrs)

1. Quantum Chemistry I:

- 1.1 Classical Mechanics- General Principles and basic assumptions- inadequacy of classical mechanics- Wave, Particle dualism- de Broglie relation- Uncertainty Principle- Postulates of Quantum Mechanics- functions, operators and operator algebra- Linear vector space and operators in linear vector space- Eigen value and Eigen functions- Solving Eigen value equations by secular equations.**
- 1.2 Setting –up of Schrodinger wave equation- Angular momentum operators and their eigen values- interpretation of amplitude and probability functions.**

UNIT II

(18 Hrs)

2. Quantum Chemistry II

- 2.1 Applications of wave mechanics to particles in one dimensional box and particle in a three dimensional box- Quantum numbers- Zero point energy- concept of Orthogonalization and Normalization.**
- 2.2 Spherical polar coordinates- Laplacian and angular momentum operators in terms of spherical angular coordinates (derivation not needed)- Rigid rotor- Harmonic oscillator- rotational and vibrational quantum numbers- selection rules for rotational and vibrational transitions- Bohr's correspondence principle- Hydrogen atom- shapes and nodal properties of orbitals.**

UNIT III

(18Hrs)

3 Electrochemistry

- 3.1 Theories of electrical double layer- electro kinetic phenomena- Zeta potential- electro capillary phenomenon- Lippmann potential.**
- 3.2 Energy barrier at electrode-electrolyte interface- over potential, hydrogen over voltage, Butler-Volmer equation- Tafel equation and Nernst equation.**
- 3.3 Transport of ions in solution: Electrolytic conduction, Debye-Huckel-Onsager treatment of strong electrolytes and its applicability to real solutions- extensions of Debye-Huckel-Onsager theory.**
- 3.4 Fuel Cells: Definition, efficiency requirements- high temperature and low temperature fuel cells- H₂-O₂ fuel cells (Bacon fuel cell), hydrocarbon- oxygen fuel cells- applications.**

UNIT IV

(18 Hrs)

4. Group Theory

- 4.1 Properties of a Group, sub-groups and classes- Abelian, cyclic and non-Abelian groups- multiplication tables- Symmetry elements and symmetry operations- point groups of molecules- matrix representation of geometric transformation- consequences of Great Orthogonality Theorem and construction of Character Table for C_{2v} , C_{3v} point groups- Character, reducible and irreducible representations
- 4.2 Applications of Group Theory: Evaluation of energies and MOs for system like ethylene, butadiene and benzene- hybridization schemes for σ and π bonding- symmetry adapted linear combinations (SALC) procedure. Symmetry functioning of secular determination of butadiene.

UNIT V

(18Hrs)

5. Surface Phenomena

- 5.1 Surface Phenomena: Adsorption and free energy relation at interfaces- Gibb's adsorption isotherm- physisorption and chemisorption- Langmuir and BET isotherms- surface area determination.
- 5.2 Homogeneous catalysis: Acid-base catalysis- general and specific mechanism of acid-base catalysis- Bronsted catalysis law- salt effects- Hammett- Deyrup acidity function- Enzyme Catalysis- Mechanism of single substrate reactions- Michaelis-Menten law- influence of temperature and pH
- 5.3 Heterogeneous Catalysis: Role of surface in catalysis- semiconductor catalysis- n and p-type surface- Kinetics of surface reactions involving adsorbed species. Langmuir-Hinshelwood mechanism- Langmuir-Rideal mechanism- Hydrogenation of ethylene.

References

1. *Mathematics for Quantum Chemistry*, J.M.Anderson, Benjamin.
2. *Introductory Quantum Chemistry*, A.K.Chandra, Tata-McGraw Hill.
3. *Quantum Chemistry*, R.K.Prasad, Wiley Eastern Ltd.
4. *Molecular Quantum Mechanics*, P.W.Atkins, Clarendon
5. *Quantum Chemistry*, Ira. N. Levine, Pearson Education.
6. *Chemical Kinetics*, K.J.laidler, Tata- Mc Graw Hill.
7. *Physical Chemistry*, P.W.Atkins,
8. *Physical Methods in Chemistry*, R.S.Drago, W.B.Sanders.
9. *Physical chemistry of surfaces by A.W. Adamson.*

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry- Syllabus
(From the year 2018-2019 onwards)

Core Course 7 - Inorganic Chemistry Practical - II

Code: 18KP2CH07P

Hours:90

Credits: 4

Marks:100

1. Titrimetry and Gravimetry

Analysis of mixtures using volumetric and gravimetric methods.

Cu (V) and Ni (G)

Cu (V) and Zn (G)

Fe (V) and Zn (G)

Fe (V) and Ni (G)

Zn (V) and Cu (G)

2. Complexometric titrations involving estimations of Ca, Mg, Ni, Zn and hardness of water.

3. Preparation of the following complexes;

Tetramminecopper(II)sulphate

Potassium trioxalatochromate(III)

Potassium trioxalatoaluminate(III)

Trithioureacopper(I) chloride

Trithioureacopper(I) sulphate.

DEPARTMENT OF CHEMISTRY
M.Sc., Chemistry- Syllabus
(Form the year 2018-2019 onwards)

Core Course 8 - Organic Chemistry Practical - II

Code: 18KP2CH08P

Hours:90

Credits: 5

Marks: 100

- 1. Quantitative Analysis of Organic Compounds.**
Estimation of phenol, aniline, ketone, glucose, nitrobenzene.

- 2. Analysis of oils: Saponification and Iodine values of an oil.**

- 3. Preparation of organic compounds (Double Stage)**
 - a) p-bromo acetanilide from aniline (Acetylation and Bromination)**
 - b) Acetyl salicylic acid from methyl salicylate (Hydrolysis and acetylation)**
 - c) P-nitroaniline from acetanilide (nitration and hydrolysis)**
 - d) Benzanilide from benzophenone (rearrangement)**
 - e) P-amino benzoic acid from p-nitro toluene (oxidation and reduction)**

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry Major - Syllabus
(From the Year 2018 – 2019 onwards)
Elective course 2 (Major) - Industrial Chemistry

Code: 18KP2CHELCH2

Hours:90

Credits :4

Marks: 100

Unit – I

(18 hrs)

Basic ideas about unit operation – Flow charts – Chemical conversion – Batch versus continuous processing – Chemical process selection – Design – Chemical process control- Chemical process economics – Market evaluation – Plant location – Management for productivity and creativity – Research & Development and its role in chemical industries.

Unit – II

(18 hrs)

Pulp and paper industries- Sulphite, sulphate, soda, ground wood pulp for paper- manufacture of paper- speciality paper- paper stock- structural boards. Soaps and detergents- manufacture- evaluation methods and application of detergents- liquid detergents, soaps- cleansing action biodegradability of surfactants- methods.

Unit – III

(18 hrs)

Dyes Introduction- sensation of colour- colour and constitution- nomenclature-basic operations in dyeing classification of dyes according to the mode of application- synthesis, reaction and applications of diphenylmethane dyes-triphenylmethane dyes-phthalein dyes-xanthene dyes-acridine dyes-sulphur dyes-cyanine dyes.

Unit – IV

(18 hrs)

Limes and Cements- Introduction- Classification of limes- manufacture of lime; Properties of lime, gypsum, Portland cement, composition of cement- setting and hardening of cement- Types of cement- Additives to cement.

Glasses: Introduction- manufacture of glasses- Types of glasses- Boro silicate glass, Alumino silicate glass, lead silicate glass, quartz glass, opal glass- structure of glass.

Unit – V

(18 hrs)

Sugar- Manufacture- Starch and related products- Miscellaneous starch. Manufacture of industrial alcohol- Butanol- Acetone- Vinegar- CH₃COOH, Citric acid, Lactic acid- all by fermentation. Industrial and Military Explosives- Manufacture- Pyro techniques- manufacture of safety matches.

References

1. **Chemical Process Industries – Norrish Shreve, R. and Joseph A. Brink Jr. McGraw Hill, Industrial Book Company, London.**
2. **Production and Properties of Industrial Chemicals – Brain A. C. S. Reinhold – New York.**
3. **Petroleum Products Hand Book. Guthrie V., McGraw Hill, Tokyo.**
4. **Industrial Chemistry (Including Chemical Engineering) – B. K. Sharma (10th Edition)**
5. **Outlines of Chemical Technology – For the 21st Century – M. Gopala Rao & Matshall Sittig (3rd Edition)**
6. **Source Book on Atomic Energy by S. Glasstone**
7. **Charles E. Carraher, Polymer chemistry, 6th edn, Marcel Dckker, Brijbasi Art Pvt.Ltd, 2003.**
8. **F.W.Billmeyer, Jr., A Text Book of Polymer Science, John Wiley and Sons, New York, 1971.**
9. **V.R.Gowariker, N.V. Viswanathan and Jayadev Sreedhar, Polymer Science, New Age Publishers,New Delhi, 1986.**
8. **Production and properties of Industrial chemicals-Brain A.C.S Reinhold- New York.**
9. **Industrial chemistry (Including Chemical Engineering)- B.K. Sharma (10th Edition).**

DEPARTMENT OF CHEMISTRY
M.Sc., Chemistry – Syllabus
(From the year 2018 -2019 onwards)
Self Study Course 1 - Instrumental Methods of Chemical Analysis

Code: 18KP2SSCH1

Credit: 5
Marks: 100

UNIT – I

- 1. Introduction**
- 1.1 Classification of quantitative methods of analysis, Sampling – Preparing a laboratory sample, Mixing solid laboratory sample – separation – precipitation and solvent extraction – extraction techniques.**
- 1.2 Error Analysis- Types of errors – significant figures – Precision and Accuracy – Confidence Limits – Comparison of data – T- test, χ^2 -test.**

UNIT – II

- 2. Chromatographic Methods**
- 2.1 Paper Chromatography-descending chromatography, ascending chromatography-Ascending – Descending chromatography, Radial Paper chromatography, Two-dimensional chromatography, Zone electrophoresis.**
- 2.2 Thin Layer Chromatography – Coating materials, preparation of thin layers in plates – development of the chromatogram, evaluation.**
- 2.3 Column chromatography – Adsorbent – Adsorbate – preparation of column, solvents used, detectors, methods of introducing the solution, analysis.**
- 2.4 Gas chromatography – Basic components of gas chromatographs – carrier gas – sample introduction system, columns, temperature – control system. Evaluation – retention volume, resolution.**
- 2.5 High performance liquid chromatography – instruments, high performance partition chromatography, high performance size exclusion chromatography – supercritical – fluid chromatography.**

UNIT – III

- 3. Spectral Methods – I**
- 3.1 Microwave spectroscopy: Instrumentations source and Monochromator, sample and sample space, detector and spectrum analyzer.**
- 3.2 Infra- red absorption spectrometry: Instruments for infra- red spectrometry – IR radiation sources, Monochromators, sample cells, sampling of substances and detectors. Typical instruments – Dispersive instruments, Photoacoustic IR instrument, Fourier Transform spectrometers, Non – dispersive instrument.**
- 3.3 Raman spectrometry: Instrumentation – source, sample illumination systems, Raman spectrometer, comparison of Raman and IR samples – Handling techniques, comparison of Raman & IR instrumentation.**
- 3.4 Visible spectrometry & Colorimetry : Instrumentation – Radiation sources, filters and monochromators, sample holder and detectors. Visual Comparators, Photo – electric colorimeter, Manual spectrometer, and Recording spectrometer.**

- 3.5 Ultra violet spectrometry :Instrumentation – Radiation source, monochromators, detectors, recording system, sample cells.Description of a UV spectrophotometer.

UNIT – IV

4. Spectral Methods –II
- 4.1 NMR spectrometry: Instrumentation – continuous wave instrument, FT NMR instrument, sample handling, cost of NMR instrument.
- 4.2 ESR spectrometry: Instrumentation – source, circulator, sample cavity, magnet system, detectors and recorder. Working method, ENDOR,ELDOR
- 4.3 Mossbauer spectrometry : Instrumentation
- 4.4 X- ray spectroscopy : Instrumentation – sources, collimator, monochromator and detectors.
- 4.5 Photo electron spectroscopy: Instrumentation – source and sample holder, analyzers, detectors, magnetic shielding.

UNIT – V

5. Thermal and Electrical Methods
- 5.1 Thermal methods: Thermo gravimetric analysis – principle, TG curve, instrumentation for TGA – balance, sample holder, furnace, temperature measurement, recorder, thermo balance – Differential Thermal Analysis – principle, instrumentation – Thermometric titration – principle – instrumentation.
- 5.2 Electrogravimetry : Theory , instrumentation for constant methods, potentiostatic gravimetry – instrumentation.
Polarography : Introduction, apparatus , cells.

References

1. Principles of instrumental Analysis, Douglas A.Skoog, HRW International Editions
2. Fundamentals of Analytical Chemistry,7th ed., Douglas A.Skoog, Donald M.West and F.James Holler.
3. Instrumental Methods of Analysis, 7th ed., H.H.Willard, L.L.Merritt Jr., J.A.Dean and F.A.Settle,New York: Wadsworth, 1988.
4. Instrumental Methods of Chemical Analysis, Gurdeep R.Chatwal and Sham Anand, Himalaya Publishing House.
5. Elementary Organic Spectroscopy, Principles and chemical applications, Y.R.Sharma and O.P.Vig.
6. Introduction to NMR Spectroscopy,R.J.Abraham,J.Fisher and P.Loftus,Wiley.
7. Physical Methods for Chemistry, R.S.Drago, Saunders Company.
8. Introduction to Photoelectron spectroscopy, P.C.Ghosh, John Wiley.
9. Modern Methods of Chemical Analysis, Peasock
10. Statistical Treatment of Experimental Tata, Young
11. Vogel's Text of Quantitative Inorganic Analysis, J.Basset, R.C Denney, G.H.Jeffery & J.Mendham, ELBS

DEPARTMENT OF CHEMISTRY
M.Sc., Chemistry Major - Syllabus
(From the Year 2018 – 2019 onwards)
Core Course CC 9 – Organic Chemistry – III

Code: 18KP3CH09

Hours:90

Credit:5

Marks100

Unit –I

(18 Hrs)1.

Addition and

Elimination reactions

- 1.1 Addition to Carbonyl Compounds Mannich, Crossed Cannizzaro, Stobbe, Benzoin, Dorzon's glycidic ester condensation, Wittig reaction, Nazarov cyclization, Koch reaction.**
- 1.2 Stereochemistry of Elimination of Hoffman and Saytzeff rules – Competition between elimination and substitution reactions- Chugaev reaction dehydration of alcohols – dehydrohalogenation – Hoffman degradation – Cope elimination – Bret's rule- Bamford Stevens reaction, Epi-oxy elimination.**

UNIT –II

2. Reagents in Organic Synthesis

(18 Hrs)

2.1 Reduction

Catalytic hydrogenation and dehydrogenation selection in reduction- Reduction with LiAlH₄, NaBH₄ and hydrazine, DIBAL, Lithium di isopropylamide, Gilman's reagents, DDQ.

2.2 Oxidation

Oxidations with chromyl chloride, periodic acid, Selenium dioxide, lead tetra acetate, Osmium tetroxide and H₂O₂.

UNIT –III

(18 Hrs)

3. Applications of UV and IR Spectroscopy

3.1 Ultraviolet and Visible Spectroscopy.

Various electronic transitions (185 – 800 nm), Beer – Lambert law, effect of solvent on electronic transitions, Ultraviolet bands for Carbonyl Compounds, Unsaturated Carbonyl Compounds, Dienes, Conjugated Polyenes, Fischer – Woodward rules for Conjugated Dienes and Carbonyl Compounds, Ultraviolet Spectra of Aromatic and Heterocyclic Compounds. Steric effect in Biphenyls.

3.2 Infrared Spectroscopy

Characteristic vibrational frequencies of Alkanes, Alkenes, Alkynes, Aromatic compounds, Alcohols, Esters, Phenol and Amines. Detailed study of vibrational frequencies of Carbonyl Compounds (ketones, aldehydes, esters, amides, acids, anhydrides, lactones, lactams and conjugated carbonyl compounds). Effect of Hydrogen Bonding and Solvent Effect on Vibrational frequencies.

UNIT –IV

(18 Hrs)

4. Applications of NMR Spectroscopy

4.1 Proton Magnetic Resonance Spectroscopy.

General introduction to NMR- Correlation of Protons bonded to carbon (aliphatic and aromatic) and other nuclei (hydrocarbons, alcohols, phenols, carboxylic acids, amines, amides, carbonyl compounds and esters), Chemical exchange, Effect of Deuteration, Spin – Spin interaction including long range coupling (first order spectra), Virtual Coupling. Simplification of complex spectra - nuclear magnetic double resonance, contact shift reagents, solvent effects. Fourier transform technique, Nuclear Overhauser Effect (NOE).

4.2 Carbon 13 - NMR Spectroscopy

General considerations - Chemical Shift (aliphatic, olefinic, alkynes, aromatic, hetero aromatic and carbonyl carbon), coupling constants. Two dimension NMR spectrometry – COSY, NOESY and DEPT techniques.

UNIT -V

(18 Hrs)

5. Applications of Mass Spectroscopy and ORD

5.1 Mass Spectroscopy

Introduction – Principles - molecular ion peak, metastable peak, Isotope Peaks, Mc Lafferty Rearrangement - Nitrogen Rule - Mass Spectral fragmentation of Organic Compounds with respect to their structural determination.

5.2 Optical Rotatory Dispersion (ORD) and Circular Dichroism (CD).

Definition, Cotton effect, deduction of Absolute Configuration- Axial HaloKetone Rule-Octant Rule of Ketones.

5.3 Combined spectroscopy problems.

References:

1. *Advanced Organic Chemistry, Reactions, Mechanisms and Structure*, Jerry March, John Wiley & Sons.
2. *Advanced Organic Reaction Mechanism* P.S.Kalsi
3. *Organic Reaction Mechanism* R.K.Bansal, Tata McGraw Hill.
5. *Applications of Spectroscopy of Organic Compounds*, J.R. Dyer, Prentice Hall.
6. *Introduction to Molecular Spectroscopy*, G.M. Barrow, McGraw Hill.
7. *Elementary Organic Spectroscopy, Principles and Chemical Applications*, Y.R.Sharma , S.Chand & Company Ltd.
8. *Spectrometric Identification of Organic Compounds*, R.M.Silverstein and F.X.Webster, John Wiley & Sons.
9. *Organic Spectroscopy*, W.Kemp, MacMillan.
10. *Spectroscopy of Organic Compounds*, P.S.Kalsi, New Age International Publishers.

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry
(From the Year 2018– 2019 onwards)
Core Course CC 10 - Spectroscopic methods

Code: 18KP3CH10

Hours: 90

Credit: 5

Marks :100

Unit –I

(18 hrs)

1. Electronic spectroscopy:

Electronic configuration, terms, states and micro states, Derivation of term symbols (p²,d²) and arranging the various terms according to their energies. Spectroscopy terms- effect of inter electronic repulsion and spin-orbit coupling- Racah parameters A, B and C, RS coupling and j-j coupling. Selection rule- Group theoretical explanation. Splitting of orbitals in octahedral field-hole formalism Ground states of free ions for dⁿ systems- Oh and T_d systems and the corresponding energy level diagrams-mixing of orbitals. Orgel diagram- characteristics-prediction and assignment of transition for dⁿ weak field cases.

Unit –II

(18 hrs)

2.1 Unifying principle: Electromagnetic radiation (EMR) - interaction of EMR with matter- absorption, emission, transmission, reflection, dispersion, polarization and scattering. Uncertainty relation- natural line width, Transition probability.

2.2 Microwave spectroscopy: The rotation of molecules- Selection rules – Stark effect, Molecular rotation- Nuclear spin Coupling. Rotational energy of Symmetric top molecules- Selection rules and spectra of asymmetric top molecules –Isotopic mass and Inter-nuclear distance from microwave spectral studies.

Unit –III

(18 hrs)

3.1 Infrared spectroscopy: The vibrating diatomic molecule- The diatomic vibrating rotator- selection rules- Harmonic and Anharmonic oscillator-Breakdown of Born-Openheimer approximation. The interaction of rotations and vibrations-Vibrations of poly atomic molecules. Parallel and perpendicular bonds-Calculations of force constants, anharmonicity constants, dissociation energy and zero point energy-isotopic substitution.

3.2 Raman spectroscopy: Raman effect-elastic and inelastic scattering- selection rules- pure rotational Raman spectra- Vibrational Raman spectra- polarization of light and Raman effect- Comparison of IR and Raman spectra- Fermi resonance- Laser Raman spectroscopy- Techniques and Instrumentations (principles only). Structural determinations of simple molecules.

Unit-IV**(18 Hrs)**

- 4.1 Electronic spectroscopy: Born oppenheimer approximation Vibrational coarse structure-Frank-Condon Principle-Dissociation energy and dissociation products. Rotational fine structure of electronic vibrational transitions-The Fortrat diagram – pre-dissociation-electronic angular momentum in diatomic molecules.**
- 4.2 NMR spectroscopy: Spin and applied magnetic field- Larmor precession- relaxation processes- PMR chemical shift- Coupling constant- spin-spin interaction- Fourier transform NMR-C¹³ NMR spectroscopy –chemical exchange.**

Unit-V**(18 Hrs)**

- 5. ESR and Photoelectron Spectroscopy**
- 5.1 ESR spectroscopy: Basic principles and features of ESR spectra – line shape and line widths-the g-value-spin densities and Mc connel relationship – hyper fine splitting-origin of hyperfine interactions-ESR and molecular orbital theory –zero field splitting and krammer’s degeneracy in ESR-applications of ESR to some simple systems.**
- 5.2 Photoelectron spectroscopy: Atomic and molecular Photoelectron spectroscopy Instrumentation-source and sample holder, analyzers, detectors, magnetic shielding. Ultra violet and X- ray Photo electron spectroscopy-principles- Auger electron spectroscopy-electron spectra in chemical analysis and applications.**

References:

- 1. C.N.Banwell.Fundamentals of molecular spectroscopy, ,Tata McGraw Hill .**
- 2. R.S.Drago,Physical methods for chemistry.Saunders Company**
- 3. G.Bartow , “Introduction to molecular spectroscopy” , McGraw-Hill .**
- 4. P.K.Ghosh,”Introduction to Photo electron spectroscopy” John Wiley.**
- 5. R.Chang, “Basic Principles of Spectroscopy”,McGraw Hills.**
- 6. .J.M.Hollas, “Modern Spectroscopy”,John Wiley.**
- 7. J.R.Dyer, “Applications of Spectroscopy of Organic compounds”,Prentice Hall.**
- 8. Y.R.Sharma, “Elementary Organic Spetroscopy,Principle and applications”,S.chand and Company Ltd.**

DEPARTMENT OF CHEMISTRY
M.Sc., Chemistry- Syllabus
(From the year 2018-2019 onwards)

Core Course 11 - Physical Chemistry Practical I

Code: 18KP3CH11P

Hours:90

Credit: 4

Marks: 100

- 1. Molecular weight determination by Rast's method**
- 2. Molecular weight of a solute by transition temperature method.**
- 3. Adsorption of oxalic acid on charcoal using Freundlich isotherm.**
- 4. Chemical Kinetics:**
 - (a) Determination of rate constant for the hydrolysis of esters (ethyl or methyl acetate) by acids at different temperatures. Comparison of acid strengths. Evaluation of Arrhenius parameters E_a and A**
 - (b) Base catalyzed hydrolysis of an ester.(2nd order kinetics)**
 - (c) Determination of rate constant of the reaction between persulphate and iodide ions.**
 - (d) Kinetics of iodination of acetone by strong acid.**
- 5. Study of phase equilibria of**
 - (a) Simple eutectic system**
 - (b) Binary systems forming compounds with congruent melting point.**
 - (c) Binary systems forming solid solutions**
 - (d) Partially miscible liquid system- Phenol-Water system. Influence of added impurity on the CST of phenol-water system. (NaCl, KCl, Succinic acid)**

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry Major - Syllabus
(From the 2018 – 2019 onwards)
Elective course 3 (Major) - Research Methodology & Current Trends In Chemistry

Code: 18KP3CHELCH3

Hours:90

Credits :4

Marks: 100

Unit – I

(18 hrs)

1. Research Methodology

Selection of the research problem-Sampling techniques – random sampling-data collection, processing and analysis of data, thesis writing – bibliography - preparation of manuscripts-full paper, preparation of seminar paper for oral presentation, short communications-review paper, use of computer browsing for literature search and downloading-basics of Internet services-various sources of abstracts, articles and papers for browsing and downloading.

Unit- II

(18 hrs)

2. Computer applications

2.1 C-Programming

a) Structure of a C program- Data types, Variables, Constants, Keywords, Operators, Expression.

b) Control structure-if, if-else, nested if-else, while, while-do, for, nested for, go to, continue, break, switch case statements.

2.2 C-Programming - Applications

a) Arrays-user defined functions (recursion, call by value and call by reference)-String functions.

b) Pointers-pointer Expressions, Introduction to OOPS.

2.3 Applications

(i) Bohr radius

(ii) Average, RMS and Most probable Velocities of gas molecules

(iii) Rate constant for a first order reaction.

Unit-III

(18 hrs)

Hyphenated Techniques

3.1 GC- MS, HP-TLC, LC-MS etc, Principle and applications.

3.2 Ion Exchange and affinity chromatography principle and applications.

3.3 Solvent Extraction method in analysis- principle, classification, theory, instrumentation and applications

Unit-IV

(18 hrs)

4. Nanochemistry

- 4.1 Introduction-definition of nano dimensional materials, size effect ,importance of Nano materials, simple examples of unique properties of nanosized materials, Investigation of materials in the nano scale-electron microscope. Carbon clusters and nano structure-Nature of carbon bond, carbon clusters, cluster formation and growth, Fullerenes-Discovery of C_{60} , super conductivity in C_{60} , larger and smaller fullerenes.
- 4.2 Carbon nano tube-synthesis and purification of carbon nano tube-mechanism of growth, properties, application of carbon nano tube, Nano wires-properties and applications. Semi conductor Quantum Dots. Nano medicines-for oral & Nasal administrations, diagnostic applicaton. Gold nano particles.

Unit- V

(18 hrs)

5. New synthetic methods

- 5.1 Retro synthetic analysis of mono and difunctional open chain target molecules. Retrosynthetic analysis of monocyclic and bicyclic target molecules. Modern methods of functional group interconversions involving C=O, CHO, -OH, -SH, -COOH, C=C, -NH₂ ,-COOR functional groups.
- 5.2 Supramolecular chemistry: Introduction, Crown ethers-synthesis of [18]Crown-6,bibenzo-18-Crown-6,diamino Crown and azocrown, Application of crown ethers-Phase transfer catalysis. Catenanes and their synthesis.

References:

1. Anderson,"Thesis and assignment writing" Prentice Hall.
2. K.V.Raman,"Computer in chemistry",Tata McGraw Hill.New Delhi,1990.
3. E.Balagurusamy,"Progrmming in C", Tata McGraw Hill.New Delhi,1991
4. M.M.Sharma,Green chemistry Environmentally Friendly Alternatives,(2006)Narosa publishing House Pvt.Ltd.,New Delhi.
5. V.K.Ahluwalia,Green chemistry Environmentally Benign Reaction,(2006)Ane Books India,New Delhi
6. T.Pradeep,Nano The Essentials(2007) Tata McGraw Hill publishing company limited New Delhi
7. P.S.Kalsi,J.P.Kalsi, Bioorganic,Bio inorganic and Supramolecular chemistry,(2007)New Age International(P) Ltd,publishers.
8. Skoog DA, Loory JI and saunder WB, Principles of Instrumental Analysis.
9. Skoog DA, West DM, Holler Fj and saunder WB, fundamentals of Analytical chemistry.
10. Basic concepts of Analytical chemistry by S.M. Khopkar- New age International Publishers.
11. F.J. welcher: standard methods of chemical anaisis, 6th Ed. Vol. I and II.

DEPARTMENT OF CHEMISTRY

**M.Sc., Chemistry - Syllabus
(From the Year 2018 - 2019 onwards)**

Elective Course 4 (Major) - Medicinal Chemistry

Code: 18KP3CHELCH4

**Hours: 90
Credit: 4
Marks: 100**

Unit I (18 hrs)

1. Chemistry of Biomolecules

- 1.1 Metabolism of Biomolecules, Disorders relating to Metabolism of Biomolecules. Major Intra and Extracellular electrolytes- Role of major physiological cations and anions- Electrolytes used in replacement therapy. (Elementary treatment only)**
- 1.2 Physiological Acid- Base balance and Therapy, water, sodium, potassium and Hydron metabolism.**
- 1.3 Nutrition- composition of foods and balanced diet biological oxidations and bioenergetics.**
- 1.4 Organic pharmaceutical aids- their role as preservatives, antioxidants, colouring, flavouring and sweetening agents, emulsifying agents, stabilizing and suspending agents, ointment bases.**

Unit II (18 hrs)

2. Drugs & Drug Design

- 2.1 Physiological aspects of Drugs, Organic medicinal substances of natural and synthetic origin.**
- 2.2 Synthetic Drugs- Mode of action in the biological system- absorption, distribution biotransformation and excretion of drugs.**
- 2.3 Drug design: Development of New drugs, procedures followed in drug design, concepts of lead compounds and lead modification, concepts of prodrugs and soft drugs, structure Activity relationship (SAR)**
- 2.4 Concepts of drug receptors- Elementary treatment of drug receptor interactions. Physico-chemical parameters and surface activity parameters.**

Unit III (18 hrs)

- 3.1 Factors affecting bioactivity. Theories of drug activity- occupancy theory- Induced fit theory.**
- 3.2 Quantitative structure- Activity relationship (QSAR).**
- 3.3 Pharmacodynamics- Introduction, elementary treatment of enzyme stimulation, enzyme inhibition, sulphonamides, membrane active drugs, xenobiotics, biotransformation, drug metabolism in medicinal chemistry**

Unit IV

(18 hrs)

- 4.1 Antineoplastic agents- Introduction, cancer chemotherapy, special problems, role of alkylating agents and antimetabolites in treatment of cancer- recent development in chemotherapy. Radio isotopes in pharmacy.
- 4.2 Cardiovascular drugs- Cardiovascular diseases- drug inhibitors, synthesis of amylnitrate, sorbitrate, quinidine, atenolol, oxyprenolol.
- 4.3 Analgesics- Narcotic analgesics, morphine and derivatives, totally synthetic analgesics- salicylic acid derivatives. Indolyl derivatives and p.aminophenol derivatives.

Unit V

(18 hrs)

- 5.1 Anaesthetics- General and local- gaseous anaesthetics- Ether, Vinylmethoxy fluorans. Halogenated hydrocarbons like chloroform, Haloethane, trichloro ethylene, Nitrous oxide. Intravenous anaesthetics, local anaesthetics- cocaine and its derivatives antiseptics, disinfectants and antihistamines
- 5.2 Antibiotics- Cell wall biosynthesis, inhibitors, antibiotics inhibiting protein, synthesis of penicillin-G, Penicillin-V, ampicillin, amoxicillin, chloramphenicol, tetracycline and streptomycin.
- 5.3 Hormones- Their chemistry and functions, Thyroid hormones and antithyroid drugs, antidotes in poisoning. Medicinally important compounds of aluminium, phosphorous, arsenic and iron.

References:

1. Medicinal Chemistry , G.R. Chatwal, Himalaya Publishing House.
2. Text Book of Medical Biochemistry, S.Ramakrishnan, K.G. Prasanna and R.Rajan, Orient longmann.
3. Pharmaceutical chemistry Inorganic, G.R.Chatwal.
4. Text Book of Pharmaceutical chemistry, Bentley and Driver's.
5. Pharmacology and Pharmacotherapeutics, R.S.Satoskar, S.D.Bhandarkar, Popular prakashan Bombay.
6. Harper's Biochemistry, Robert K.Murray, Daryl K.Granner, Peter A Mays, Victor W Rodwell, McGraw-Hill.
7. Pharmaceutical Chemistry, Jayashree Gosh.
8. Pharmaceutical Chemistry, Lakshmi.
9. Medicinal Chemistry, Ashutosh Kar, New Age International Pvt. Ltd.

DEPARTMENT OF CHEMISTRY
M.Sc., Chemistry – Syllabus
(From the year 2018 -2019 onwards)
Self Study Course 2 – Chemistry of Nano Science

Code: 18KP3SSCH2

Credit:5
Marks:100

UNIT-I

1. Introduction

- 1.1 Definition of Nanodimensional materials-Some historical milestones in the saga of nano forms- Size effects- Importance of nano materials- Classification of nanomaterials- Simple examples of unique properties of nano sized materials-elementary aspects of bio nano technology- Some important recent discoveries in nano science and technology.**
- 1.2 Novel physical chemistry related to nanoparticles such as colloids and clusters: different equilibrium structures, quantum effects, conductivity and enhanced catalytic activity compared to the same materials in the macroscopic state.**

UNIT-II

2. NanoMaterial

Nanotechnology Timeline and Milestones, Overview of different nanomaterials available, Potential uses of nanomaterials in electronics, robotics, computers, sensors in textiles, sports equipment, mobile electronic devices, vehicles and transportation. Medical applications of nanomaterials. Medical applications of nanomaterials.

UNIT-III

3. Techniques for Nano Material

Characterization Techniques Related to Nanoscience and Nanotechnology: Compositional surface analysis: XPS, SIMS, Contact angles. Microscopies: optical microscopy, fluorescence and confocal microscopy, TEM, SEM, Probe techniques: Scanning tunneling microscopy (STM), Atomic force microscopy (AFM), Scanning Nearfield Optical Microscopy SNOM, Scanning Ion Conducting Microscopy (SICM). Ellipsometry, Neutron Scattering and XRD, Spectroscopic Techniques: UV-visible, FT-IR, Raman, NMR, ESR. Electrochemical Techniques: Voltammetric techniques, AC Impedance Analysis.

UNIT-IV

4. Size and Synthesis of Nano Particles

- 4.1 Models of reaction of metal atoms in matrices, melting point, optical spectra, peculiarities of chemical processes on the surface of nano particles , Thermodynamics features of nano particles.
- 4.2 Chemical reduction reaction in micelles, Emulsions and Dendrimers, Photochemical and radiation chemical reduction ,Cryochemical synthesis ,physical methods, particles of various shapes and films .

UNIT-V

5. Biochemistry Related to Nanoscience

Basic Aspects of Molecular Biology: Structure and function of proteins, antibodies, enzymes and implications for processing. Nucleic acids: DNA, RNA. Lipids: structure, role in membranes. The mammalian cell: Internal organization, specialized cells such as nerve cells. Building up of nano - structures that incorporate biological molecules as components of the system.

References:

1. C.N.R Rao, A.Muller A.K.Cheetam (Eds), The Chemistry of Nanomaterials, Vol.1, 2002, Wiley-VCH, Weinheim, 2004.
2. Introduction to Nanotechnology: Charles P. Poole, Jr. and Frank J. Owens; Wiley Student Edition, 2008
3. Nanoscale Science and Technology, Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan, John Wiley & Sons, Ltd., UK, 2005.
4. Introduction to Nanotechnology, Charles P. Poole Jr and Frank J. Owens, Wiley Interscience, 2003.
5. Bio-Inspired Nanomaterials and Nanotechnology, Edited by Yong Zhou, Nova Publishers.
6. Nano: The Essentials: Understanding Nanoscience and Nanotechnology, T. Pradeep, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2008.
7. Nanostructures & Nanomaterials: Synthesis, Properties & Applications: G. Cao, Imperial College Press, 2004.
8. Nanomaterials and Nanochemistry, Br'echignac C., Houdy., and Lahmani M. (Eds.) Springer Berlin Heidelberg New York. 2007.
9. Nanoparticle Technology Handbook. M. Hosokawa, K. Nogi, M. Naito and T. Yokoyama (Eds.) First edition 2007. Elsevier
10. Nanotechnology Basic Calculations for Engineers and Scientists. Louis Theodore, John Wiley & Sons, Inc., publication, 2006.

DEPARTMENT OF CHEMISTRY

**M.Sc., Chemistry - Syllabus
(From the Year 2018 - 2019 onwards)**

Core Course 12 - Inorganic Chemistry – II

Code: 18KP4CH12

**Hours: 90
Credit: 5
Marks: 100**

UNIT I

(18 Hrs)

- 1. Advances in Chemical Bonding**
- 1.1 Symmetry of the orbitals- qualitative MO Theory and shapes of molecules as applied to simple molecules- MO of polyatomic molecules (H₂O, CO₂ etc.)**
- 1.2 Fluxional isomerism- stereochemical non- rigidity in metal carbonyls- pseudo rotation in organo phosphorus compounds.**
- 1.3 Massbauer Spectroscopy- Basic Principles -Spectral parameters, spectrum display and isomer shift**
Application of the technique to the studies of
 - 1. Bonding and Structure of Fe⁺² and Fe⁺³ Compounds including those of Intermediate Spin.**
 - 2. Sn⁺² and Sn⁺⁴ compounds- Nature of M-L Bond, Coordination number, Structure.**

UNIT II

(18Hrs)

- 2. Applications of Spectrometry**
- 2.1 Vibrational Spectrometry –Vibration in simple molecule (H₂O, CO₂) and their symmetry notations- Group vibration and limitations. Mode of bonding of Ambidentate Ligands, Ethylene Diammine and Diketonato complexes, Application of Resonance Raman Spectroscopy particularly for the study of active sites of Metalloproteins.**
- 2.2 Electron Spin Resonance Spectrometry- Hyperfine Splitting, Spin Polarization for atoms and Transition metal ions, Spin–Orbit Coupling and significance of G-Tensors, Application to Transition Metal Complexes (having One Unpaired Electron) including biological systems and to Inorganic Free Radicals such as BH₄⁻, F₂⁻ and [BH₃]⁻.**
- 2.3 Nuclear Magnetic Resonance of Paramagnetic substances in solution – The Contact and Pseudo Contact Shifts, Factors affecting Nuclear Relaxation, some applications including Biochemical Systems, An Overview of NMR of Nuclides with emphasis on Chemical Shift with respect to P³¹**

UNIT III**(18 Hrs)****3 Inorganic Photochemistry**

- 3.1 Electronic transitions in metal complexes- metal-centred and charge-transfer transitions – various photo physical and photo chemical processes of co- ordination compounds.**
- 3.2 Unimolecular charge-transfer- photochemistry of Cobalt (III) complexes- mechanism of CTM photo reduction- Ligand Field photo chemistry of Chromium(III) complexes- Adamson's rules- photo active excited states, VC model.**
- 3.3 Photochemistry of Ruthenium- poly pyridine complexes- relating to solar energy Conversion (solar cell) emission and redox properties- photo chemistry of organo metallic compounds- compounds with metal-metal bonding- Reinecke's Salt- Chemical actinometer.**

UNIT IV**(18 Hrs)****4 Metal π complexes**

- 4.1 Metal carbonyls: Structure and nature of bonding in metal carbonyls – vibrational spectra of metal carbonyls for structural elucidation-18 electron rule-Carbonylate ions-carbonyl hydride complexes;**
- 4.2 Metallocenes- preparation, reactions, nature of bonding and structure.**
- 4.3 Catalysis by Organometallic compounds- Hydrogenation and Hydroformylation of Olefins, Olefins oxidation- Wacker Process- Olefin Polymerisation- Cyclooligomerization- Metathesis.**

UNIT V**(18 Hrs)****5. Bio Inorganic Chemistry**

- 5.1 The elements of Living systems- The Biological roles of Metal ions- Calcium biochemistry- Transport and Storage of Dioxygen, Blue Copper Proteins.**
- 5.2 Redox Catalysis- Iron-Sulphur Proteins and Non-Heme Iron, Cytochromes of the electron transport chain, Cytochrome P-450 enzyme, Coenzyme B12**
- 5.3 Nitrogenase- Biological Nitrogen Fixation- Molybdenum Nitrogenase, Spectroscopic and other evidence, Other Nitrogenases Model Systems.**

References:

- 1. *The Organometallic Chemistry of the Transition Metals*, R.H. Crabtree, John Wiley**
- 2. *Organometallic Chemistry*, R.C. Mehrotra and A .Singh, New Age International**
- 3. *Metallo-organic Chemistry*, A. J. Pearson, Wiley**
- 4. *Inorganic Chemistry*, Keith F. Purcell, John C. Kotz, Holt-Saunders**
- 5. *Inorganic Chemistry*, D.F. Shriver, P. W. Atkins, Oxford**
- 6. *Bio Inorganic Chemistry*, I. Bertini, H. B. Gray, S. J. Lippard and J. S. Valentine, University Science Books.**
- 7. *Physical Methods For Chemistry*, R. S. Drago, Saunders Company**

8. *Structural Methods in Inorganic Chemistry*, E. A. V. Ebsword, D. W. H. Rankin and S. Cradock, ELBS
9. *Progress in Inorganic Chemistry Vol.,8, ed*, F. A. Cotton, Vol.,15, ed, S. J. Lippard, Wiley
10. *Basic Principles of Spectroscopy*, R. Chang, McGraw Hill
11. *Modern Spectroscopy*, J. M. Hollas, John Wiley
12. *Chemical applications of Group Theory*, F. A. Cotton, Wiley.
13. *Bio Inorganic Chemistry*, G.R.Chatwal & A.K.Bhagi, Himalayan Publishing House.
14. *Inorganic Chemistry- Principles of Structure and Reactivity*, J.E.Huheey, E.A.Keiter & R.L.Keiter, Addison- Wesley.
15. *Inorganic Photochemistry*, S.Arunachalam, Kala Publications, Tiruchirappalli

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry- Syllabus
(From the year 2018-2019 onwards)
Core Course 13 - Physical Chemistry – II

Code: 18KP4CH13

Hours: 90
Credits: 4
Marks: 100

UNIT I

(18 Hrs)

4 Chemical Kinetics I

- 4.1 Kinetics of opposing, consecutive, parallel and simultaneous reactions- Theories of Reaction Rates. Simple Collision theory, Absolute Reaction Rate Theory (ARRT)- thermodynamic treatment of absolute reaction rate theory.**
- 4.2 Theory of unimolecular reactions- Lindemann's theory, Hinshelwood theory.**
- 4.3 Principles of microscopic reversibility- Steady State approximation- Chain reactions- thermal and photochemical reactions between hydrogen and halogens- Factors influencing reaction rates in solutions.**

UNIT II

(18 Hrs)

5 Chemical Kinetics II

- 2.1 Factors influencing reaction rates in solutions -Applications of Absolute Reaction Rate Theory to solution kinetics- Effect of solvents, ionic strength and pressure on reaction rates in solution- volume of activation- substituent effect- Hammett and Taft equations**
- 2.2 Fast Reactions: Study of kinetics by stopped flow technique- relaxation methods- T and P jump methods, flash photolysis and magnetic resonance methods. Reactions between H₂ and X₂ – Gas phase auto oxidation, explosion and explosion limits.**

UNIT III

(18 Hrs)

3. Quantum Chemistry III

- 3.1 Exactly solvable nature of systems- approximation methods- variation method- linear variation principle-application to Hydrogen and Helium atoms perturbation method –first order - non degenerate systems- application of perturbation theory to Helium atom.**
- 3.2 Hartree- Fock self consistent field method - Many electron atoms- wave functions- one electron orbitals- Pauli's principles and Slater determinants- Hartree- Fock self consistent field method- L-S and J-J coupling.**

UNIT IV

(18 Hrs)

4. Statistical Thermodynamics

- 4.1 Classical Statistics: Velocity space and phase space- Maxwell Boltzmann distribution law for molecular velocities and energy distributions.
- 4.2 Partition Functions: Definition and calculation of partition functions- partition functions and thermodynamic properties- Sackur-Tetrode equation. Application of partition function in calculating equilibrium constant and free energy functions
- 4.3 Third Law of Thermodynamics- Nernst heat theorem- statistical meaning of third law- calculation of entropy by third law.

UNIT V

(18 Hrs)

5. Quantum Statistics

- 5.1 Derivation of Maxwell- Boltzmann statistics expression- Limitations of Maxwell Boltzmann statistics- relationship between entropy and probability.
- 5.2 Bose- Einstein and Fermi Dirac statistics and their corresponding distribution functions- comparison with Boltzmann statistics- application of Bose- Einstein statistics to photon gas- Super fluidity of liquid helium- application of Fermi-Dirac statistics to electron gas- heat capacity of metals and thermionic emission.
- 5.3 Heat capacity of solids- Einstein and Debye treatment. Concept of negative absolute temperature.

References:

1. *Introduction to Quantum Chemistry*, A.K.Chandra, Tata McGraw Hill
2. *Quantum Chemistry*, R.K.Prasad, Wiley Eastern Ltd.
3. *Molecular Quantum Mechanics*, P.W.Atkins, Clarendon.
4. *Chemical Kinetics*, K.J.laidler, Tata- Mc Graw Hill.
5. *Physical Chemistry*, P.W.Atkins, ELBS.
6. *Statistical Thermodynamics*, Lee Sears & Turcotte, Addison Wesley.
7. *Chemical thermodynamics*, T.M.Koltz, Benzamin.
8. *Thermodynamics for Chemists*, S.Glasstone, Affiliated East West Press.
9. *Statistical Thermodynamics*, W.Sears & L.Salinger, Narosa Publishing House.
10. *Thermodynamics for Students of Chemistry*, S.Rajaraman & J.C.Kuriacose, Shobhan Lal-Nagin Chand.
11. *Principles of Quantum chemistry*, Levine

**M.Sc Chemistry- Syllabus
(From the year 2018 -19 onwards)**

Core Course 14 – Physical Chemistry Practical II

Code: 18KP4CH14P

Hours: 90

Credit: 4

Marks: 100

- 1. Conductometric Experiments:**
 - (a) Equivalent conductance of a strong electrolyte and the verification of Debye-Huckel-Onsager Law.**
 - (b) Verification of Oswald's dilution law for a weak electrolyte.**
 - (c) Conductometric Titrations – Acid-Base, precipitation titrations.**
 - (d) Determination of solubility of a sparingly soluble salt.**

- 2. Electromotive Force:**
 - (a) Potentiometric titrations: i. Acid-Base titration, ii. Redox titrations.**
 - (b) Determination of pH and pK_a using quin hydrone electrode.**
 - (c) Determination of Std. Electrode Potential for redox systems.**

- 3. Study of the kinetics of acid catalyzed hydrolysis of cane sugar using polarimeter.**

DEPARTMENT OF CHEMISTRY
M.Sc Chemistry
(From the year 2018– 2019 onwards)

Elective Course 5 (Major) – Polymer Chemistry

Code: 18KP4CHELCH5

Hours: 90
Credits: 4

Marks: 100

UNIT – I

(18 Hrs)

- 1. Basics, Classification and Molecular Mass Determination**
- 1.1 Importance of polymers- Basic concepts – Monomers, Repeat Units- Linear, Branched and Network Polymers.**
- 1.2 Classification of Polymers – Addition, Condensation, Radical Chain – Ionic and Coordination- and Co-polymerization – Polymerization in homogeneous and heterogeneous systems – Biopolymers.**
- 1.3 Mass and Size of Polymers – Polydispersion- Average Molecules Weight- Number and Weight average Mol. Wt.- Methods of Molecular weight determination – Osmometry, viscosity and light scattering methods.**

UNIT II

(18 Hrs)

- 2. Kinetics and Degree of Polymerization**
- 2.1 Kinetics of polymerization – Free radical chain polymerization, Cationic and Anionic polymerization.**
- 2.2 Degree of Polymerization – Chain length, chain transfer, chain termination- Stereo regular polymerization – Olefin polymerization– Zeigler – Natta catalyst.**

UNIT III

(18 Hrs)

- 3. Characterization and Properties**
- 3.1 Analysis of polymers – Degree of crystallinity – Thermal analysis (Differential Scanning Calorimetry and Thermo gravimetric Analysis) of polymers.**
- 3.2 Polymer Structure and Physical Properties – Crystalline Melting point – T_m –relation to structure – Glass Transition Temperature- T_g – Factors affecting T_g – Relationship between T_m and T_g .**

UNIT IV

(18 Hrs)

4. **Chemical Reactions and Processing of Polymers**
- 4.1 **Hydrolysis, acidolysis, hydrogenation, addition and substitution reactions – cyclization - cross-linking – vulcanization- graft and block co-polymers**
- 4.2 **Types of degradations- Thermal, Mechanical, Oxidative, Hydrolytic and Photo degradation**
- 4.3 **Plastics, Elastomers and Fibres – Processing Techniques: Calendering, die casting, film casting, injection molding, blow molding, foaming and fibre spinning.**

UNIT V

(18 Hrs)

5. **Polymer Types**
- 5.1 **Natural Polymers- proteins, polysaccharides and rubber**
- 5.2 **Synthetic Polymers: synthetic rubber, polyesters, polytetrafluoroethylene (TEFLON), polyethylene, polyvinylchloride, polyacrylates, polyacrylonitrile, polystyrene, phenolic resins, epoxy resins, silicone polymers. Fire retarding polymers, Biomedical polymers - contact lens, dental polymers and artificial heart.**

References

1. *Text Book of Polymer Science*, F.W.Billmeyer Jr, John – Wiley & Sons.
2. *Polymer Science*, V. R. Gowariker, N. V. Viswanathan and J. Sreedhar, Wiley Eastern
3. *Polymer Chemistry- An Introduction*, Raymond B. Seymour, Marcel Dekker Inc., NY.
4. *Fundamentals of Polymer Science and Engineering*, K.Gupta, Tata McGraw Hill.
5. *Organic Polymer Chemistry*, K.J. Saunders, Chapman and Hall.
6. *Inorganic Polymers*, Stone, Academic Press, NY.
7. *Polymer Chemistry*, B.K.Sharma, Krishna Prakashan Mandir, Meerut.
8. *Contemporary Polymer Chemistry*, H.R.Alcock and F.W Lambe, Prentice Hall
9. *Polymer Characterization of Processing Technology*, Stepak, Academic Press, London.

Kunthavai Naacchiyaar Government Arts College For Women (Autonomous)

Thanjavur-613007

Department of Botany

B.Sc- Syllabus 2018 – 2019

ALGAE, FUNGI AND LICHENS

Hours :6

Code : 18K1B01

Credit Allotted: 5

Max Marks : 75

UNIT-I : ALGAE

General Characters, Fritsch's classification of Algae and Economic importance. Structure, Reproduction and life cycles of the following genera – *Oscillatoria*, *Nostoc*, *Chlamydomonas*, *Volvox*, *Oedogonium* and *Chara*.

UNIT-II

Structure, Reproduction and life cycles of the following genera – *Vaucheria*, *Diatoms*, *Ectocarpus*, *Dictyota* and *Polysiphonia*.

UNIT-III : FUNGI

Habit and Habitat, General characters of Fungi, Structure and Modification of mycelium and Fungal nutrition. Classification of Fungi (Alexopoulos and Mims, 1979) and Economic importance of Fungi.

UNIT-IV

Structure, Reproduction and Life cycles of the following genera *Albugo*, *Rhizopus*, *Peziza* and *Puccinia*.

UNIT-V : LICHEN

General characteristic features, Occurrence, Types, Structure, Reproduction of Lichens - Economic and Ecological importance of Lichens.

REFERENCES

- 1. Pandey, B., 1999, College Botany Vol I S. Chand and company Ltd. New Delhi.**
- 2. Pandey, B.P., 2005. Simplified course in Botany, S.Chand & Company Ltd., New Delhi.**
- 3. Sharma, O.P. 1992 Text Book of Algae. Tata McGraw Hill, New Delhi,**
- 4. Vashista, B.R. 1982. Botany for Degree students - Fungi S.Chand& Co., New Delhi.**
- 5. Sharma, O.P., 1982 Text book of Fungi, Tata McGraw Hill, New York/**

**ALLIED BOTANY: THALLOPHYTES, BRYOPHYTES, PTERIDOPHYTES AND
GYMNOSPERMS**

Hours :4

Credit Allotted: 3

Code : 18K1ZAB1

Max Marks : 75

UNIT-I: THALLOPHYTES – ALGAE

General characters and Fritsch's Classification of Algae, Structure and life cycle of the following genera – *Oscillatoria*, *Oedogonium* and *Polysiphonia*. Economic importance of Algae.

UNIT-II: THALLOPHYTES – FUNGI

General characters and Classification (Alexopoulos and Mims, 1979) of fungi. Structure and reproduction of the following fungi – *Albugo*, *Penicillium* and *Polyporus*. Economic importance of Fungi.

UNIT-III: BRYOPHYTES

General characters and Classification (Rothmaler, 1951) of Bryophytes, Structure and life cycle of *Riccia* and *Funaria*. Economic importance of Bryophytes.

UNIT-IV: PTERIDOPHYTES

General characters and Classification (Sporne, 1962) of Pteridophytes - Structure and life cycle of *Lycopodium* and Economic importance of Pteridophytes.

UNIT-V: GYMNOSPERMS

General characters and Classification (K. R. Sporne, 1965) of Gymnosperms. Structure and life cycle of *Cycas*. Economic importance of Gymnosperms.

REFERENCE

1. Fuller, H. J. and Trippo, O. (1949). College Botany, Henry Holt & Co.
2. Ganguly, A. K. (1975). General Botany Vol. I & Vol. II, The New Book Stall, Calcutta.
3. Vashista, P.C., Sinha, A. K. and Anilkumar (2005). Botany for Degree Students.
S. Chand & Company Ltd., New Delhi.
4. Pandey *et al.*, (1998). A Text Book of Botany Vol. II. S. Chand & Co. Ltd.
5. Rao, K., Krishnamurthy, K.V. and Rao, G. S. (1979). Ancillary Botany.
S. Viswanathan Pvt. Ltd., Madras.
6. Palaniappan, S. (1985). Thavaraviyal Thunaippadam (Tamil), Mohan Padhippagam,
Chennai.

Semester	Course	Hours	Credit	Sub. Code	Marks
II	CC 2 (P)	6	5	18K2B02P	40 + 60 = 100

PRACTICAL - I FOR CORE COURSE 1 and 3

SEMESTER - I

Study of the morphological, anatomical and reproductive parts of the following genera:

ALGAE

Oscillatoria, Nostoc, Chlamydomonas, Volvox, Oedogonium, Chara, Vaucheria, Diatoms, Ectocarpus, Dictyota and Polysiphonia.

FUNGI

Albugo, Rhizopus, Peziza and Puccinia.

LICHEN

Parmelia and Usnea.

SEMESTER – II

BRYOPHYTES

Riccia, Anthoceros and Polytrichum.

PTERIDOPHYTES

Psilotum, Lycopodium, Selaginella, Equisetum and Marsilea.

GYMNOSPERMS

Cycas, Pinus and Gnetum.

PALEOBOTANY

Rhynia, Lepidodendron, Calamites and Williamsonia.

BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

Hours :6

Credit Allotted: 6

Code : 18K2B03

Max Marks : 75

UNIT-I: BRYOPHYTES

General characteristics, Classification (Rothmaler, 1951) - Economic importance of Bryophytes. Occurrence, Distribution, Structure and Reproduction of *Riccia*, *Anthoceros* and *Polytrichum* (Development stages not required).

UNIT-II: PTERIDOPHYTES

General characteristics and Classification (Sporne, 1962) - Morphology and internal features, reproduction and life cycle of the following genera: *Psilotum*, *Lycopodium* and *Selaginella*.

UNIT-III

Morphology and internal features, reproduction and life cycle of the following genera: *Equisetum* and *Marsilea*. Stellar evolution, Economic importance of Pteridophytes.

UNIT-IV: GYMNOSPERMS

General characteristics and Classification of Gymnosperms (K. R. Sporne, 1965). Economic importance of Gymnosperms. Morphology, External and internal structure, Mode of reproduction and Life cycle of *Cycas*, *Pinus* and *Gnetum*.

UNIT-V: PALEOBOTANY

Fossils - Methods of fossilization - Geological timescale - Age of fossils - Radio-Carbon Dating – Uses of fossils. A brief study of the fossil forms - *Rhynia*, *Lepidodendron*, *Calamites* and *Williamsonia*.

REFERENCE

1. Singh V, Pande PC and Jain OK. A text book of Botany, Rostogi Publications, Meerut.
2. Smith, G. M. (1955). Cryptogamic Botany. Vol. II. (Bryophytes and Pteridophytes), (2nd ed). Tata McGraw Hill, New Delhi.
3. Rashid, A. (1998). An Introduction to Bryophyta. Vikas Publishing House Pvt. Ltd., New Delhi.
4. Vashishta, B.R., Sinha, A.K. and A.Kumar, (2011). Botany for Degree students Bryophyta, S. Chand Publishing Company,.
5. Parihar, N. S. (1999). An Introduction to Embryophyta. Vol. II. Pteridophyta. Central Book Depot, Allahabad.
6. Sporne, K. R. (1970). The Morphology of Pteridophytes (The structure of Ferns and Allied Plants). Hutchinson University Library, London.
7. Sharma, O. P. (1990). Textbook of Pteridophytes. MacMillan India Ltd., Delhi.
8. Sundara Rajan, S. (1994). Introduction to Pteridophyta. New Age Int. Publishers Ltd., New Delhi.
9. Vashista, P. C. (1997). Botany for Degree Students - Pteridophyta. S.Chand & Co.Ltd., New Delhi.
10. Vashista,P.C. (1996). Botany for Degree Students-Gymnosperms(2nd ed). S.Chand & Co.Ltd., New Delhi.
11. Sharma, O. P. (1997). Gymnosperms. Pragati Prakashan, Meerut, India.
12. Vashishta, B.R., Sinha. A.K. and Kumar A. (2011). Botany for Degree students Gymnosperms,

13. S.Chand Publishing Company,.
14. Shukla, A. C. and Misra, .S P. (1975). Essentials of Paleobotany. Vikas Publishing House (P) Ltd., New Delhi.
15. Stewart, W. N. (1983). Paleobotany and the Evolution of Plants. Cambridge University Press, London.

Semester	Course	Hours	Credit	Sub. Code	Marks
II	AC 2 (P)	6	3	18K2ZAB2P	40 + 60 = 100

PRACTICAL FOR ALLIED COURSE 1 and 3

SEMESTER-I

ALGAE

Oscillatoria, Oedogonium and Polysiphonia.

FUNGI

Albugo, Penicillium and Polyporus.

BRYOPHYTES

Riccia and Funaria.

PTERIDOPHYTES

Lycopodium.

GYMNOSPERMS

Cycas

SEMESTER-II

TAXONOMY

Rutaceae, Leguminosae, Cucurbitaceae, Euphorbiaceae and Poaceae.

ANATOMY & EMBRYOLOGY

Dicot (Helianthus) & Monocot (Maize) stem and root. Mature anther and ovule, Types of ovule, Dicot embryo.

HORTICULTURE

Horticulture Tools - Spade, Sickle, Pruning scissors, Weed cutter, Plant propagation methods (refer the syllabus).

PLANT ECOLOGY

Study of Morphological and Anatomical features of Hydrophytes and Xerophytes.

ALLIED BOTANY: TAXONOMY, ANATOMY, EMBRYOLOGY, HORTICULTURE AND ECOLOGY

Hours :4

Code : 18K2ZAB3

Credit Allotted: 3

Max Marks : 75

UNIT-I: TAXONOMY

General outline of Bentham and Hooker's classification. Detailed study and economic importance of the families: Rutaceae, Leguminosae, Cucurbitaceae, Euphorbiaceae and Poaceae.

UNIT-II : ANATOMY

Classification of plant tissues -Anatomical structure of stem, root and leaf in dicots and monocots – Normal secondary growth in dicot stem.

UNIT-III : EMBRYOLOGY

Structure of mature anther and ovule, Types of ovule. Double fertilization. Development of dicot embryo.

UNIT-IV: HORTICULTURE

Scope and Importance of horticulture. Propagation Method: Cutting, layering and grafting. Bonsai technique.

UNIT-V: ECOLOGY

Plant Ecology: Factors affecting vegetation – climatic, biotic and abiotic. Adaptations in Hydrophytes and Xerophytes, Food chain and Food web.

REFERENCES

1. Pandey B.P., 2001, Taxonomoy of Angiosperms, S.Chand & Company .Ltd. New delhi.
2. Pandey B.P., (2015)(Edn.) Plant Anatomy S. Chand Publ. New delhi.
3. Pijushroy,(2010).Plant Anatomy, New central Book Agency ,Pvt Lit, New Delhi.
4. Kumar , K.N.,1999 , Introduction of Horticulture, Rajalakshmi Publication , Nagercoil.
5. Bhojwani, S.S. and Bhatnagar, S.P., 1978, The Embryology of angiosperms, S.P Publishing house Pvt. Ltd. New Delhi.
6. Rajaram, P. Allied Botany 1983. College Book Publisher. Chennai.
7. Muneeswaran.A. Allied Botany Srinivas Book Center. Thanjavur.
8. C. (1973). Ornamental Horticulture in India. Today & Tomorrow Publishers, New Delhi.
9. Narayanaswamy.R.V., Rao.K.N. and Raman.A. 1992. Out lines of Botany.S. Viswanathan Printers and Publisher Pvt Ltd., Chennai.
10. Essu. K., 1953, Plant anatomy, John wiley Sons Inc, New York.
11. Rogland, A. (2000). Developmental Botany (Embryology of Angiosperms). Saras Publications, Nagercoil.Ltd

ANATOMY AND EMBRYOLOGY

Hours :6
Code : 18K3B04

Credit Allotted: 5
Max Marks : 75

UNIT-I : ANATOMY

Plant tissues - Meristematic tissues, Permanent Tissues - simple Tissues (Parenchyma, Collenchyma and Sclerenchyma) Complex Tissues (xylem and phloem), Stomata - Types of stomata.

UNIT-II

Primary structure of root, stem and leaf in Dicots and Monocots. Normal secondary growth in stem and root.

UNIT-III

Features of wood – Annual rings –Heart wood – Sap wood, Anomalous secondary growth in Dicot stem - *Aristolochia* and *Boerhaavia*, Monocot stem - *Dracaena*.

UNIT-IV: EMBRYOLOGY

Microsporogenesis: Structure and development of Anther. Development of male gametophyte, Megasporogenesis: Structure and types of ovules. Development of Female gametophyte - Monosporic (*Polygonum*), Bisporic (*Allium*), Tetrasporic (*Peperomea*).

UNIT-V

Fertilization - Double fertilization. Endosperm: Nuclear, cellular and Helobial. Development of embryo in monocot and dicot.

REFERENCES

1. Bhojwani, S.S. and Bhatnagar, S.P., 1978, The Embryology of angiosperms, S.P Publishing house Pvt. Ltd. New Delhi.
2. Pandey B.P., 2005. Plant Anatomy, S.Chand & Company Ltd. New Delhi.
3. Cutter, E.G. (1978). Plant Anatomy (2nd Edn.), Edward Arnold, London.
4. Vasishta, P.C. (1977). A Text Book of Plant Anatomy. S. Nagin and Co., New Delhi.
5. Maheswari, P. (1985). An Introduction to the Embryology of Angiosperms. Tata McGraw Hill Publishing Co. Ltd., New Delhi.
6. Rogland, A. (2000). Developmental Botany (Embryology of Angiosperms). Saras Publications, Nagercoil.Ltd.

MEDICINAL BOTANY

Hours :2

Code : 18K3BEL01

Credit Allotted: 2

Max Marks : 75

UNIT-I

Scope of medicinal Botany, Indian system of medicines - Siddha, Ayurveda, Unani, Homeopathy, Aromotherapy and Importance of herbal drugs in Indian system of medicines.

UNIT-II

Pharmacognosy- Definition, scope, Natural source of Drugs – Crude drugs, classification of crude drugs. Collection and processing of crude drugs.

UNIT-III

Cultivation and of medicinal uses of Whole Plant parts - *Catharanthus roseus* and *Coriandrum sativum*, Flower - *Cassia auriculata*, Fruit - *Emblica officinalis*.

UNIT-IV

Cultivation and medicinal uses of Root - *Withania somnifera* and *Rauvolfia serpentina*, Leaf - *Aloe vera* and *Centella asiatica*.

UNIT-V

Drug adulteration - Types of drug adulteration, Harmful adulteration and adulteration of powders.

REFERENCES

1. Kumar N.C., 1993, An Introduction to medical Botany and Pharmacognosy, Em.Kay. Publication, Jodhpur.
2. Srivastava, A.K. (2006). Medicinal Plants. International Book distributors, Dehradun.
3. Chopra R.N. Nagar S.L. and Chopra I.C., 1956, Glossary of Indian Medicinal Plants.
4. Gamble, J.S. and Fisher, 1921 , CECl,II,III Flora of the Presidency of Madras Volumes.
5. Kokate, C.K., Purohit, A.P and Gokhalae, S.B., 2005, Pharmacognosy, Nirali Pradasam, Pune.
6. Chopra, R.N., Badhuvar, R.L. and Gosh, G. (1965). Poisonous Plants of India. CSIR Publications, New Delhi.
7. Mathew K.M., 1988, Flora of the Tamilnadu and Carnatic.

MUSHROOM TECHNOLOGY

Hours :----

Code : 18K3SSB1

Credit Allotted: 5

Max Marks : 75

UNIT-I

Introduction – History – Scope of edible mushroom cultivation – Importance of mushrooms – Culture media - PDA, Substrate preparation.

UNIT-II

Sterilization methods - Mother spawn preparation, Multiplication of spawn from mother spawn bed preparation and spawn running and harvesting.

UNIT-III

Cultivation and harvesting of *Agaricus bisporus*, *Calocybe indica*, *Pleurotus citrinopileatus* and *Volvariella volvarea*.

UNIT-IV

Factors affecting mushroom cultivation - storage methods (Short and long term storage) - nutritive value – carbohydrates and fats, proteins, amino acids, vitamins, mineral elements, fibre content and energy volume of mushrooms.

UNIT-V

Preparation of mushroom soup, mushroom cutlet, omelets, samosa, pickle, mushroom vegetable curry and mushroom biriyani. Marketing, Cost benefit analysis.

REFERENCE

1. Nita Bahl, 2002. Hand Book on Mushroom 4th edn. Vijay Primplani for Oxford and IBH Publishing Co. Pvt., New Delhi.
2. Chang, T.S. and Hayes, W. A., 1978. The Biology and Cultivation of Edible Mushrooms. Academic Press, New York.
3. Ignacimuthu, S. 1997. Applied Plant Biotechnology. Oxford & IBH Publishing Co. Pvt., New Delhi.

Semester	Course	Hours	Credit	Sub. Code	Marks
IV	CC 5 (P)	6	5	18K4B05P	40 + 60 = 100

PRACTICAL – II FOR CORE COURSE 4 and 6

ANATOMY

Preparation of T.S of the primary structure of root, stem and leaf in dicots (*Helianthus* and *Ixora*) and monocots (Maize and Grass).

Normal secondary thickening in dicot, stem and root. Anomalous thickening in dicot - *Aristolochia* and *Boerhaavia*, monocot stem - *Dracaena*.

EMBRYOLOGY

Mature anther, Types of Ovules, Embryo sac - Monosporic (*Polygonum*), Bisporic (*Allium*), Tetrasporic (*Peperomea*).

Endosperm – Nuclear, Cellular and Helobial.

Embryo dissection (*Cucumis* / *Tridax*).

MICROBIOLOGY

1. Methods of sterilization
2. Media preparation - NA and PDA
3. Serial dilution Technique,
4. Isolation of Bacteria and Fungi.
5. Gram's staining of Bacteria.

SPOTTERS

1. Ultra structure of Bacteria,
2. TMV, T₄ bacteriophage,
3. Viroids and Prions.
4. Hot air oven,
5. Autoclave/Cooker,
6. Inoculation chamber
7. Inoculation needle.

PLANT PATHOLOGY

Causal organism, Symptom, Control measures of the following disease

- | | | |
|--------------------|---|---|
| Viral disease | - | TMV |
| Mycoplasma disease | - | Little leaf of Brinjal |
| Bacterial disease | - | Citrus canker |
| Fungal disease | - | Red rot of sugarcane, Tikka disease of groundnut. |

GENERAL MICROBIOLOGY AND PLANT PATHOLOGY

Hours :5

Code : 18K4B06

Credit Allotted: 4

Max Marks : 75

UNIT-I : MICROBIOLOGY

History, Scope and Branches of Microbiology, Five kingdom concept (Whittaker), Methods of Sterilization, Preparation of Culture medium (NA and PDA) and Economic Importance of Bacteria.

UNIT-II: BACTERIA

Morphology, Ultra Structure, Nutrition, Respiration and Multiplication of Bacteria. Recombination of Bacteria - Transformation, Conjugation and Transduction.

UNIT-III: VIRUSES

General characters of Viruses. Structure of TMV, T4 Bacteriophages and Adeno virus. Reproduction of viruses– Lytic and Lysogenic cycle. Viroids and Prions.

UNIT-IV: PLANT PATHOLOGY

History of plant pathology, Disease causing organisms, General symptoms, Host-parasite interaction – Commensalism, Amensalism and Mutualism. Methods of Control of Plant disease- Cultural, Chemical and Biological methods.

UNIT-V

Study the causal organism, symptoms, disease cycle and control measures of the following diseases.

- a. Viral disease - Tobacco Mosaic Virus.
- b. Mycoplasma Disease - Little Leaf of Brinjal.
- c. Bacterial Disease - Citrus canker.
- d. Fungal Disease - Red rot of sugarcane, Tikka disease of Groundnut.

REFERENCE

1. Sharma, P.D., 1992, Microbiology - Rastogi & Co., India.
2. Power and Dagainwala., 1994, General Microbiology (Vol-1&2)- Himalayan Pub. House.
3. Pelczar.J., Chan E.C.S and Krieg. R., 1999, Microbiology, Tata Mc.craw Hill, New Delhi.
4. Dubey & Maheswari, 2000, A Text Book of General Microbiology, S.Chand & Company Ltd., New Delhi.
5. Prescott, Harley and Klein., 1996, Microbiology, McGraw Hill Publications – IV edn.
6. Microbiology, Chandrasekhar. (Tamil Edition).
7. Microbiology, S.Palaniyappan. (Tamil Edition).
8. Pandey, B.P. (2001). *Plant Pathology*. S. Chand & Company Limited, New Delhi.
9. Sharma, D (1996) *Plant Pathology*, Rastogi Publications, Merrut, India.
10. Mehrotra, R.S., 1990, Plant Pathology , Tata Mc Graw Hill, New Delhi.
11. Bilgrimi, K.S. & H.C. Dube., 1990, A Text Book of Modern Plant Pathology. Vikas
12. Plant Pathology, Chandrasekhar. (Tamil Edition).
13. Plant Pathology (Tamil Edition). S.Palaniyappan, V. K. Publishing House, Chennai-5.

BIOFERTILIZER AND EDIBLE MUSHROOM TECHNOLOGY

Hours : 2

Credit Allotted: 2

Code : 18K4BEL02

Max Marks : 75

UNIT-I: BIOFERTILIZER

Biofertilizer – Introduction – Types and advantages of biofertilizers, Isolation and Mass Cultivation of Algal biofertilizer – Blue Green Algae.

UNIT-II

Isolation and Mass Cultivation of Bacterial fertilizer - Symbiotic (*Rhizobium*) and asymbiotic Association (*Azospirillum*).

UNIT-III

Isolation and Mass Cultivation of Fungal biofertilizers – Mycorrhizae (Ecto and Endo), Organic fertilizers- Green Manuring and Panchakavya.

UNIT-IV: EDIBLE MUSHROOM TECHNOLOGY

History – Scope of edible mushroom – Cultivation of Button and Oyster mushroom - Culture techniques, Preparation of spawn, Preparation of compost, Spawn running, Harvesting and Marketing.

UNIT-V

Storage – short term and long term storage, Nutrition - proteins, aminoacids, mineral elements and vitamins. Preparation of soup, omelets, samosa, biriyani, pickle and vegetable curry.

REFERENCE

1. Marimuthu, T., Krishnamoorthy, T. S., Sivaprakasam, K. and Jayarajan, R. (1991). Oyster Mushrooms. Tamil Nadu Agricultural University, Coimbatore.
2. Tewari, Pankaj Kapoor, S.C. (1988). Mushroom Cultivation, Mittal Publications, Delhi.
3. Nita Bahl, (2002). Hand Book on Mushroom 4th edn. Vijay Primplani for Oxford and IBH Publishing Co. Pvt., New Delhi.
4. Chang, T.S. and Hayes, W. A., (1978). The Biology and Cultivation of Edible Mushrooms. Academic Press, New York.
5. Ignacimuthu, S. (1997). Applied Plant Biotechnology. Oxford & and IBH Publishing Co. Pvt., New Delhi.
6. Tripathi, D. P. (2005). Mushroom Cultivation. Oxford & and IBH Publishers, New Delhi.

ETHNOBOTANY

Hours : --
Code : 18K4SSB2

Credit Allotted: 5
Max Marks : 75

UNIT-I

Ethnobotany – definition, history and its scope – Inter disciplinary approaches in herbal medicine – Collection of ethnic information.

UNIT-II

Importance of medicinal plants – role in human health care – health and balanced diet (Role of proteins, carbohydrates, lipids and vitamins).

UNIT-III

Tribal medicine – methods of disease diagnosis and treatment – Plants in folk religion – *Aegle marmelos*, *Ficus benghalensis*, *Curcuma domestica*, *Cyanodon dactylon* and *Sesamum indicum*.

UNIT-IV

Traditional knowledge and utility of some medicinal plants in Tamilnadu – *Cardiospermum halicacabum*, *Adathoda vasica*, *Azadirachta indica*, *Ocimum sanctum*, *Centella asiatica*, *Solanum trilobatum*, and *Aloe vera*.

UNIT-V

Nutritive and medicinal value of some fruits (Guava, Orange, Banana), vegetables (Tomato, Potato, Brinjal) and Greens (*Moringa*, *Solanum nigrum*).

REFERENCE

1. Sinha, R. K. & Shweta Sinha , 2001. Ethnobiology, Surabhe Publications, Jaipur.
2. Pal, D.C. & S. K. Jain, 1998. Tribal medicine, 206, Bidhan Sarani, Calcutta – 700 006.
3. Jain, S. K, 1995. Contribution to Indian Ethnobotany. 3rd edition, Scientific publishers, P.B.No. 91, Jodhpur, India.
4. Jain, S.K., 1995. A Manual of Ethnobotany 2nd edition.

MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY

Hours : 7

Code : 18K5B07

Credit Allotted: 6

Max Marks : 75

UNIT-I : MORPHOLOGY

Parts of plants - Types of leaves, Phyllotaxy and Stipules, Inflorescence – Racemose, Cymose, Mixed Special type - Description of flower - Types of fruits.

UNIT-II : TAXONOMY

Binomial nomenclature, Systems of classification – Bentham & Hooker; Engler & Prantle. Merits and demerits of natural systems of classification. Herbarium - Preparation and advantages.

UNIT-III

Diagnostic characters and Economic Importance of the following Families: Polypetalae: Cruciferae, Capparidaceae, Tiliaceae, Rutaceae, Anacardiaceae, Leguminosae (Fabaceae, Caesalpiniaceae, Mimosoideae) and Cucurbitaceae.

UNIT-IV

Gamopetalae: Rubiaceae, Asteraceae, Asclepiadaceae, Apocynaceae, Solanaceae, Acanthaceae, Verbenaceae, Labiatae and Convolvulaceae.

Monochlamydeae: Amaranthaceae and Euphorbiaceae.

Monocotyledanae: Gramineae and Cyperaceae.

UNIT-V : ECONOMIC BOTANY

A brief study of the economic importance of the following plants:

Food crop – Ragi and Maize, Forage crops - Sorghum, Redgram. Fibre crops – Cotton, Jute. Spices - Cardamom, Clove. Oil yielding crops - Groundnut, Sesamum.

REFERENCE

1. Vashista, P.C., 1990. Taxonomy of Angiosperms-S.Chand & Co., New Delhi.
2. B.P.Pandey, and Anitha, 1990, Economic Botany, S.Chand & Company Ltd., New Delhi.
3. Pandey, B.P., 1997. Taxonomy of Angiosperms - S.Chand & Co., New Delhi.
4. Lawrence H.W., 1955. Taxonomy of vascular plants. Macmillan, Co., USA.
5. Davis, P.H & Heywood, V. M 1963, Principles of Angiosperm Taxonomy, Oliver & Boyd.
6. Jaffrey C., 1982, An introduction to Plant Taxonomy- Cambridge University, Press, UK.
7. Heywood, V.K. & Moore, D.M., 1984, Current Concepts in Plant Taxonomy, Academic Press, London.
8. Sharma O.P, 2000. Economic Botany, Tata Mc Graw Hill Publications, New Delhi.
9. Sambamurty, A.V.S.S. 2005. Taxonomy of Angiosperms, I.K. International Pvt. Ltd. New Delhi.

HORTICULTURE AND PLANT BREEDING

Hours : 5

Code : 18K5B08

Credit Allotted: 5

Max Marks : 75

UNIT-I : HORTICULTURE

Importance and scope of horticulture - Divisions of horticulture - Types of gardens: Formal, Informal and Kitchen.

UNIT-II

Plant propagation methods: cutting, layering, budding and grafting. Stock – scion relationship in important horticultural crops.

UNIT-III

Floriculture: cultivation of commercial flowers – Rose, Jasmine and Chrysanthemum - Nursery maintenance - Green house, Water garden, Rockery, Bonsai and Hydroponics.

UNIT-IV : PLANT BREEDING

Principles and objectives of plant breeding, Plant introduction and acclimatization. Selection methods and their advantages and disadvantages of Mass, Pure line and Clonal selection.

UNIT-V

Technique and methods of hybridization. Somatic hybridization: Heterosis, hybrid vigor and exploitation in plant breeding. Mutation breeding - Role of mutation and polyploidy in plant breeding.

REFERENCE

1. Randhava, G.S, 1973 – Ornamental horticultural in India Today and Tomorrow Printers and Publishers, New Delhi.
2. Yawalkar, K.S. 1961 – Vegetables crops of India – Agri, Horticultural Publishing House, Nagpur.
3. Kumar, H.D. Introduction to Horticulture.
4. Hariharan, Y. Thotta Kalaiyum Thottaviyalum (Tamil), Bharathidhasan University Publications, Tiruchirappalli.
5. Fundamentals of Horticulture – Edment Senn Andrews 1994 Tata McGraw Hill Publishing Co., Ltd., Delhi.
6. Chauduri, H.K. Elementary Principles of Plant Breeding, 1971-Oxford and IBH Co., New Delhi.
7. Singh, B.D. 2002-Plant Breeding, Kalyani Publishers, Ludhiana.

Semester	Course	Hours	Credit	Sub. Code	Marks
V	CC 9	6	5	18K5B09P	40 + 60 = 100

PRACTICAL – III FOR CORE COURSE 7 and 8

MORPHOLOGY

Types of leaves, Phyllotaxy, Inflorescence and fruits.

TAXONOMY

Training in dissection, observation, identification and sketching of floral parts of plants belonging to the families mentioned in the syllabus along with floral diagrams and floral formula. Field study of flora. Submission of 20 herbarium specimens.

Dicotyledons

Polypetalae: Cruciferae, Capparidaceae, Tiliaceae, Rutaceae, Anacardiaceae, Leguminosae (Fabaceae, Caesalpiniaceae, Mimosoideae) and Cucurbitaceae.

Gamopetalae: Rubiaceae, Asteraceae, Asclepiadaceae, Apocynaceae, Solanaceae, Acanthaceae, Verbenaceae, Labiatae and Convolvulaceae.

Monochlamydeae: Amaranthaceae and Euphorbiaceae.

Monocotyledons: Gramineae and Cyperaceae.

ECONOMIC BOTANY

Food crop – Ragi and Maize.

Forage crops- Sorghum, Redgram.

Fibre crops – Cotton, Jute.

Spices - Cardamom, Clove.

Oil yielding crops - Groundnut, Sesamum.

HORTICULTURE

Study of tools and implements used in horticulture and plant propagation.

Garden layout - formal, informal, kitchen.

Plant propagation methods - cutting, layering, grafting and budding.

PLANT BREEDING

Hybridization techniques – Emasculation and Bagging.

Selection methods – Mass, Pure line and Clonal.

CYTOGENETICS AND MOLECULAR BIOLOGY

Hours : 6

Code : 18K5BELB1

Credit Allotted: 6

Max Marks : 75

UNIT-I : CYTOLOGY

Ultra structure of Plant cell- Structure and functions of cell wall, plasma membrane and cell organelles – Plastids, Mitochondria, Golgi bodies, Endoplasmic Reticulum, Ribosome and Lysosomes.

UNIT-II

Structure and function of Nucleus – Nuclear membrane, Nucleoplasm, Chromatin reticulum and Nucleolus, Chromosome - Structure and function; Special types of chromosome - Lamp brush and Polytene chromosomes. Cell cycle and Cell division - Amitosis, Mitosis and Meiosis.

UNIT-III: GENETICS

Introduction, Monohybrid & Dihybrid Experiment, Test and Back cross, Mendel's Law. Gene Interaction- Complementary Gene, Supplementary Gene, Duplicate Gene, Epistasis, Inhibitory factor, Incomplete Dominance and Co-dominance.

UNIT-IV: MOLECULAR BIOLOGY

Nucleic acids – Components of Nucleic acid, DNA- Types, structure (Watson and Crick model) and Replication. RNA – Structure, types and functions.

UNIT-V

Genetic code, Regulation of gene expression in Prokaryotes - Lac Operon concept, Gene Expression through Protein Synthesis - Transcription, Translation.

REFERENCES

1. Power, C.B. (1984). Cell Biology. Himalaya Publishing Co., Mumbai.
2. Sharma, N.S. (2005). Molecular Cell Biology. International Book distributors, Dehradun.
3. Verma, P.S. and Agarwal, V.K. (1986). Cell Biology and Molecular Biology (Cytology). S. Chand and Company Ltd., New Delhi.
4. Agarwal, V.K. (2000). Simplified course in Genetics (B.Sc., Zoology). S. Chand & Company Ltd., New Delhi.
5. Ahluwalia, K.B. (1990). Genetics. Wiley Eastern Ltd., Madras.
6. Meyyan, R.P. (2000). Genetics. Saras Publication, Nagercoil.
7. Palaniyappan, S. (1987). Marabiyal (Genetics - In Tamil). V.K. Publishing House, Madras.
8. Pandey, B.P. (2012). Cytology, Genetics and Molecular Genetics. Tata McGraw-Hill Education Private Ltd., New Delhi

PLANT PHYSIOLOGY

Hours : 5

Code : 18K6B10

Credit Allotted: 5

Max Marks : 75

UNIT-I

Introduction - Osmosis, Diffusion, Diffusion pressure deficit, Plasmolysis, Imbibition, Absorption - Mechanism of absorption, Active and Passive absorption, ascent of sap. Transpiration - Types, Guttation, Stomata - Mechanism of stomatal action.

UNIT-II

Photosynthesis: Photosynthetic apparatus, pigments, Action and absorption spectrum, Light reaction – Non-cyclic and Cyclic Photophosphorylation, Dark reaction - Calvin cycle, Hatch & Slack pathway, CAM pathway – Factors affecting photosynthesis.

UNIT-III

Respiration - types of respiration, respiratory substrates, Mechanism of respiration, Glycolysis, Krebs's cycle, Electron transport pathway, Pentose phosphate pathway, Photorespiration (Glycolate metabolism), Factors affecting respiration.

UNIT-IV

Physiology of flowering, short day and long day plants, significance of Photoperiodism, Phytochrome, Vernalization, Senescence, Abscission and Seed dormancy.

UNIT-V

Plant growth regulators - Structure and Physiological role of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene.

REFERENCES

1. Pandey, S.N., & Sinha., 1972, Plant Physiology, Vikas Publishing, New Delhi.
2. Noggle, G.R. and Fritz, G.J., 1976, Introductory Plant Physiology, Prentice-Hall, India.
3. Devlin, R.M., 1974, Plant Physiology, Affiliated East West Press Pvt. Ltd.,
4. Salisbury, F.B. & Ross, C.N., 1995. Plant Physiology, CBS Publishers, New Delhi.

BIOPHYSICS AND BIOCHEMISTRY

Hours : 4

Code : 18K6B11

Credit Allotted: 4

Max Marks : 75

UNIT-I : BIOPHYSICS

Atoms - physical forces and chemical bonds, Structure and properties of water, Definition of pH –its determination; Buffers and electrolytes and their functions, Laws of Thermodynamics – Entropy and Enthalpy.

UNIT-II

Bioenergetics – Structure and formation of ATP — Structure and characteristics of NADP/NADPH₂ - NADP/NADPH redox couple – Mitochondrial bioenergetics – Chloroplast bioenergetics.

UNIT-III

Radiation – Physical properties and biological importance of α , β and γ rays, X – rays. Radioactive isotopes – half life – effect of radiations on biological systems.

UNIT-IV : BIOCHEMISTRY

Structure, classification and properties of Carbohydrates (Cellulose and starch) and Proteins (Primary, Secondary, Tertiary and Quaternary) – Biological importance of Carbohydrates, Proteins.

UNIT-V

Lipids - Structure, Classification, Properties and Significance, Enzymes – Structure, Properties and Classification - Factors affecting Enzyme action. Enzyme inhibition – Competitive – Non-competitive, coenzyme and cofactors.

REFERENCES

1. Jain, J. L.,1979. Fundamentals of Biochemistry, S.Chand & Co., Ltd., New Delhi.
2. Salil Bose, L.,1981. Elementary Biophysics, Vijaya Printers, Chennai.
3. Thiravia Raj,S.,1999. Biophysics, Saras Publication , Tamil Nadu.
4. Zuley, G.L., 1998. Biochemistry, Wm.C. Brown Publishers USA.
5. Jeffrey, M Cooper., 2002. The Cell: A molecular approach.
6. Stryer, L., 2002. Biochemistry, W.H. Freeman & Co., 5 edn.
7. Mathews C. K et al., 2005. Biochemistry, Pearson Education, Singapore.
8. Lehninger, A. L., 1987. Biochemistry, CBS Pub.
9. Casey,E. J.,1969. Biophysics concepts and mechanisms, East and West Press, New Delhi.

PLANT ECOLOGY AND PHYTOGEOGRAPHY

Hours : 4

Credit Allotted: 4

Code : 18K6B12

Max Marks : 75

UNIT-I : PLANT ECOLOGY

Approaches to the study of ecology – Autecology – Synecology – Population, Community. Climatic Factors (Light factor, Temperature factor, Wind factor). Edaphic Factors (Soil, Topography, Minerals).

UNIT-II

Ecosystems - components, Types of Ecosystem – aquatic (Pond), terrestrial (Grass land and Forest), Dynamic of eco systems – Food chain, Food web, Ecological pyramid, Primary and Secondary production, Energy flow in Ecosystem,

UNIT-III

Vegetation – Plant vegetation – plant formation, association, consociation, Societies. Study of vegetation (quadrant and transect). Plant succession – Hydrosere and Xerosere.

UNIT-IV

Morphological and Anatomical adaptation of Hydrophytes (*Hydrilla*, *Nymphaeae*), Mesophytes (*Hibiscus*, *Mangifera*) and Xerophytes (*Cactus*, *Nerium*), Halophytes (*Rhizophora*), Parasites (*Cuscuta*) and Epiphytes (*Vanda*).

UNIT-V

Phytogeographical region of World, Climate of India, Botanical region of India, Vegetational type of India – Evergreen, deciduous, sand dune vegetation and mangrove vegetation. Endangered plants and Red Data Book and RET.

REFERENCE

1. Agarwal, K.C (1994). Environmental Biology, Agro botanical publishers, India
2. Animugan, N (1994). Concepts of Ecology (Environmental Biology) Saras publications, Nagercoil, Tamil Nadu.
3. Odum, E.P. (1971) Fundamentals of Ecology (2nd Edition) saunders and Co., Philadelphia and Natraj Publishers, Dehradun.
4. Verma, P.S. and Agarwal, V.K. (1999) Concept of Ecology (Environmental Biology), S Chand and Co., New Delhi.
5. Mani, M.S. (1974). Ecology and biogeography of India, Dr, W.Junk publishers, The haque.
6. Kumerasan, M. (2000) Ecology and phytogeography, Saras Publications, Tirunelveli.
7. Savage, J.M. (1969) Evolution 2nd Edition Amarind Publishing cosec P (p) Ltd., New Delhi.
8. Gottfried, Ld. and Jain, S.K. (1988) Plant Evolutionary Biology, London.
9. Sharma, P.D., 1999, Ecology and Environment, Rastogi Publishers, Meerut.
10. Kumaresan.M., 2000, Ecology and Phytogeography, Saras Publication, Trunelvali

Semester	Course	Hours	Credit	Sub. Code	Marks
VI	CC 13 (P)	6	5	18K6B13P	40 + 60 = 100

PRACTICAL – IV FOR CORE COURSE 10, 11 and 12

PLANT PHYSIOLOGY

1. Demonstration of Osmotic pressure (Onion / Rheo leaf).
2. Rate of transpiration by Ganong's potometer.
3. Comparison of rate of absorption and rate of transpiration.
4. Separation of leaf pigments by paper chromatography.
5. Measurement of respiration rate using germinating seeds / flower buds with simple respiroscope.
6. Measurement of rate of photosynthesis by Wilmott's bubbler.
7. Evolution of O₂ during photosynthesis.
8. Light is necessary for photosynthesis (Ganong's light screen experiment).
9. CO₂ is necessary for photosynthesis (Mohl's half leaf experiment).
10. Determination of anaerobic respiration.

BIOPHYSICS

1. pH meter
2. Centrifuge
3. Colorimeter
4. Spectrophotometer

BIOCHEMISTRY

1. Estimation of starch by anthrone method.
2. Estimation of protein by Lowry's method.
3. Estimation of Lipid.
4. Estimation of Amylase from potato.

PLANT ECOLOGY

1. Study of vegetation by quadrat method. Estimation of its frequency, density & Dominance cover.
2. Study of vegetation by line transect method. Estimation of its frequency, density & Dominance cover.
3. Measurement of soil and water pH.
4. Study of anatomical features of Hydrophytes, Mesophytes and Xerophytes. Morphological features of Epiphytes (*Vanda*), Parasites (*Cuscuta*) and Halophytes (*Rhizophora*).

BIOTECHNOLOGY - CONCEPT AND TECHNIQUES

Hours : 5

Credit Allotted: 5

Code : 18K6BELB2

Max Marks : 75

UNIT - I :

Biotechnology - Definition, History and Scope, Branches of Biotechnology , Market potential of biotechnology, GM crops.

UNIT - II

Plant tissue culture, concepts and techniques, Sterilization techniques, preparation of MS medium. Micropropagation - embryogenesis and Organogenesis-Anther culture, Suspension culture, Isolation and Fusion of protoplast.

UNIT - III

Genetic engineering - Cloning vectors – Plasmids (pBR 322), cosmids (λ Phage), BAC and YAC. Enzymes used in gene cloning - polymerases, restriction endonucleases, ligases and reverse transcriptase.

UNIT - IV

Procedure for gene cloning, isolation of specific genes, Methods of direct gene transfer – Particle bombardment, Electroporation, Micro injection and Liposomes. Screening of recombinant.

UNIT - V

Working mechanism and application of PCR, RFLP, RAPD and DNA finger printing techniques in biotechnology. Northern, Southern and Western blotting techniques. Electrophoresis (PAGE and AGE).

REFERENCE

- 1. Applied Biotechnology.,L P Rema.,MJ Public.,Chennai.**
- 2. S. Ignacimuthu, Applied Plant Biotechnolgy, Vishvanathan & Sons., Chennai**
- 3. Basic Biotechnology, S. Ignacimuthu - Vishvanathan&Co.,Chennai Plant Biotchnolgy, S. Ignacimuthu – Vishvanathan&Co.,Chennai**
- 4. A Text Book of Biotechnology, R.C.Dubey.,Agrobios.Jodhpur. Biotechnology, S.S. Purohit and S.K. Mathur - Agrobios.Jodhpur Biotechnology the Biological Principle, M.P. Trehan and Others.,TataMcGrow Hill.,New Delhi.**
- 5. Biotechnology.,V.Kumaresan., Saras Publication.,Nagercoil., Tamil Nadu Outlines of Biotechnology., Emkay Public., Delhi.,5**

BIORESOURCES AND BIOSTATISTICS

Hours : 5
Code : 18K6BELB3

Credit Allotted: 5
Max Marks : 75

UNIT-I : BIORESOURCES

Edible plants and their importance: Cereals (Rice and Wheat), Pulses (Cicer, Greengram), Spices (Pepper and Capsicum), Oil-Seeds (Mustard and Castor), fruits (Mango and Banana) and Beverages (Coffee and Tea).

UNIT-II

Drug Yielding Plants - Therapeutic and habit forming drugs with special reference to *Andrographis*, *Digitalis*, *Rauwolfia*, *Papaver*. Study of plants for the source and application of the following products: Fibre (*Cocus*) and Latex (*Heavea*).

UNIT-III

Useful products from Gymnosperms – Wood (Pine), Drugs -Turpentine, Taxol and Ephedrine. traditional and Economically important wood plant species in India – *Acacia*, *Bambusa*, *Tectona* and *Terminalia*.

UNIT-IV : BIOSTATISTICS

Biostatistics - Types and methods of collection of Data, Sampling techniques, Frequency distribution. Presentation of Data – Tabulation, Parts of Table, Types of table, Diagrammatic and Graphical representation of data.

UNIT-V

Measures of central tendency – Arithmetic Mean, Median and Mode. Measures of dispersion – Standard Deviation and standard error. Test of significance – Chi-Square test. Correlation, Regression and ANOVA - One way.

REFERENCE

1. Ragava Rao, D., 1983. Statistical Techniques in Agricultural and Biological Research, Oxford & IBH Publishing Co., New Delhi.
2. P.Ramakrishnan, Biostatistics. Saras Publication, Nagercoil.
3. Sharma O.P, 2000. Economic Botany, Tata Mc Graw Hill Publications, New Delhi.

PLANT DIVERSITY I (ALGAE, FUNGI AND BRYOPHYTES)

UNIT I: ALGAE

Introduction– Classification (F. E. Fritsch 1935-1948). Phylogeny of Algae- Thallus organization – Ultra structure of Prokaryotic and Eukaryotic Algae. Reproduction and Life cycle of Algae. Ecology of Algae, Freshwater and Marine Algae, Terrestrial Algae, Phytoplankton, Epiphytic, Parasitic and Symbiotic algae. Fossil Algae.

UNIT II:

Salient features of Protochlorophyceae, Cyanophyceae, Chlorophyceae, Charophyceae, Xanthophyceae, Bacillariophyceae, Phaeophyceae, Rhodophyceae, Economic importance of Algae.

UNIT III: FUNGI

Introduction, Classification (Alexopoulos and Mims 1979) Phylogeny of Fungi. General characters of Fungi, Ultra structure, Mode of nutrition- Reproduction – Life cycle, Culture of fungi, Heterothallism, Parasexuality and Fossil Fungi.

UNIT IV:

**General characters and reproduction of Myxomycotina, Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina, Economic importance of Fungi.6
LICHEN: General characters, Classification (Miller -1984), Distribution, Thallus organization and Reproduction of Lichens. Ecological and Economic importance of Lichens.**

UNIT V: BRYOPHYTES

General characters, Classifications (Rothmaler-1959), Structure and Reproduction of Hepaticopsida - (Marchantiales, Jungermanniales) Anthoceroptopsida (Anthocerotales) Bryopsida (Funariales and Polytrichales), Economic importance of Bryophytes, Evolution of Sporophytes, Fossil Bryophytes.

REFERENCES:

1. Pandey.S.N., S.P.Misra and P.S. Trivedi. 2002. A Textbook of Botany Volume II. Vikas Publishing House Pvt Ltd, New Delhi
2. Sambamurthy A.V. S.S. 2005. A Textbook of Algae. I.K. International Pvt.Ltd, New Delhi.
3. Bilgrami, K.S. and L.C. Saha, 2004. A textbook of Algae, CBS publications.
4. Alexopoulos, C.J., C.W. Mims and M. Blackwell. 2007. Introductory Mycology. IV Edition. Wiley India (P) Ltd., Daryaganj, New Delhi.
5. Mukta Bhargava, 2003. The latest portfolio of theory and practice in Fungi, A.S Saini Dominant Publications.
6. Rashid.A. 2007. An Introduction to Bryophyta – Vikas publications, New Delhi.
7. Chopra, R.N. and P.K. Kumar, 2003. Biology of Bryophytes, New age International Pvt.
8. Chandrakant Pathak, 2003. The latest portfolio of theory & practice in Bryophyta, Dominan Publications.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
I	CC 2	6	5	18KP1B02	25	75	100

PLANT DIVERSITY – II (PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY)

UNIT – I: PTERIDOPHYTES

General characters, Reimer's classification (1954). Telome concept. Sporangium development – Eusporangiate type and Leptosporangiate type. Apogamy, Apospory, Heterospory and seed habit. Detailed account on stelar evolution.

UNIT – II:

Brief account of the Morphology, Structure and Reproduction of the major groups – Psilophytopsida, Psilotopsida, Lycopsidea, Sphenopsida and Pteropsida. (Individual type study is not necessary). Economic importance of Pteridophytes.

UNIT – III: GYMNOSPERMS

General characters - Classification of Gymnosperms (Sporne, 1965), Origin and Phylogeny of Gymnosperms, Gymnosperms compared with Pteridophytes and Angiosperms - Economic importance of Gymnosperms.

UNIT – IV:

A general account of Distribution, Morphology, Anatomy, Reproduction and Life cycle of the following major groups- Cycadopsida (Pteridospermales, Bennettitales, Pentaxylales, Cycadales), Coniferopsida (Cordaitales, Coniferales, Ginkgoales) and Gnetopsida (Gnetales).

UNIT – V: PALEOBOTANY

Concepts of Paleobotany - Geological time scale – Fossils- Fossilization- Compressions, Incrustation, Casts, Molds, Petrifications, Compactions and Coal balls. Detailed study of the fossil forms - Pteridophytes: *Lepidodendron* and *Calamites*. Gymnosperms: *Lyginopteris*, *Cordaites*. Role of fossils in oil exploration and coal excavation, Paleopalynology.

REFERENCE

1. Rashid. A. (2007). An Introduction to Pteridophyta – Vikas publications, New Delhi.
2. Sporne, K.R. (1975). The Morphology of Pteridophytes, Hutchinson and Co., London.
3. Sundararajan, S. (2007). Introduction to Pteridophyta. New Age International Publishers, New Delhi.
4. Vashishta, P. C. *et al.* (2008). Botany for Degree Students: Pteridophyta. S. Chand and Co.Ltd., New Delhi.
5. Coulter, J. M. and Chamberlin, C. J. (1967). Morphology of Gymnosperms. Central Book Depot, Allahabad.
6. Johri, RM, Lata S, Tyagi K (2005), A text book of Gymnosperms, Dominate pub and Distributer, New Delhi.
7. Nikias, K. J. (1981). Paleobotany, Paleoecology and Evolution. Praeger Publishers, USA.
8. Seward, A. C. (1919). Fossil Plants. Vol. I, II, III and IV. Cambridge University Press, London.
9. Shukla, A. C. and Mishra, S. P. (1982). Essentials of Paleobotany (2nd ed.). Vikas Publishing. House Pvt. Ltd., New Delhi.
10. Stuart WN. (1998). Paleobotany and Evolution of Plants, New York Publications.

UNIT I: IMAGING AND RELATED TECHNIQUES

Principles and application of microscopy; Light microscopy; Fluorescence microscopy; Confocal microscopy; Transmission and Scanning electron microscopy – sample preparation and staining techniques.

UNIT II: CELL FRACTIONATION AND RADIOISOTOPES

Introduction, Basic Principle of Sedimentation, components and different types of centrifuges - Differential and density gradient centrifugation, analytical centrifugation, ultracentrifugation. Basic concept of radio isotope, GM and scintillation counter, autoradiography, Applications in biological science.

UNIT III: CHROMATOGRAPHY

Basic principle and biological applications. Paper chromatography; Column chromatography, TLC, GLC, HPTLC, Ion-exchange chromatography; Size exclusion chromatography; Affinity chromatography.

UNIT IV: SPECTROPHOTOMETRY

Properties of Electromagnetic radiations; Beer Lambert's Law, Extinction Coefficient, Principle and Applications of UV-Visible light Spectroscopy. Atomic absorption and Flame emission spectroscopic techniques. Mass spectrometry: X-ray diffraction; X-ray crystallography; Principle & biological applications of IR & NMR.

UNIT V: ELECTROPHORESIS

Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE. Immunoelectrophoresis, Isoelectrofocussing, Capillary Electrophoresis, Polymerase Chain Reaction, DNA sequencing.

REFERENCES

1. Plummer, D.T. (1996). *An Introduction to Practical Biochemistry*. Tata McGraw-Hill Publishing Co. Ltd. New Delhi. 3rd edition.
2. Ruzin, S.E. (1999). *Plant Microtechnique and Microscopy*, Oxford University Press, New York. U.S.A.
3. Wilson K and Walker J "Principles and Techniques of Biochemistry and Molecular Biology" 6th Ed. Cambridge University Press, 2005.
4. Willard, H.H., Merritt L.L. Dean J.A. and Settle F.A., "Instrumental Methods of Analysis", 7th Ed., Wadsworth Publishing Co., 1986.
5. Van Holde, K E, Johnson, W. and Ho, P. S., "Principles of Physical Biochemistry", Prentice Hall, 1981.
6. Cantor, C. R. and Schimmel, W.H., "Biophysical Chemistry Part-II", Freeman & Co., 1981.
7. Campbell, I.D. and Dwek, R. A., "Biological Spectroscopy", Benjamin Curmmings Publication Co. Inc., 1984.
8. Glasel, J. and Deutscher, M. B., "Introduction to Biophysical Methods for Protein and Nucleic acid Research", Academic Press, 1995.

ALGAE :

Study of the Morphological, Anatomical and Reproductive parts of the following:-

Cyanophyta	: <i>Gloeocapsa, Anabaena</i>
Chlorophyta	: <i>Hydrodictyon, Aectabularia</i>
Charophyta	: <i>Chara</i>
Xanthophyta	: <i>Vaucheria</i>
Bacillariophyta	: <i>Cyclotella and Navicula (Diatoms)</i>
Phaeophyta	: <i>Padina, Sargassum</i>
Rhodophyta	: <i>Batrachospermum, Gracilaria.</i>

FUNGI:

Mastigomycotina	: <i>Pythium</i>
Zygomycotina	: <i>Pilobolus</i>
Ascomycotina	: <i>Taphrina, Xylaria</i>
Basidiomycotina	: <i>Pluerotus, Lycoperdon</i>
Dueteromycotina	: <i>Cercospora, Colletotrichum</i>
Lichens	: <i>Usnea.</i>

BRYOPHYTES:

Hepaticopsida	: <i>Targionia, Reboulia</i>
Anthocerotopsida	: <i>Anthoceros</i>
Bryopsida	: <i>Pogonatum</i>

PTERIDOPHYTES:

(Extinct and living forms)

Psilophytopsida	: <i>Rhynia</i>
Psilotopsida	: <i>Psilotum</i>
Lycopsida	: <i>Isoetes</i>
Sphenopsida	: <i>Equisetum</i>
Pteropsida	: <i>Angiopteris, Osmunda & Azolla</i>
Extinct and Fossil forms:	<i>Lepidodendron, Stigmara, Calamites</i>

GYMNOSPERMS:

- Cycadopsida** : *Cycas*
- Coniferopsida** : *Ginkgo, Cupressus, Podocarpus*
- Gnetopsida** : *Gnetum* and *Ephedra*

PALEOBOTANY:

Extinct & fossil forms: Pteridophytes-*Lepidodendron* and *Calamites*. Gymnosperms - *Lyginopteris* and *Cordaites*

ANALYTICAL TECHNIQUES IN PLANT SCIENCE

SPOTTERS

- 1. Microscopy-SEM &TEM**
- 2. PH meter**
- 3. Centrifuge**
- 4. Chromatography- GLC, TLC,**
- 5. Spectrophotometer- GCMS.**
- 6. Autoradiography**
- 7. Electrophoresis –PAGE, SDS - PAGE**
- 8. NMR**
- 9. PCR**
- 10. DNA Sequencing**

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
I	MBE 1	6	4	18KP1BELB1	25	75	100

BIOFERTILIZER AND MUSHROOM TECHNOLOGY

UNIT I: BIOFERTILIZERS

Definition, Advantages, Microbes used as Biofertilizers. Isolation, Characteristics, Identification, Mass inoculum production, Field application and marketing of *Rhizobium*, *Azospirillum*, *Azotobacter*.

UNIT II:

Cyanobacteria (BGA) - Isolation, Characteristics, Mass inoculum production and Field application. Azolla – Isolation, Characteristics, Mass inoculum production and Field application.

UNIT III:

Mycorrhizae – Morphology, types of Mycorrhizae, Isolation, Mass production of VAM, Field application and Importance. Brief account on Vermicompost.

UNIT IV: MUSHROOM TECHNOLOGY

Introduction – History and Scope of edible and medicinal mushrooms – Types of mushroom and Economic importance. Cultivation method – Isolation, Spawn preparation, Growth media, Spawn running and harvesting and Marketing of mushrooms.

UNIT V:

Cultivation technology – *Agaricus* sp., *Pleurotus* sp., *Vovariella* sp., Storage – Short term storage and Long term storage. Nutritional value and Food preparation – Types of food prepared from mushroom (Cutlet, Omelet, Pickles, Curry, Soup & Briyani).

REFERENCE:

1. Kumarasan.B, 2001, Biotechnology, Saras Publication, Tamil Nadu.
2. Dubey, R.C., 2001, Text Book of biotechnology, S.Chand & Co., New Delhi.
3. Bagyaraj,D.J., & Rangasamy A.,2005,Agricultural Microbiology- Tata McGraw Hill., NewDelhi
4. Subba Rao, N.S.,1995, Soil and Agricultural Microbiology, Oxford and IBH Publishing Co., Pvt. Ltd., New Delhi.
5. Subba Rao, N.S.,1995, Biofertilizers, Oxford and IBH Publishing Co., Pvt. Ltd., New Delhi.
6. Kaul, T.N., 1997, Introduction to Mushroom Science, Oxford & IBH, Publishing Ltd, NewDelhi.
7. Gupta, P.K., 1998, Elements of Biotechnology, Rostagi Publications, Meerut.
8. Paneerselvam, A., Ambikapathy, V., and Usha, S., 2007, Hand Book of edible mushroom cultivation, Murugan Publication, Tanjore.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
II	CC 5	6	4	18KP2B05	25	75	100

ANATOMY, EMBRYOLOGY AND MICROTECHNIQUES

UNIT I: ANATOMY

Meristem organization of shoot and root apices of Angiosperms. Theories of Root and Shoot Apex, Cambium and its derivative tissues, Differentiation of secondary xylem and secondary phloem, Anatomy in Relation to taxonomy.

UNIT II:

Anatomical features of Root, Stem and Leaf of Dicot and Monocot. Normal and Anomalous secondary growth in Dicot stem -*Aristolochia*, *Nyctanthes* and Monocot stem - *Dracena*. Nodal anatomy- Types of nodes and origin of bud traces. Wood Anatomy in relation to phylogeny.

UNIT III: EMBRYOLOGY

Microsporogenesis– Structure and development of Microsporangium – development of Male gametophyte, Megasporeogenesis – Structure and development of Megasporeangium – Types of ovule, Development of female gametophyte. Fertilization, Development of Dicot and Monocot Embryo.

UNIT IV:

Sexual incompatibility, Methods to overcome incompatibility, Endosperm – Types, cytology of endosperm, Polyembryony and its types, Parthenocarpy, Apomixis, Embryology relation to Taxonomy and application of Embryology.

UNIT V: MICROTECHNIQUES

Fixation of plant materials: Fixation – Fixative – Dehydration – Clearing reagents – Embedding with wax – resins – sectioning. Stains and staining mechanisms. Preparation of permanent slide and Museum specimen, Mountants. Microtome – rotary, rocking and Cryomicrotome.

REFERENCE:

1. Bhojwani, S. S. and Bhatnagar, S.P. 1992. The Embryology of Angiosperms. Vikas Publishing house Pvt. Ltd., New Delhi.
2. Maheshwari P. 1985. An introduction to the Embryology of Angiosperms. Tata McGraw - Hill publishing company, New Delhi.
3. Varghess TM. 1984 An introduction to Experimental and applied Embryology of Angiosperms. Oxford IBH publishing Company, New Delhi.
4. Fahn, A. 1979, Plant Anatomy. Pergamon press, Oxford, Newyork.
5. Esau, K. 1972, Plant Anatomy. Wiley, Newyork.
6. Johansen, D.A. 1940. Plant Microtechnique. McGraw Hill, Newyork.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
II	CC 6	6	4	18KP2B06	25	75	100

GENETICS AND MOLECULAR BIOLOGY

UNIT I: GENETICS

Mendelian genetics – Mendel’s laws of inheritance – Monohybrid and Dihybrid Cross, Incomplete dominance and Complementary interaction of genes. Epistasis and Lethal alleles, Multiple alleles. General account of ABO blood group in man.

UNIT II:

Linkage and Crossing over, tetrad analysis, Sex determination in plants, sex limited and sex linked inheritance, Cytoplasmic inheritance, Male sterility and mechanism of inheritance, Application of Cytoplasmic and genetic male sterilities.

UNIT III:

Mutation - Biochemical basis, induction, mutagenic agents, Physical and chemical mutagens, Types of mutations. Polyploidy - types, induction, role in plant breeding. Population genetics - Hardy and Weingberg Law.

UNIT IV: MOLECULAR BIOLOGY

Structure of Gene- Cistron, Recon, Muton, Salient features of Genetic code, Structure of DNA and RNA – types of DNA (A, B, Z) and RNA (mRNA, t RNA, r RNA, hn RNA). Replication of DNA in Prokaryotes and Eukaryotes. Role of enzymes in DNA replication, DNA damage and repair mechanisms.

UNIT V:

Transcription – RNA polymerase, RNA synthesis (Initiation, Elongation and Termination), Post transcriptional modification, Translation (Activation, Attachment Initiation, Elongation, Termination.), Post-translation modification. Gene Expression –Lac operon and Trp operon model.

REFERENCE

1. De Roberties, E.D.P. and De Roberties, E.M.F.,1995, cell and Molecular Biology, 8th edn. B.I.Waverly Pvt. Ltd. New Delhi.
2. Elliot, D.L.& Jones,E.W., 2001,Genetics:Analysis of genes and genomes (Fifth edition), Jones and Barlett Publishers, Sdbury, Massachussts.
3. Verma PS Agarwal VK. Molecular Biology (First edition),S.Chand and Company Ltd. New Delhi, (2009).
4. Verma,P.S. and Agarwal, V.K., 1986. Cell biology and Molecular Biology. S.Chand and Company, New Delhi.
5. Gardner, E.J., 1972, Principles of genetics - John Wiley and sons, N.Y.
6. Freifelder, D.,1986,Molecular Biology. Jones and Bardett Publishin INC. Boston,Portola Valley.
7. Vasishtha, P. C. and Gill, P. S. (1998). Genetics: Speciation and Plant Breeding. Pradeep Publications, Jalandhar.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
II	CC 7	6	5	18KP2B07	25	75	100

PLANT PHYSIOLOGY AND BIOCHEMISTRY

UNIT I: PHYSIOLOGY

Water relations of plants, Osmosis –Osmotic pressure, diffusion –diffusion pressure deficit, chemical and water potential in plants, water and salt stress, root pressure, Ascent of sap, Mineral nutrition in plants , Modern concepts of mineral salt absorption and its translocation. Transpiration, Stomatal physiology and regulation.

UNIT II:

PHOTOSYNTHESIS - Photosynthetic apparatus, Pigments, Red Drop and Emerson's Enhancement effect. Photosynthesis Mechanism – Light reactions; Cyclic, Non-cyclic and Pseudocyclic reaction. Dark reaction – C3 & C4 cycle. Photorespiration and Glycolate metabolism (C2 Cycle) Factors affecting and significance of photosynthesis. CAM cycle.

UNIT III:

RESPIRATION- Glycolysis, Krebs's cycle and Electron transport system, Bioenergetics of ATP. Pentose phosphate pathway and its significance. Photoperiodism, Vernalization, Phytochrome, Seed Dormancy and Senescence. Plant growth regulators: Structure and functions of Auxin, Gibberellins, Cytokinins, Abscisic acid and Ethylene.

UNIT IV: BIOCHEMISTRY:

Structure, Properties and classification of Carbohydrates (Monosaccharide, Disaccharide and Polysaccharide), Protein (Primary, Secondary, tertiary and Quaternary) and Amino acids (Essential and Nonessential).

UNIT V:

Structure, Properties and Classification of Lipids, Nucleic acid, Enzymes and Vitamins, Biosynthesis of Lipid, Structure and function of Phenols, Terpenes, Alkaloids, Flavonoids.

REFERENCE

1. Pandey,S.N.,& Sinha., 1972, Plant Physiology, Vikas Publishing , New Delhi.
2. Jain, J.L., 1979, Fundamentals of Biochemistry, S. Chand&Co., Ltd., New Delhi.
3. Salil Bose, L., 1981, Elementary Biophysics, Vijaya Printers, Chennai.
4. Thiravias Raj, S.,1999,Biophysics , Saras Publication, Tamil Nadu.
5. Lehninger, A.L., 1987, Biochemistry,CBS Pub.
6. Salisbury, F.B.&Ross, CN.,1955.Plant Physiology, CBS Publishers, New Delhi.
7. Zuley G.L., 1998, Biochemistry, Wm.C. Brown publishers USA.
8. Jeffrey M Cooper., 2002. The Cell: A molecular approach.
9. Stryer.L., 2002, Biochemistry, W.H. Freeman & Co., 5 edn.
10. Mathews C.K *et al.*, 2005, Biochemistry, Pearson Education, Singapore.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
II	CC 8 (P)	6	5	18KP2B08P	40	60	100

PRACTICAL –II FOR CORE COURSE 5, 6 & 7

ANATOMY:

1. Anatomy of Monocot and Dicot Root, Stem and Leaf.
2. Secondary growth of Root and Stem.
3. Nodal Anatomy– Uni, Tri & Multilacunar node.
4. Wood structure - T.S., T.L.S., and R.L.S., - showing variation in vessel elements, fibres, axial parenchyma and ray parenchyma.
5. Identification of different types of stomata
6. Anomalous secondary in Dicot stem *Aristolochia* & *Nyctanthus*
7. Anomalous secondary in Monocot stem- *Dracaena*

EMBRYOLOGY:

1. Slides showing developmental stages of Anther, Embryosac, Endosperm and Embryo.
2. Study of different types of pollen grains.
3. Dissection of Endosperm Haustoria – *Cucumis* (Cucurbitaceae)
4. Dissection of Embryo – *Tridax*.
5. Methods of testing pollen viability using - (a). Alexander's stain (b). Acid - test.

MICROTECHNIQUES

SPOTTERS

1. Fixatives
2. Stains
3. Clearing agents
4. Mountants
5. Microtome

GENETICS:

Genetics practical will include working problems in genetics.

MOLECULAR BIOLOGY:

1. Isolation of Plasmid DNA from bacteria.
2. Isolation of Genomic DNA.
3. Estimation of DNA by Spectrophotometric method.
4. Estimation of RNA by Spectrophotometric method.

PLANT PHYSIOLOGY

- **Determination of water potential in different tissues.**
- **Effect of temperature on the membrane permeability.**
- **Determination of Stomatal frequency.**
- **Determination of Rate of Transpiration by Ganong's Potometer.**
- **Determination of Respiratory Quotient using Ganong's Respirometer.**
- **Determination of Evolution O₂ during Photosynthesis.**
- **Determination of chlorophyll-a, chlorophyll-b and total chlorophyll by the Arnon's method.**
- **Determination of Carotenoids.**
- **Estimation of total Phenols.**
- **Separation of Pigments by Paper Chromatography**

BIOCHEMISTRY

- **Estimation of Protein (Lowry's method)**
- **Estimation of Amino acids**
- **Estimation of Starch**
- **Estimation of Total lipid**
- **Estimation of Amylase.**
- **Estimation of Protease.**

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
II	MBE 2	6	4	18KP2BELB2	25	75	100

HERBAL SCIENCE

UNIT I:

General Introduction: Definition, source of herbal raw materials, identification, authentication, standardization of medicinal plants as per WHO guidelines & different herbal pharmacopoeias.

UNIT II:

Collection and processing of herbal drugs. Seasonal & geographical variations; natural & artificial drying methods. Packaging & labeling of herbal drugs prior to extraction.

UNIT III:

Organoleptic evaluation of drugs – Microscopic evaluation of drugs – Physical evaluation of drugs – Active and inert constitutions of drugs- drug adulteration. Detailed organoleptic study of *Adadhoda vasica*, *Andrographis paniculata*, *Azadirachta indica*, *Coriandrum sativum* and *Datura metal*.

UNIT IV:

Detailed organoleptic study of *Eclipta alba*, *Emblica officinalis*, *Ocimum baselicum*, *Phyllanthus amarus*, *Ricinus communis*, *Catharanthus roseaus* and *Zingiber officinalis*.

UNIT-V:

Herbal Preparations – Collections of wild herb – Capsules Herbal oils – Herbal bath – Extraction of Phytopharmaceuticals. API (Active pharmaceutical ingredients - Alkaloids, Phenols, Flavonoids and Terpenoids.)

REFERENCE

1. Kokate, C.K., Purokit A.P and Gokahale, 2002. Pharmacognosy, Nirali Prakashan Pune.
2. Gary Walsh 1998. Biopharmaceutical, John Wisley and Sons, NY.
3. Peter B. Kaufmann *et al.*, 1999, Natural Products from Plants, C.R.C.Press.
4. K. Peach and M.V. Tracey. 1964. Modern Methods of Plant Analysis.

Semester	Course	Hours	Credit	Sub. Code	Marks
					External
II	SS 1	-	5	18KP2SSB1	100

CELL COMMUNICATION AND CELL SIGNALING

UNIT I:

DNA replication, repair and recombination, Unit of replication, enzymes involved, replication origin and replication fork. RNA synthesis and processing transcription factors and machinery, formation of initiation complex, transcription activator and repressor, RNA polymerases, capping, elongation, and termination, RNA processing, RNA editing, splicing, poly adenylation, structure and function of different types of RNA.

UNIT II:

Protein synthesis and processing, Ribosome, formation of initiation complex, initiation factors and their regulation, elongation and elongation factors, termination, genetic code, aminoacylation of tRNA, aminoacyl tRNA synthetase, and translational proof-reading, translational inhibitors, Post- translational modification of proteins. Gene expression – Positive and Negative gene expression.

UNIT III:

Host parasite interaction Recognition and entry processes of different pathogens like bacteria, viruses into animal and plant host cells, alteration of host cell behaviour by pathogens, virus-induced cell transformation, pathogen-induced diseases in animals and plants, cell-cell fusion in both normal and abnormal cells.

UNIT IV:

Cell signaling Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors, signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two component systems, light signaling in plants, bacterial chemotaxis and quorum sensing.

UNIT V :

Cellular communication Regulation of hematopoiesis, general principles of cell communication, cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, neurotransmission and its regulation.

Sub. Code: 18KP2SSB1

DEPARTMENT OF BOTANY

PG - SELF STUDY COURSE 1

CELL COMMUNICATION AND CELL SIGNALING

QUESTION PAPER PATTERN (Max. Marks:100)

SECTION A

Answer All Questions (50x2=100)

(Ten questions from each unit)

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
III	CC 9	6	5	18KP3B09	25	75	100

PLANT SYSTEMATICS AND ECONOMIC BOTANY

UNIT I: TAXONOMY

Introduction, History of classification, A detailed study of classification - Artificial System - Carl Linnaeus, Natural System - Bentham and Hooker, Modern System - Engler and Prantl, Hutchinson and Takhtajan. Biosystematics, Chemotaxonomy and Numerical Taxonomy, Role of Anatomy and Embryology in solving Taxonomic problems.

UNIT II:

Taxonomical studies of selected families and their economic importance and medicinal uses. Polypetalae: Menispermaceae, Caryophyllaceae, Portulacaceae, Rhamnaceae, Sapindaceae, Anacardiaceae, Combretaceae, Myrtaceae, Umbelliferae.

UNIT III:

Taxonomical studies of selected families and their economic importance and medicinal uses. Gamopetalae: Aizoaceae, Oleaceae, Boraginaceae, Scrophulariaceae, Bignoniaceae, Pedaliaceae, Verbenaceae and Lamiaceae.

UNIT IV:

Taxonomical studies of selected families and their economic importance and medicinal uses. Monochlamydeae: Chenopodiaceae, Aristolochiaceae, Lorantheaceae, Orchidaceae. Monocotyledons: Amaryllidaceae, Commelinaceae, Areaceae and Cyperaceae.

UNIT V: ECONOMIC BOTANY:

Cereals (Wheat, Maize), Pulses (Red gram, Black gram), Vegetable oil (ground nut and Oil palm), Fibers (*Gossypium*, *Corchorus*), Nuts (Cashew, Walnut), Spices (Pepper, Clove) Wood (Teak, Pine).

REFERENCE

1. Lawrence, G.H.M., 1955, The Taxonomy of Vascular Plants, Central Book Depot., MacMillan, New York,
2. Davis, P. H & Hetwood, V.M., 1980, Principles of Angiosperm Taxonomy, Oliver & Boyd.
3. Vashista, P.C., 1990. Taxonomy of Angiosperms-S.Chand & Co., New Delhi.
4. Heywood, V.K. & Moore, D.M., 1984, current Concepts in Plants-Clendon Press.
5. Grant, W.F., 1984, Plant Biosystematics, Acad Press Inc., Canada.
6. Sambamurty, A.V.S.S., 2005 Taxonomy of Angiosperms, I. K. International P vt. Ltd. New Delhi.
7. B.P.Pandey., and Anitha., 1990, Economic Botany, S.Chand & Company Ltd., New Delhi.
8. Pandey, B.P., 1997, Taxonomy of Angiosperms-S.Chand & Co., New Delhi.
9. Sharma O.P, 2000, Economic Botany, Tata Mc Graw Hill Publications, New Delhi.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
III	CC 10	6	4	18KP3B10	25	75	100

HORTICULTURE AND ECOLOGY

UNIT I: HORTICULTURE

History, Scope and Importance of horticulture, Division of horticulture, Climate, soil and nutritional needs, Water irrigation, Plant propagation method – Cutting, layering, grafting and budding. Stock – Scion relationship, micropropagation by induction of rooting. Role of growth hormone in horticultural crops.

UNIT II

Types of Garden, methods of designing outdoor garden – hedges, edges, fences, trees, climbers, rockeries, arches, terrace garden, Lawn making and maintenance, water garden – cultivation of water plants. Establishment of Herbal garden.

UNIT III

Indoor gardening, roof gardening, Foliage plants, flowering plants, hanging basket, Bonsai, Training and pruning. Floriculture – Cultivation of commercial flower crops – Rose, Jasmine and *Chrysanthemum*, flower decoration - Dry and Wet decoration.

UNIT IV: ECOLOGY

Introduction to Ecology. Evolutionary Ecology, Environmental concepts, Characteristics of population. Types of forest and forest conservation, Resources –Renewable and Non renewable.

UNIT V:

Nature of Ecosystem and its component- food chain food web, energy flow and Ecological pyramids. Biogeochemical cycle (Carbon, Nitrogen, Phosphorus and sulphur cycle), Pollution – Air, Water, Soil, Thermal and Radiation, Cumulative effect of pollution on global environment- Ozone depletion, Acid rain, Green house effect and their consequences, Ecological indicators.

REFERENCES

1. Rao, K.M. (2000) Text Book of Horticulture. Macmillan India Ltd., New Delhi
2. Kumar, N. (1987). Introduction to Horticulture, Rajalakshmi publishers, Nagercoil.
3. Arora. J. S. (1992). Introductory ornamental Horticulture, Kalyani Publishers, New Delhi
4. Manibushan Rao, K. (1991). Text book of Horticulture. Macmillan publishing co., Newyark
5. Agrawal K.C. (1987) Environmental Biology - Agro – Botanical publication, India
6. Grant, W.E. and Swannack, T.M. (2008), Ecological modelling Blackwell
7. Wilkson, D.M. (2007) Fundamental process in Ecology, An earth system approach ,Oxford.
8. Ambasht, R.S. (1974). A Textbook of plant Ecology- Third ed. Students Friends Co., Varanasi, India.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
III	CC 11 (P)	6	5	18KP3B1IP	40	60	100

PRACTICAL –III FOR CORE COURSE 9 and 10

PLANT SYSTEMATICS

1. **Key Preparation.**
2. **Nomenclature of Plants with few examples.**
3. **Embryo & Pollinia dissection.**
4. **Study the plants belonging to the following families with minimum two examples. Training in dissection, observation, identification and sketching of floral parts of plants belonging to the families mentioned in the syllabus along with floral diagrams and floral formula. Field study of flora. Submission of 25 herbarium specimens.**

Polypetalae: Menispermaceae, Caryophyllaceae, Portulacaceae, Rhamnaceae, Sapindaceae, Anacardiaceae, Combretaceae, Myrtaceae, Umbelliferae.

Gamopetalae: Aizoaceae, Oleaceae, Boraginaceae, Scrophulariaceae, Bignoniaceae, Pedaliaceae, Verbenaceae and Lamiaceae.

Monochlamydeae: Chenopodiaceae, Aristolochiaceae, Loranthaceae, Orchidaceae. Monocotyledons: Amaryllidaceae, Commelinaceae, Arecaceae and Cyperaceae.

ECONOMIC BOTANY:

Observation of Economic plants included in theory part of Taxonomy and Economic Botany.

HORTICULTURE:

- **Study of tools and implements used in horticulture and plant propagation.**
- **Gardens layout-Formal, Informal, Kitchen and Rock.**
- **Plant propagation methods- Cutting, Layering, Grafting and Budding.**

ECOLOGY:

Observation of the Scheme / Photographs of Carbon, Nitrogen, Phosphorus and Sulphur cycle), Pollution – Air, Water, Soil. Green House Effect, Acid rain and Ozone depletion.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
III	MBE 3	6	4	18KP3BELB3	25	75	100

PHARMACOGNOSY

UNIT I:

Introduction; History, definition and scope of Pharmacognosy, Traditional and Alternative system of medicine (Ayurvedha, Unani, Homeopathic, Siddha, Acupuncture and Yoga.) Collection and processing of Herbal drug.

UNIT II:

Medicinal plants- Cultivation and propagation of medicinal plants, Methods of Collection, Harvesting, drying and storage of drugs, Preparation of crude drugs. Indian trade in medicinal and aromatic plants, conservation of medicinal plants.

UNIT III:

Quality control techniques - Adulteration and deterioration, Factors affecting herbal drugs quality. Drug evaluation – Macroscopical, Microscopical, Physicochemical, Phytochemical (Qualitative and Quantitative analysis of secondary metabolites- Alkaloids, Tannin, Phenols, Steroids, Terpenoids and Flavonoids) and Biological Evaluation methods.

UNIT IV:

Cultivation and standardization of drugs from natural origin. Anticancer drug - *Vinca rosea*, Antidiabetic- *Gymnema sylvestris*, Hepatoprotective - *Phyllanthus niruri*, Antiasthmatic – *Toddalia asiatica*, Cardiotonic – *Digitalis purpurea*, Antimalarial- *Chinchona officinalis*, Hypertensive– *Rauwolfia serpentina*.

UNIT V:

Natural pesticides (*Vitex, Azadiracta*), Allergenic Plant (*Parthenium, Mucunna*) Poisonous plant (*Abrus precatorius, Nerium oleander*). IPR and Patenting of active Principles, Entrepreneurship.

REFERENCES

1. Kokate, C.K., Purohit, A.P and Gokhalae, S.B.2005. Pharmacognosy, Nirali Prakasam, Pune.
2. Kapoor, L.D.1990. Handbook of Ayurvedic medicinal plants. CRC Press, New York,USA.
3. Ram, P.Rastogi, B.N.Malhotra.1995. Compedium of Indian Medicinall plants CDRI & PID, New Delhi.
4. Upadhyay, S.N. 1997. Immunomodulation. Narosa Publishing House, New Delhi.
5. Warriar, Nambiar and Ganapathy, 2001. Some important medicinal plants of the Western Ghats, India.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
III	MBE 4	6	4	18KP3BELB4	25	75	100

FOOD TECHNOLOGY

UNIT I:

Food preservation: Principles and methods – Perishable, semi-perishable and non-perishable foods – Methods of preservation – Temporary preservation – Asepsis, low temperature, pasteurization – Permanent preservation – Sterilization processing by heat, effect of acidification.

UNIT II:

Preservation by salting, Preservation by sugar syrup – Preservation by concentration – Preparation of jam jelly – Role of pectin in jam – Preservation by chemicals: Benzoic acid, Parabenzene, Sulphur-di-oxide, Sulphites nitrites, Diethylpyrocarbonates (DEPC), Hydrogen per oxide, Chlorine and CO₂.

UNIT III:

Food Processing: Methods – Wet heating method by cookers, Microwave heating method – Processing of fruits and fruit products – Canning of fruits – Preparation of fruit juices – Squashes, Functional Food.

UNIT IV:

Vegetable Products – Canning of vegetables and pickles. Baked products: Flour preparation, baking formulation, processing. Milk and milk products: butter, ghee, lassi, unfermented milk products, condensed milk, cheese, ice-cream and milk powder.

UNIT V:

Food additives: Definition, antioxidants – colouring agents, emulsifier, stabilizers and thickening, bleaching and maturing agents, clarifying agents, anti-foaming agents, function of additives.

REFERENCE:

1. Frazier, W.C. and Westhoff, D.C.,1988, Food Microbiology. 3rd ed. Tata MC Graw Hill Publishing Co. Ltd., New Delhi.
2. Adams, M.R. and Moss, M.O.,1996, Food Microbiology. New Age International Pvt. Ltd. Publishers, New Delhi.
3. Lal, B., Siddappa, G.S. and Tandon, G.N., 1967,Preservation of Fruits and Vegetables. ICAR Publication, New Delhi.
4. Ranganna, S.,1986, Handbook of Analysis and Quantity Control for Fruit, Vegetable Products. CFTRI, Mysore.
5. Giridharilal, Siddappa, G.S. and Tandon, G.L., 1990, Preservation of Fruits and Vegetables, CFTRI, Mysore.
6. Manorajan Kalia and Sangita Sood, 1992, Food Preservation and Processing. Department of Food Science and Nutrition, College of Home Science, Himachal Pradesh Agricultural University, Palampur.

Semester	Course	Hours	Credit	Sub. Code	Marks
					External
III	SS 2	-	5	18KP3SSB2	100

INHERITANCE BIOLOGY AND DIVERSITY OF LIFE FORMS

UNIT I:

Mendelian principles: Dominance, segregation, independent assortment. Concept of gene: Allele, multiple alleles, pseudoallele, complementation tests. Extensions of Mendelian principles: Codominance, incomplete dominance, gene interactions, genomic imprinting, penetrance and expressivity, phenocopy, linkage and crossing over, sex linkage, sex limited and sex influenced characters.

UNIT II:

Extra chromosomal inheritance: Inheritance of Mitochondrial and chloroplast genes, maternal inheritance. Microbial genetics: Methods of genetic transfers – transformation, conjugation, transduction and sex-duction, mapping genes by interrupted mating, fine structure analysis of genes. Human genetics: Pedigree analysis, karyotypes, genetic disorders. Quantitative genetics: Polygenic inheritance, heritability and its measurements.

UNIT III:

Mutation- Types, causes and detection, mutant types – lethal, conditional, biochemical, loss of function, gain of function, germinal verses somatic mutants, insertional mutagenesis. Structural and numerical alterations of chromosomes: Deletion, duplication, inversion, translocation, ploidy and their genetic implications. Recombination: Homologous and non-homologous recombination including transposition.

UNIT IV:

Principles & methods of taxonomy: Concepts of species and hierarchical taxa, biological nomenclature, classical & quantitative methods of taxonomy of plants, animals and microorganisms. Levels of structural organization: Unicellular, colonial and multicellular forms. Levels of organization of tissues, organs & systems. Comparative anatomy, adaptive radiation, adaptive modifications.

UNIT V:

Outline classification of plants, animals & microorganisms: Important criteria used for classification in each taxon. Classification of plants, animals and microorganisms. Evolutionary relationships among taxa. Major habitat types of the subcontinent, geographic origins and migrations of species. Organisms of health & agricultural importance: Common parasites and pathogens of humans, domestic animals and crops. Organisms of conservation concern: Rare, endangered species. Conservation strategies.

Sub. Code: 18KP3SSB2

DEPARTMENT OF BOTANY

PG - SELF STUDY COURSE 2

INHERITANCE BIOLOGY AND DIVERSITY OF LIFE FORMS

QUESTION PAPER PATTERN (Max. Marks:100)

SECTION A

Answer All Questions (50x2=100)

(Ten questions from each unit)

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
IV	CC 12	6	5	18KP4B12	25	75	100

MICROBIOLOGY AND PLANT PATHOLOGY

UNIT – I: MICROBIOLOGY

History, Scope, Branches of Microbiology; Culture media, Sterilization, Isolation, Culture and Preservation of microbes. Structure, Nutrition, Growth and Reproduction of Bacteria; Structure and Reproduction of viruses; General characters of Viroids and Prions.

UNIT – II:

Role of microbes in Biogeochemical cycle- Carbon, Nitrogen, Phosphorus and Sulphur cycle. Bioremediation, Biodegradation of Xenobiotics, Organic compost, Biogas production, Sewage water treatment- Small scale and large scale treatment.

UNIT – III:

Isolation, Screening and preservation of industrially important microbes. Fermentor – Types, Structure and function of Fermentor; Industrial Production of Ethanol, Beer, Wine and Vinegar. Production of Antibiotics -Penicillin; Production of Vitamins- Vitamin B₁₂ (Cyanocobalamine)

UNIT – IV: PLANT PATHOLOGY

Introduction, Organisms and causal factor responsible for plant diseases; Koch's postulates; Symptomatology; Host-Parasite Interaction; Defence mechanisms in plants-Morphological, Structural and Biochemical; Control of plant diseases- Cultural, Chemical and Biological methods.

UNIT – V:

Study the causal organism, symptoms, disease cycle and control measures of the following diseases. Viral Diseases- Bunchy top of Banana, Vein clearing disease of Bendi. Bacterial Diseases-Potato wilt, Blight of Paddy, Fungal Diseases- Late blight of Potato, Rust of wheat. Mycoplasmal diseases-Little leaf of Brinjal, Phyllody disease of Sesamum.

REFERENCES

1. Sharma, P.D., 1992, Microbiology - Rastogi & Co., India.
2. Power and Dagainwala., 1994, General Microbiology (Vol- 1&2) - Himalayan Pub. House.
3. Pelczar. J., Chan E.C.S and Krieg. R., 1999, Microbiology, Tata Mc. craw Hill, New Delhi.
4. Salle, A.J., 1974, Fundamental Principles of Bacteriology, Tata Mc. craw Hill, New Delhi.
5. Dubey & Maheswari, 2000, A Text Book Of General Microbiology, S.Chand & Company Ltd., New Delhi.
6. Prescott, Harley and Klein., 1996, Microbiology, McGraw Hill Publications – IV edn.
7. Pandey, B.P. (2001). *Plant Pathology*. S. Chand & Company Limited, New Delhi.
8. Rangasami, G. and Mahadevan, A. (1998). *Diseases of Crop Plants in India*. Prentice Hall of India Ltd. New Delhi.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
IV	CC 13	6	4	18KP4B13	25	75	100

BIOTECHNOLOGY AND BIOINFORMATICS

UNIT - I: BIOTECHNOLOGY

Biotechnology - Definition, History and Scope, Branches of Biotechnology , Genetic Engineering- Tools of genetic engineering - Type of vectors - Plasmids (pBR 322), Cosmids (λ Phage), BAC and YAC, Role of Enzymes and linkers in gene cloning techniques, Gene cloning techniques- Isolation of specific DNA, Insertion of foreign DNA into a vector, Transfer of recombinant DNA into Bacterial cell.

UNIT - II:

Tissue culture techniques - Concept, Sterilization and media preparation. Micropropagation – Organogenesis, Embryogenesis, Meristem culture, Anther culture, Suspension culture, Protoplast Technology – Isolation, Maintenance, Plant regeneration-Applications of tissue culture, Cryopreservation.

UNIT - III:

Gene cloning in Eukaryotes – *Agrobacterium* based gene transfer- Structure of Ti- and Ri Plasmid, Mechanism of T-DNA transfer. Plant cell transformation – Electroporation, Liposome mediation, Particle bombardment, Microinjection. Transgenic plant- Herbicide resistance plants, Immobilization and its types, Synthetic seeds.

UNIT – IV: BIOINFORMATICS:

Introduction to computers –Generation, Types and Components of computers, Input devices, CPU and Output devices, Types of hardware and software, Types of networking, Operation of networks, Internet basics.

UNIT – V:

Bioinformatics- Definition, concept and application of bioinformatics, Biological Database Classification- Nucleic Acid Database- EMBL, NCBI, DDBJ; Protein sequence database- PIR, MIPS, SWISS PROT. BLAST, FASTA, CLUSTALW, PUBMED and Entrez.

REFERENCES:

1. Dubey, R.C., 2001, Text Book of biotechnology, S. Chand & Co., New Delhi.
2. Watson ,J.D, et al ,2005 ,Recombinant DNA ,Blackwell Sciencepub.USA.
3. Singh, B.D., 2006, Biotechnology, Kalyani Publishers, New Delhi.
4. Dubey & Maheshwari,2006, AText Book Of Biotechnology. S. Chand & Co., New Delhi.
5. Attwood, T.K. and Parry-Smith, D.J., 2001. Introduction to Bioinformatics, Pearson Education.
6. Mantell and Smith, S.H., 1983, Plant biotechnology, Cambridge, U.K.
7. Old, R.W. and Primose, S.B., 1994, Principles of Gene Manipulation, Blackwell, Science Ltd., London.
8. Bernard R. Click and Jack J. Pasternak, 1996, Molecular Biotechnology, PBC, New Delhi.
9. Gupta, P.K., 1998, Elements of Biotechnology, Rostagi Publications, Meerut.
10. Glick B.R. and Pasternak J.J., 1998, Molecular Biotechnology, ASM Press, Washington.

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
IV	CC 14 (P)	6	4	18KP4B14P	40	60	100

PRACTICAL IV FOR CORE COURSE 12 and 13

MICROBIOLOGY:

1. Laboratory Rules
2. Preparation of Medium – Bacteria-Nutrient Agar, Fungi - PDA Medium.
3. Isolation of Microbes by Serial Dilution Techniques
4. Isolation of Fungi and Bacteria from air and soil
5. Isolation of fungi and Bacteria from Sewage Water.
6. Preparation of Spread plate, Streak plate (Simple and Quadrant) and Pour plate.
7. Effect of different antibiotic sensitivity, pH and Temperature on bacterial growth.

PLANT PATHOLOGY:

Study of the following diseases.

- | | |
|----------------------|--|
| Viral Diseases | - Bunchy top of Banana, Vein clearing disease of Bhendi. |
| Bacterial Diseases | -Potato wilt, Blight of Paddy. |
| Fungal Diseases | - Late blight of potato, Rust of wheat. |
| Mycoplasmal diseases | -Little leaf of Brinjal, Phyllody disease of Sesamum. |

BIOTECHNOLOGY

1. Tissue culture techniques - Sterilization and MS medium preparation.
2. Callus Induction
3. Sterilization & Inoculation of Root tip culture.
4. Sterilization & Inoculation of Shoot tip culture.
5. Sterilization & Inoculation of Leaf culture.
6. Sterilization & Inoculation of Anther culture
7. Isolation of Protoplast & Spheroplast
8. Isolation of DNA from Cauliflower
9. Immobilization of Cells by using Sodium Alginate Beads

SPOTTERS

1. Hot Air Oven
2. pH Meter
3. Laminar Air flow chamber
4. Fermentor
5. Plasmids (pBR 322),
6. Cosmids (λ Phage),
7. PCR
8. EMBL
9. NCBI
10. PIR

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
IV	MBE 5	6	4	18KP4BELB5	25	75	100

RESEARCH METHODOLOGY AND BIOSTATISTICS

UNIT – I: RESEARCH METHODOLOGY

Research design –Selection of the research problem - Scientific writing – Characteristics, Logical format for writing thesis and article – Introduction, Review of literature, Materials and methods, Result – Effective illustration- Tables and figures, Discussions, Reference- Online journals. Essential features of abstracts. Proof correction. Oral/poster presentation.

UNIT – II:

Principle, working mechanism and application of pH meter, Sonicator, Microfuge, Gas Chromatography Mass Spectrometry (GCMS), Fourier Transform Infra Red spectroscopy (FT-IR), Atomic Force Microscopy (AFM), High Performance Liquid chromatography (HPLC), Gene sequencer and Molecular docking.

UNIT – III:

Computer in biological science, scope and prospects – Operation system. Introduction to windows operating system – MS windows – MS word – folders, files, MS Excel, SPSS. Data Storage – Data analysis – MS Power point – creating slides – templates – animation and transitions. On line publications, Electronic journals.

UNIT – IV: BIOSTATISTICS

Collection of data, tabulation, classification of data – primary and secondary data. Graphical or diagrammatic representation of data. Measures of central tendency – mean, median mode, harmonic and geometric mean. range, standard deviation, mean deviation and Standard error.

UNIT – V:

Probability – rules of probability, normal and binominal distribution. Test of significance, level of Significance ‘t’ – test, ‘F’ test, Chi-square test, ANOVA – two way, simple correlation and regression. Sampling and experimental designs of research – Randomized block design and Split plot design.

REFERENCES:

1. Chaturvedi, B.K, 2002, Basic Computer Knowledge, Diamond Pocket Books Pvt. Ltd., NewDelhi.
2. Kothari.C.R., 2004, Research Methodology–Methods. New Age International (P) Ltd, NewDelhi.
3. Rastogi, V. B.(2006). Fundamental of Biostatistics. Ane Book India ,New Delhi.
4. Misra. R. P., 1981, Research Methodology A Hand Book, Concept Publishing Company, NewDelhi.
5. Gupta, S.P. (1990). Statistical Methods. S.Chand & Co.Ltd., New Delhi.
6. Khan, I.A. and Khannum, A.(19994). Fundamentals of Biostatistics. Vikas Publishing, Hyderabad.

PROJECT WORK

Semester	Course	Hours	Credit	Sub. Code	Marks		
					Internal	External	Total
IV	Project Work	6	6	18KP4B15PW	40	40+20	100

M.Phil., Botany Programme

Semester	Course	Credit	Sub. Code	Marks		
				Internal	External	Total
I	CC 1	4	18KM1BT1	40	60	100

RESEARCH METHODOLOGY

UNIT I - Research Methodology

Research design –Selection of the research problem - Scientific writing – Characteristics, Logical format for writing thesis and article, Research publications, short communications and Power point preparations. Review paper, index card and Proof reading. Plagiarism Checker-ORKUND.

UNIT II -Centrifugation and microscopy:

Microscopy- Differential interference contrast (DIC), Polarization, Fluorescent microscopy, dark field and phase contrast microscopy, electron microscope-SEM and TEM. Atomic Force Microscopy.

UNIT III - Spectrometry, Electrophoresis and Separation techniques:

Spectrometry-Principle- Beer Lambert's law. UV, IR, FTIR, Atomic Absorption Spectroscopy (AAS), Radio activity analysis technique-GM and Scintillation counter. Electrophoresis; PAGE–Nucleic acid, SDS PAGE. Chromatography: Principle, Procedures and Application of TLC, PC, Gel Filtration and Ion exchange, GC, GLC, HPLC, GCMS LCMS and HPTLC.

UNIT III -Molecular biological techniques:

Molecular biological techniques: Isolation and amplification of nucleic acid Bacterial genome DNA(Bacteria), Plasmid DNA, total RNA, Polymerase chain reaction(PCR) – Types and its application. Gene cloning techniques: Phosphatase treatment of cloning vectors, use of adapters and linkers in cloning- screening of recombinants; labelling of nucleic acids by radioactive methods plaque and colony hybridization-southern blotting and western blot-Northern blot-DNA finger printing and Microarray.

UNIT IV – Biostatistics:

Collection and Presentation of Experimental data-Measures of Central Tendency, Arithmetic Mean, Median, Mode, Position of averages, Geometric Mean, Harmonic mean and percentile-Measures of Dispersion: Range, Inter quartile range, variance, standard deviation and standard error. Correlation and Regression: Correlation coefficient-Types of correlation –Regression-Simple and Linear regression-Tests of significance. –Chi-square test-Analysis of variance and DMRT.

REFERENCES:

1. Batschelet, E. 1991. Introduction to Mathematics for Life Scientists. Springer International Student Edn., Narosa Publishing House, New Delhi.
2. Becker, J.M., Caldwell, G.A. and Zachgo, E.A. 1996. Biotechnology: A Laboratory Course, 2nd Edn. Academic Press, Inc., San Diego, California.
3. Cannel, J.P. 1998. Natural Products Isolation. Humana Press, New Jersey, USA.

4. **Chirikjian, J.G.1995. Biotechnology: Theory and Techniques Vol. I.Plant Biotechnology, Animal Cell Culture, Immunobiotechnology. Jones and Bartlett Publishers, London, England.**
5. **Cynthia Gibas and Per Jambek.2001. Developing Bioinformatics computer skills, Shroff Pub., Mumbai.**
6. **Forthofer, L. 1995. Introduction to Biostatistics, Academic Press, New York.**
7. **Gupta, S.C. and Kapoor, V.K. 2002. Fundamentals of Mathematical Statistics, (11th Edn.). Sultan Chand & Sons, New Delhi.**
8. **Harborne, J.B. 1998. Phytochemical Methods. Chapman & Hall, London.**
9. **Jordan, D.W. and Smith, P. 2002. Mathematical Techniques. Oxford University Press, New Delhi.**
10. **Primrose, *et al.*2005. Principles of gene manipulation. Black Well Science, London.**
11. **Sambrok and Russel. 2001. Molecular cloning-A laboratory manual. Cold Spring Laboratory Press, New York.**
12. **Sharma, B.K 1996. Instrumental Methods of Chemical Analysis. Goel Publishing House, Meerut.**
13. **Sokal, R. R. and Rohlf, F.J. 1987. Introduction to Biostatistics (Biology-Statistics Series). W.H. Freeman & Company, New York.**
14. **Snedecor,GW and Cochran,WG. 1967. Statistical methods.Oxford & IBH Pub.New Delhi.**

Semester	Course	Credit	Sub. Code	Marks		
				Internal	External	Total
I	CC 2	4	18KM1BT2	40	60	100

ADVANCES IN BOTANY

UNIT-I: Plant Cell and Molecular Biology:

Structural organization of the plant cell – Fundamental aspects of cell organelles – Techniques in cell biology – *in situ* hybridization for location of transcripts in cell types – FISH, GISH.

UNIT-II: Plant Physiology and Biochemistry:

Membrane Transport Proteins – Signal transduction – Light harvesting complexes – CO₂ sequestration – overview of respiratory cycles – Synthesis of membrane lipids – Phytochemical and biochemical properties of cryptochromes – Physiological role of brassinosteroids – Polyamines – Genetic and molecular analysis of photoperiodism – Molecular aspects of stress physiology.

UNIT-III: Stress physiology:

Abiotic stress: Temperature, cold, light, water, salinity and herbicides - Biotic stress: Pathogens and Pests – Role of enzymes in stress physiology: Glycine betain, proline dehydrogenase, superoxide dismutase, lipid peroxidase, osmolytes.

UNIT-IV: Plant Biotechnology:

Knowledge on chloroplast and mitochondrial genomes – rDNA technology – Genetic engineering of plants – Genetic and physical mapping of genes, Functioning of genomics – Microarrays – Protein profiling and its significance.

UNIT-V: Plant Biodiversity:

Concepts, principles and scope. *In situ* conservation: Sanctuaries, National parks, Biosphere reserves, Mangroves – *Ex situ* conservation: Botanical gardens, Gene banks, Seed Banks, Cryobanks – Activities of IUCN, NBPGR – Applications of molecular markers in Biodiversity. Plant biodiversity databases.

REFERENCES:

1. Kleinsmith, L.J. and Kish, V.M. 1995. Principles of cell and molecular biology, 2nd Edition, Harper Collins College Publishers, New York, USA.
2. Lewin, B. 2007. Genes IX. Oxford University Press, New York.
3. Alberts, B., Lewis, J., Raff, M., Roberts, K. and Watson, J.D. 1999. Molecular Biology of the Cell. Garland Publishing, Inc., New York.
4. Mehrotra, R. Plant Pathology,
5. Buchanan, B.B., Ruissem, W. and Jones, R.L. 2000. Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists, Maryland, USA.
6. Moore, T.C. 1989. Biochemistry and Physiology of Plant Hormones. Springer Verlag, New York, USA.
7. Lehninger, Principles of Biochemistry,
8. Salisbury and Ross, Plant Physiology,
9. Nobel, P.S. Physiochemical and Environmental Plant Physiology, Academic Press, San Diego, USA.
10. Thomas, B. and Vince-Pruce, D. 1997. Photoperiodism in Plants, Academic Press, San Diego, USA.
11. Falk, D.A., Olwell, M. and Millan, C. 1996. Restoring Diversity. Island Press, Columbia, USA.
12. Kothari, A. 1997. Understanding Biodiversity: Life Sustainability and Equity. Orient Longman.
13. Plucknett, D.L., Smith, N.J.H., William, J.T. and Murti Annishetty, N. 1987. Gene banks and Worlds food. Princeton University Press, Princeton, New Jersey, USA.
14. Razdon, Plant Tissue Culture,
15. George, E.F. 1993. Plant Propagation by Tissue Culture, Part I and II. Exegetics Ltd. Edington, U.K.
16. Glick, B.R. and Thompson, J.E. 1993. Methods in Plant Molecular Biology and Biotechnology, CRC Press, Boca Raton, Florida.

Semester	Course	Credit	Sub. Code	Marks		
				Internal	External	Total
I	CC 3	4	18KM1BT3	40	60	100

RESEARCH TRENDS IN PLANT SCIENCES

UNIT-I: Molecular Genetics

Replication of DNA – Central Dogma – Protein synthesis – The regulation of gene expression in prokaryotic and eukaryotic organisms – The genetic code – Gene sequencing - Evolutionary genetics – Genetic engineering – Developmental Genetics.

UNIT-II: Plant tissue culture

Medium and its preparation – Methods of sterilization – Micropropagation – Somatic embryogenesis – Cell immobilization and synthetic seed technology – Somaclonal variation – Haploidy – Gene transformation methods – Transgenic crops – Molecular pharming – Antisense RNA technology.

UNIT-III: Microbiology

Microbial analysis of soil, water and sewage – MPN technique – General account on marine fungi and diatoms – Single Cell Proteins – Algal blooms – Plant microbial diseases: Bacterial blight, Blast disease of paddy and TMV. Molecular taxonomy of microbes – 16S rRNA and its role.

UNIT-IV: Bioinformatics

Major search engines and Scientific databases – Sequence – Genome – Literature databases – Sequence database searching programmes – BLAST, FASTA, CLUSTAL and BLITZ. Drug Discovery, Drug Targeting and Auto-docking.

UNIT-V: Developmental anatomy:

Cell wall (Ultra structure, formation) – Meristems (Types, Concepts, Vegetative and Floral) – Tissue system – Cambium (Types, formation) – Periderm – Bark formation – Secretary cells – Transfer cells – Abscission – Senescence – Programmed Cell Death in plants – Anatomical adaptations (Shoot, Leaves, Xerophytic and Aquatic plants).

References:

1. Shukla, R.M. 2005. Molecular Genetics, Dominant Publishers and Distributors, New Delhi.
2. Razdon, 1999. Plant tissue culture.
3. Dewlin and Witham, Plant Physiology.
4. Pelzar, Chan and Creig, Text book of Microbiology.
5. Katherine Esau, Anatomy of Seed Plants.

Semester	Course	Credit	Sub. Code	Marks		
				Internal	External	Total
I	CC 4	4	18KM1BT4	40	60	100

TEACHING AND LEARNING SKILLS

UNIT I: Computer Application Skills

Computer system: Characteristics, Parts and their functions – Different generations of Computer – Operation of Computer: switching on / off / restart, Mouse control, Use of key board and some functions of key – Information and Communication Technology (ICT): Definition, Meaning, Features, Trends – Integration of ICT in teaching and learning – ICT applications: Using word processors, spread sheets, Power point slides in the classroom – ICT for Research: On-line journals, e-books, Courseware, Tutorials, Technical reports, Theses and Dissertations.

UNIT II: Communication Skills

Communication: Definitions – Elements of Communication: Sender, Message, Channel, Receiver, Feedback and Noise – Types of Communication: Spoken and written; Non-verbal communication – Intrapersonal, Interpersonal, Group and Mass communication – Barriers to communication: Mechanical, Physical, Linguistic & Cultural – Skills of communication: Listening, Speaking, Reading and writing – Methods of developing fluency in oral and written communication – style, Diction and Vocabulary – Classroom communication and dynamics.

UNIT III: Communication Technology

Communication Technology: Bases, Trends and Developments – Skills of using Communication Technology – Computer Mediated Teaching: Multimedia, E-content – Satellite-based communication: EDUSAT and ETV channels, Communication through web: Audio and Video applications on the Internet, interpersonal communication through the web.

UNIT IV: Pedagogy

Instructional Technology: Definition, Objectives and Types – Difference between Teaching and Instruction – Lecture Technique: Steps, Planning of a Lecture, Delivery of a lecture – Narration in tune with the nature of different disciplines – Lecture with power point presentation – Versatility of lecture technique – Demonstration, Characteristics, Principles, Planning Implementation and Evaluation – Teaching – Learning Techniques: Team Teaching, Group discussion, Seminar, Workshop, Symposium and Panel Discussion – Models of teaching: CAI, CMI and WBI.

UNIT V: Teaching Skills

Teaching skill: Definition, Meaning and Nature – Types of Teaching skills: Skill of Set Induction, Skill of Stimulus Variation, Skill of Explaining, Skill of Probing Questions, Skill of Black Board writing and Skill of Closure – Integration of Teaching Skills – Evaluation of Teaching Skills.

REFERENCES:

1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi
2. Don Skinner (2005), Teacher Training, Edinburgh University Press Ltd., Edinburgh
3. Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Tom Van Weert, UNESCO, 2002
4. Kumar K.I (2008) Educational Technology, New Age International Publishers, New Delhi
5. Mangal, S.K. (2002) Essential of Teaching – Learning and Information Technology, Tandon Publications, Ludhiana
6. Michael D. and William (2000), Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, New York .
7. Pandey S.K. (2005) Teaching Communication, Commonwealth Publishers, New Delhi
8. Ram Babu A. and Dandapani S (2006) Microteaching (Vol.1&2) Neelakamal Publications, Hyderabad
9. Singh V.K. and Sudarshan K.N. (1996) Computer Education, Discovery Publishing Company, New York
10. Sharma R. A. (2006) Fundamentals of Educational Technology, Surya Publications, Meerut
11. Vanaja. M. and Rajasekar S. (2006) Computer Education, Neelkamal Publications, Hyderabad.

CCI- INVERTEBRATA

Subject code: 18K1Z01

Hours: 6

Credit: 5

UNIT: I

General characters and classification of Phyla up to class level giving examples Phylum Protozoa - Detailed study: Plasmodium – Structure, life history, and pathology and control measures. General Topic: Diseases, Locomotion, Nutrition and reproduction in protozoa.

UNIT: II

General Characteristics of Phylum : Porifera – Detailed study – Ascon sponge, General Topic: canal system in sponges. General Characteristics of Phylum: Coelenterata - Detailed study: Obelia. General topic: Polymorphism in Hydrozoa.

UNIT: III

General Characteristics of Phylum: Platyhelminthes: Detailed study: *Taenia solium*. General Characteristics of Phylum: Nematoda. General topics: Human Nematode parasites: Life history, Pathogenicity and Control measures of *Ancylostoma duodenale*, and *Wuchereria bancrofti* Parasitic adaptations in nematodes.

UNIT: IV

General Characteristics of Phylum: Annelida-Detailed study: Nereis. General Topic: Adaptive radiation among annelids. General Characteristics of Phylum: Arthropoda. Detailed Study: Prawn. General Topics: Mouth parts of insects. Peripatus – Characters and affinities.

UNIT: V

General Characteristics of Phylum: Mollusca. Detailed study-Pila. General topics: Foot in mollusc. Cephalopods are advanced molluscs. Phylum: Echinodermata: Detailed study: Star fish. General topics: Larval forms of Echinoderms.

Text Books:

1. Ayyar E.K. and T.N. Anathakrishnan 1992 A. Manual of Zoology. Vol.1 (Invertebrata) parts I &II Viswanathan Pvt. Ltd.,
2. Jordon E.L and P.S Verma 1995. Invertebrate Zoology 12th edn. S. Chand & Co.,
3. Arumugam.N Invertebrata. Saras Publications.
4. Verma and Agarwal(2009). Invertebrate Zoology. Chand & Co.,
5. Sandhu.S.G (2004). Text book of Invertebrate Zoology(Vol-II),Campus books International.
6. Kotbal.R.L (2009).Modern Textbook of zoology- Invertebrates.Rastigi,Publ.

Reference Books:

- 1.Anderson, Donald Thomas (2006). Invertebrate zoology, Oxford Univ.Press.
- 2.Branes.R.D (1982). Invertebrate zoology,VI Edn.Holt Saunders International Edn.
- 3.Moore, Janet (2006). An introduction to the Invertebrates. Cambridge Univ.Press.

CC 2 - PRACTICAL

INVERTEBRATA AND CHORDATA

Subject code: 18K2Z02P

**Hours:6
Credit:5**

Spotters:

Classify giving reasons:

Protozoa: Amoeba, Euglena, Paramecium

Porifera: Sycon

Coelenterata: *Obelia geniculata*, Physalia, Aurelia, Sea Anemone, Fungia.

Platyhelminthes: Planaria, *Fasciola hepatica*, Taenia solium.

Aschelminthes: *Ascaris lumbricoides*-Male, *Ascaris lumbricoides*-Female, Filarial Worm.

Annelida: Nereis, Leech, Sabella.

Arthropoda: Prawn, Lepas, Balanus, Crab, Limulus.

Mollusca: Chiton, Pila, Dentalium, Sepia.

Echinodermata: Star Fish, Sea Urchin.

Chordata: Balanoglossus, Amphioxus, Ascidian, Shark, Alytus, Hyla, Naja naja, Russel Viper, Chelonemydas, Pigeon, Bat.

Comment on Biological Significance:

Paramacium Conjugation, Paramecium Binary Fission, Sponge gemmule, Heteronereis, Trochopore larva, Nauplius larva, Zoea larva, Mysis larva, *Bombyx mori*, Honey bee, Lac insect, Pearl oyster, Limulus, Bipinnaria larva, Salamander

Draw A Labelled Sketch:

**Pigeon: Symsacrum,
Rabbit: Pectoral girdle, Pelvic girdle, Fore limb, Hind limb.**

Relate Structure And Function:

Sponge- Spicules, Tape worm- Scolex, Neries - Parapodium, Earth worm - Body setae, Pineal setae, Pila - Radula, Star fish - Pedicellaria, Aristotle's Lantern, Chaetopterus, Hippocampus, Echinus, Clarius, Exocoetus, Pigeon - Quill feather, Draco.

Dentition:

Man, Rabbit, Dog.

Dissections (Virtual Dissection using Pro Dissector tools):

Earth worm - digestive system, nervous system. Prawn - Nervous system.

Mountings:

Earth worm- Body Setae, Pineal Setae. Shark - Placoid Scale. Fish - Ctenoid Scales, Cycloid Scales. Prawn - Appendages.

Spotters:

- Prochordata : Balanoglossus, Amphioxus and Ascidian.**
- Pisces : Shark, Clarius, Echeuis, Hippocampus and Exocetus.**
- Amphibian : Alytes, Axolotly larva, Hyla and Salamander.**
- Reptilia : Naja naja, Viper, Draco and Chelone mydos.**
- Aves : Pigeon and Quill feather.**
- Mammalia : Bat, Platypus and Kangaroo.**
- Dentition : Rabbit, Dog and Man.**
- Osteology : Pigeon – Synsacrum, Rabbit – Pectoral, Pelvic girdle, fore limb and Hind limb.**

CC 3 - CHORDATA

Subject code: 18K2Z03

Hours: 6
Credit: 4

UNIT: I PROCHORDATA, AGNATHA & PISCES

Characteristics and Classifications of Prochordata, Agnatha up to order level and Pisces up to class level. Prochordata: Balanoglossus- detail study. Pisces: Scoliodon detail study. Accessory respiratory organs in fishes.

UNIT: II AMPHIBIA

Characteristics and Classification of Amphibia up to order level. Frog detail study – Parental care in amphibians. Gymnophiona: Structure and Biological significance.

UNIT: III REPTILIA

Characteristics and classification of Reptilia up to order level. Calotes: detail study. Sphenodon: Biological significances . Identification of Poisonous and non-poisonous snakes; Poisonous snakes of South India; Poison apparatus and biting mechanism. Mesozoic reptiles.

UNIT: IV AVES

Characteristics and Classifications of Aves up to order level; Pigeon: detail study. Flight adaptation in birds. Migration of birds, Flightless birds.

UNIT:V MAMMALIA

Classification of mammalia up to order level. Rabbit- detail study. Prototheria and metatheria: Structure and Affinities. Dentition in Mammals and adaptations of Aquatic mammals

Text Books:

1. Ayyer E.K. and T.N. Anathakrishnan 1995. A Manual of Zoology. Vol.2 (parts I &II) Viswanatan Pvt. Ltd.,
2. Jordon E.L and P.S Verma 2000. Chordate Zoology 12th edn. S. Chand & Co.,
3. Arumugam,2008 Chordate Zoology, Vol.2, Saras Publications.

Reference Books:

1. Kotpal, R.L.2000 Modern Text Book of Zoology, Vertebrates, Rastogi Publications, Meerut.
2. Sandhu G.S. Bhaskar H (2004. Text Book of Chordate Zoology, Campus Books.
3. Sumithra Saxena and R.K. Saxena Comparative anatomy of Vertebrates
4. Romer A.S. and T.S Parsons 1986. The Vertebrate body, Souders College Publication.
5. Young J.Z.2006, The Life of Vertebrates; The Oxford University Press, New Delhi.

CC 4- CELL AND MOLECULAR BIOLOGY

Subject code: 18K3Z04

Hours: 3

Credit: 3

UNIT: I

Prokaryotic and Eukaryotic cell: Plasma membrane – ultra structure – unit membrane model – fluid mosaic model –functions. Cytoplasm – Physical and biological properties

UNIT: II

Cytoplasmic Organelles: Structure and functions of Golgi body, Endoplasmic reticulum, Ribosome, Lysosomes, Mitochondria, Nucleus and nucleolus.

UNIT: III

Chromosomes – structure and organization in Prokaryotes and Eukaryotes, types and giant chromosomes. Cell cycle, Cell division: amitosis, mitosis and meiosis – cytology of cancer cells, cell death and ageing.

Unit : IV

Molecular structure of DNA and RNA. DNA – Replication. Transcription in prokaryotes and eukaryotes. RNA processing.

Unit : V

Protein synthesis. Genetic code -Gene expression and regulation – operon model in prokaryotes – Lac operon model.

Text Books:

1. E.D.P.DeRobertis and E.M.F. DeRobertis: Cell and Molecular Biology (W.B. Saunders)
2. P.S. Verma and V.K. Agarwal: Cytology (S. Chand & Co)
3. C.B. Powar: Cell Biology (Himalaya Publishing Co)

Reference books:

1. A.L. Giese: Cell Physiology (W.B. Saunders)
2. Harvey Lodish and James E Darnell Molecular cell Biology.

CC 5- GENETICS AND EVOLUTION

Subject code: 18K3Z05

Hours: 3

Credit: 3

UNIT: I

Classical Genetics: Biography of Johan Gregar Mendel – Mendelian laws, monohybrid and dihybrid inheritance. Multiple alleles and blood group antigens. Linkage and crossing over.

UNIT: II

Sex determination - sex linked inheritance: X linked recessive (haemophilia), dominant inheritance (Rett syndrome)- pedigree analysis - inborn errors of metabolism

UNIT III.

Identification of the DNA as the genetic material, Genetic recombination in bacteria: transformation , conjugation, transduction and sexduction. Mutagens and Mutation-gene mutation - population genetics - Hardyweinberg law

UNIT IV

Origin of life - Theories of evolution - Lamarckism - Neo Lamarckism - Darwinism -Neo Darwinism, De vries theory of evolution and modern synthetic theory.

UNIT V

Mimicry and coloration. Isolation and speciation. Evidences of evolution(Fossils)- Fossilization - Geological time chart - Human evolution: paleontological , biological , cultural and future.

Text books:

1. Veer Bala Rastogi (2005). Text book of genetics. Kedar Nath Ram Nath.
2. Arumugam,N and R.P.Meyyan(2016) Vol. I & II Advances in genetics. Saras Publication.
3. Verma,P.S. and V.K. Agarwal(2008). Genetics, 9th Edition. S.Chand & Company Ltd, New Delhi.
4. Mohan,P.Arora Gurdarshan,and S. Sandhu(2004). Genetics. 5th edition,Himalaya publishing house.
5. Arora,M.P(1995). Organic Evolution. Himalaya publishing house.
6. Arumugam, N(2015). Organic evolution.10th edition, Saras publication,Nagercoil.

Reference Books:

1. William,S. Klug and Michael R. Cummings(1994). Concepts of genetics. 4th edition, Macmillan College publishing company , New York.
2. Jocelyn,E.Krebs,Elliott S.Goldstein and Stephen T.Kilpatrick(2014). Lewin's Genes XI, Jones and Bartlett India pvt.Ltd,New Delhi.
3. Brian K.Hall and Benedikt Hallgrimsson(2014). Strickberger's Evolution,5th edition,Jones and Bartlett India Pvt.Ltd., New Delhi.

NME 1- POULTRY SCIENCE

Subject code: 18K3ZEL01

Hours: 2

Credit: 2

UNIT: I

Introduction – Progress of Poultry industry in South India. Some common types of poultry Plymouth rock, Light Sussex, Minorca , Rhode island Red and White leghorn, their advantageous features – choosing commercial laying stock – Poultry housing – the deep litter system – laying cages – poultry manure.

UNIT: II

Management – practical aspects of chick rearing – Management of growers, layers and broilers – Lighting and temperature – summer and winter management – Debeaking.

UNIT: III

Poultry Nutrition – requirements – food additives – feed for poultry. Feed ingredients.

UNIT: IV

Diseases of poultry: viral, bacterial, fungal and animal diseases. Symptoms and preventive measures.

UNIT:V

Factors affecting egg size: storage and preservation methods. Marketing and grading. Economics of poultry production, maintenance of farm record and accounts.

Text books:

- 1. JayaSurya, N.C.Nair, N.Soundara Pandian ,A.Thangamani, L.M.Narayanan, N.Arumugam, S.Leelavathy,T.Murugan, S.Prasannakumar and J.Johnson Rajeshwar, 2015. Economic zoology,Saras publication,Nagercoil.**
- 2. Arumugam,N,T.Murugan,J,Jhonson Rajeswar and R.Ramprabhu,2009.Applied zoology, Saras publications, Nagercoil.**

Reference book:

- 1. Rajeshwar Prasad, 2010. Poultry management, Alfa publications, New Delhi.**

SS1-ECONOMIC ENTOMOLOGY

Subject code: 18K3SSZ1

Credit: 5

UNIT: I

Class Insecta-Diagnostic characters. General organization of typical insect. Insect development and metamorphosis (Complete & Incomplete).

UNIT: II

Insects of Agricultural importance - Pests of rice, sugarcane and vegetables (Brinjal & Tomato).

UNIT: III

Methods and principles of pest control – physical, chemical, mechanical, biological and integrated pest management.

UNIT: IV

Insects in relation to public health

- a) Insects associated with human beings (Pediculus sp.,-Vagabonds disease)
- b) Insects associated with household environment(Housefly and diseases-Cholera, typhoid, tuberculosis and dysentery).

UNIT: V

Beneficial Insects - lifecycle and byproducts-Honeybees and Lac insects - soil builders(termite) and scavengers(dung insect).

Text Books

1. Mani M.S., 1973.General entomology Oxford & TEM.
2. Nayar K.K., Ananthkrishnan T.N., and David V.D .1990. General and applied entomology. Tata McGraw Hill .New Delhi.

Reference Books:

1. Chapman R.F., 1993.The Insects. Structure and functions.ELBS.London
2. David B.V., Muralirangan N.C., and Meera Muralirangan.1992. Harmful and Beneficial Insects. Popular book depot
3. David B.V., 1992. Pest management and pesticides: Indian Scenario.Namrutha publications.
4. Krishnan N.T., 1993. Economic entomology. J.J. Publications, Madurai.
5. Ramakrishnan Ayyar, T.V., 1984. Hand book of economic entomology for south India. International books and periodicals supplies service, New Delhi.

CC 7- BIOLOGICAL TECHNIQUES

Subject code: 18K4Z07

Hours:5
Credit:5

UNIT: I

Microscopy: Principle and applications of Dissection, Compound, Micrometer and Camera lucida and Electronmicroscope (TEM and SEM).

UNIT: II

Microtechniques: Fixation, Preservation (Block making, embedding , staining and Mounting process).

Radioactivity: isotopes, autoradiography and Geiger Muller counter.

UNIT: III

Chromatography: Principle and applications of Paper and TLC. Centrifuge: Principle, types and applications.

UNIT: IV

Analytical techniques: Principles and applications of p^H meter, Electrophoresis (SDS - PAGE; Agarose) and Colorimeter.

UNIT: V

Collection of specimen, Preparations and Preservation methods: types – wet and dry. Importance of display. Stuffing methods, skeletal preparations. Taxidermy and Alizarin preparation.

Text Books:

1. Verma,P.S and Agarwal, V.K. (1978). Cytology,S.Chand &Company Ltd, New Delhi.
2. Arumugam, N.(2014). Cell biology, Molecular biology, Genetics, Evolution and Ecology Vol II, Saras Publications, Nagarcoil.
3. Narayanan,L.M, Dulsy Fatima, N. Arumugam, Meiyar pillai R.P, Nallasingam,K and Prasanakumar,S.(2010). Biochemistry, Vi Edn, Saras Publications, Nagarcoil
4. Arumugam,N and Kumaresan,V.(2013). Biophysics and Bio instrumentations, Saras Publications, Nagarcoil.
5. Sathyamurthy, Hand Book of Musceum Techniques.

Reference books:

1. Jayaraman. J. Lab Manuals in Biochemistry, New age International (P) Ltd., Mumbai.
2. Plummer – An Introduction to Practical biochemistry, Tata Mcgraw Hill, Bombay.
3. Slater – Radio molecules in Biology, IRL Press Oxford.
4. David – Handbook of Histological and Histochemical techniques –CBS Publishers.
5. Freeman W.H. & Co, - Lodish *et al.*, (1990) Molecular cell biology, New York.

NME2-VERMICULTURE

Subject code: 18K4ZEL02

Hours: 2
Credit: 2

UNIT: I

Scope of vermitechology-Habitat based classification-morphological identification and characteristics of *Lampito mauritii*, *Eisenia foetida* and *Eudrillus eugeniae*.

UNIT: II

Steps involved in vermiculture-site selection-species selection-preparation of vermibed -inoculation of earthworm-Feeding-Harvesting

UNIT: III

Compositing organic material-vermicompost methods-small scale and large scale. Pit and Heap method.

UNIT: IV

Factors affecting Vermicompositing - p^H , moisture and temperature – Characteristic of vermicompost -Nutritive value of vermicompost.

UNIT: V

Economic importance of earthworm-use of vermicompost for crop production-waste management – Economics of Vermiculture .

Text books:

1. Seethalekshmy and R. Santhi,2017.vermitechology,Saras publication,nagercoil.
2. Ramalingam,R.2007.Manpuzhu Valarppu, Tamil Nadu State Higher Education Association,Chennai

Reference book:

1. Edwards, C.A, Paul F. Hendrix, Norman Q. Aramcon (2018) Biology and Ecology of Earthworm , Springer,US.

SS 2-MEDICAL ZOOLOGY

Subject code: 18K4SSZ2

Credit: 5

UNIT: I

Scope and History of medical zoology and Biological importance. Parasitism - types of parasites- parasitic adaptations - host parasite interaction - source of infection.

UNIT :II

Parasitology - medical parasites - pathogenesis and clinical diagnosis of bacterial (Typhoid cholera) Viral (Polio and AIDS),protozoan (Ameobiasis and Trichomoniasis) and Nematode (Filariasis) diseases

UNIT :III

Biology of vectors - bed bug- mosquitoes (Aedes and Culex).

UNIT: IV

Arthropods as parasites - Mites' lice. Injurious arthropods (Spider & scorpion) - Zoonosis - *Echinococcus granulosus* (Dog Tape Worm), Leptospirosis.

UNIT: V

Clinical diagnosis: Specimen collection and analysis. Blood - Blood smear examinations and Erythrocytes Sedimentation Rate (ESR).Urine - colour, Appearance, volume and odour.

Text books:

1. R.C.Sobti., Medical Zoology. Professor and Chairman / Head Department of Biotechnology, Punjab University.Shoban Lal Nagin Chand & Co.,
2. Krishnan N.T., 1993.Economic entomology. J.J. Publications, Madurai.
3. Mani M.S., 1973.General entomology Oxford & TEM.

Reference book:

1. Park and Park 2005. Text book of Preventive and Social Medicine. M/s. Banarsidas Bha Not Publishers, Jabalpur.

CC 6- PRACTICAL II

CELL AND MOLECULAR BIOLOGY, GENETICS AND EVOLUTION AND BIOLOGICAL TECHNIQUES

Subject code: 18K4Z06P

Hours: 6

Credit: 5

CELL AND MOLECULAR BIOLOGY:

1. Chironomous : Mounting of polytene chromosomes
 2. Grasshopper : Testis squash preparation to observe meiotic stage
 3. Onion : Root tip squash preparation to observe mitotic stage
- Spotters : Dissection and compound microscope
Epithelial, muscular, vascular and supporting tissues,
(Bone, Cartilage and Connective tissues).

GENETICS:

1. Blood grouping
2. Drosophila - Male, female Identification, Culture, Life cycle
Mutant analysis.
3. Pedigree analysis
4. Models of DNA, RNA and tRNA
5. Observation of normal and malignant cells.

EVOLUTION:

- Spotters : Homologous (fore limbs of frog and pigeon) and Analogous organs (wings of bird and insects)
- Protective colorations : Leaf insects, Stick insects, Chameleon, Hippocampus, Pepper moth. Mimicry, Monarch and viceroy butterfly.
- Quantum evolution : Evolutionary significance of Archaeopteryx and Peripatus.
Bat and Pteropus.

BIOLOGICAL TECHNIQUES

1. Collection of specimen – Preparation and preservation (Insects). Micrometers, Camera Lucida.
2. Demonstration of a paper chromatography.
3. Spotters: Electrophoresis unit, Centrifuge, Chromatography and colorimeter

CC 8- ANIMAL PHYSIOLOGY AND BIOCHEMISTRY

Subject code: 18K5Z08

Hours: 6
Credit: 6

UNIT: I

Nutrition: Mechanism of Digestion and Absorption of proteins, Carbohydrates and lipids in man, Hormonal control of digestion. **Respiration:** Respiratory organs and respiratory pigments in animals, transport of O₂ and CO₂ in man, control of respiration, respiratory quotient.

UNIT: II

Circulation: Types of circulation in animals, structure and function of human heart, composition of blood. Blood pressure, ECG, Pace makers. **Excretion:** Nitrogenous wastes, Ammonotelism, Ureotelism and Uricotelism, Ornithine cycle, Uric acid formation. Mammalian kidney and urine formation.

UNIT: III

Nerve Physiology: Structure of neurons, conduction of nerve impulse, synapse structure, synaptic transmission, reflexes, conditional reflexes. **Muscle Physiology:** Types of muscles, Ultra structure of skeletal muscles, mechanism of contraction, Neuromuscular junction, muscles twitch – types.

UNIT: IV

Hormones: Structure and functions of Endocrine glands (Pituitary, Thyroid, Parathyroid, Adrenal, Reproductive glands) in man. Hormonal control of reproduction and menstrual cycle.

UNIT: V

Biological molecules: structure and importance of Carbohydrates, Proteins and Lipids. Minerals and Vitamins. Catabolism of Carbohydrates, Proteins and fats.

Text books:

Animal Physiology

1. Verma P.S and V.K. Agarwal : Physiology(S. Chand &Co)
2. Nagabushanam R. Animal Physiology (S. Chand &Co)
3. Arumugam.N, Animal Physiology,Saras Publications,Nagergovil.

Biochemistry

1. Sathyanarayana.Text book of Biotechnology
2. Arumugam.N. Biochemistry,Saras Publications,Nagergovil.

Reference books:

Animal Physiology

1. Prosser C.L and F.A. Brown. Comparative Animal Physiology (W.B. Saunders)
2. Hoar W.S. General and Comparative Physiology (Prentice Hall)
3. Wilson J.A. Principles and Animal Physiology (MacMillan)

Biochemistry

1. Stryar.L. 1988 Biochemistry
2. Lehninger. A.L. 1982. The Principles of Biochemistry
3. Rebert Murray – Harpers Biochemistry
4. Jain 1994. Text book of Biochemistry.

CC 9- DEVELOPMENTAL BIOLOGY

Subject code: 18K5Z09

Hours: 6

Credit: 6

UNIT: I

Definition and scope of Embryology: Theories of development – Epigenesis, Pangenesis, Biogenetic law, Germplasm theory, Mosaic theory and regulative theory.

UNIT: II

Gametogenesis in mammals: Spermatogenesis and Oogenesis. Types of eggs, Symmetry of eggs. Fate maps: construction, fate maps of Amphioxus and frog.

UNIT: III

Fertilization: Physiological changes, theories of fertilization. Parthenogenesis. Cleavage patterns, mechanism of blastulation and gastrulation in Amphioxus, frog and chick.

UNIT: IV

Development of brain, eye and ear in frog. Chick development with reference to 24hrs, 48hrs, 72hrs. Foetal membranes in chick, Placentation in mammals.

UNIT: V

Embryonic induction – types of induction – Nucleo cytoplasmic relationship – Nuclear transplantation.

Text books:

1. Arumugam.N. Developmental Biology, Saras Publications, Negarcoil.
2. Verma, P.S. and V.K. Agarwal: Chordate Embryology (S. Chand & Co)

Reference books:

1. Balinsky, B.I. An Introduction to embryology (Holt-Saunders International).
2. Dalela, R.C and S.R. Verma: A Text Book of Chordate Embryology (Jaiprakash Nath & Co).
3. Bernice Anantharaj, M : Karuvigal (Cresolite Publications).

SKILL BASED ELECTIVE: 1
COMMUNICATION AND PERSONALITY DEVELOPMENT

Hours: 4
Credit: 4

Subject code: 11K4SBEC1

UNIT: I

Theories of Personality – Definition of Personality – Techniques for Personality Assessment – The determinacy of Personality Development.

UNIT: II

Communication process – process of communication – language as a tool of communication – flow of communication – communication networks – barriers to communication – effective speaking and listening skills.

UNIT: III

Constituents of effective writing – words and phrases – dictionary and thesaurus – sentence construction – guidelines for effective communication – development of paragraphs – art of condensation – reading comprehension.

UNIT: IV

Effective presentation strategies – analyzing audience and locate –visual aids – understanding nuances of delivery – interviews – mock interviews – group discussion.

UNIT: V

Business English – drafting letters, email, memos – reports – characteristics and types of report – structure and writing of reports.

References:

- 1. P.S. Bright Successful Techniques to Improve your Personality. New Delhi: Bright Publications.**
- 2. Meenakshi Raman and Sangeetha Sharma. Technical communication principles and practice. New Delhi: Oxford University Press,2004**

CC 10- PRACTICAL III

ANIMAL PHYSIOLOGY & BIOCHEMISTRY DEVELOPMENTAL BIOLOGY AND MICROBIOLOGY.

Subject code: 18K5Z10P

Hours: 6

Credit: 5

ANIMAL PHYSIOLOGY

1. Salivary amylase activity of human saliva in relation to temperature.
2. Qualitative tests for ammonia, urea and uric acid.
3. Enumeration of RBC by haemocytometer.
4. Effect of temperature on the ciliary activity of fresh water mussel
5. Spotters: Sphygmomanometer, Kymograph.

BIOCHEMISTRY

1. P^H Measurement of various samples.
2. Qualitative tests for protein carbohydrates and lipids.
3. Beer –Lambert law verification using colorimeter.
4. Spotters: Model of amino acids. Haemoglobin, ATP.

DEVELOPMENTAL BIOLOGY

1. Examination of prepared micro slides to study the following:
Frog – egg, cleavage, blastula, yolk plug stage and Gastrula.
Chick – egg, Developmental stages: 24hrs, 48hrs & 72hrs.

MICROBIOLOGY

1. Fixing and staining of bacteria – Simple and Gram staining.
2. Demonstration – Sterilization procedures.
3. Motility of bacterial cell
4. Spotters ; Autoclave, petriplate, inoculation loop needle and Laminar air flow.

MBE 1- MICROBIOLOGY

Subject code: 18K5ZELZ1

Hours: 6
Credit: 6

UNIT: I

Biography and contribution of Louis Pasteur. Scope of Microbiology. Prokaryotes and Eukaryotes. Organization of a Bacterial cell, fungal cell, Yeast, Bacteriophage and Virus.

UNIT: II

Nutritional classification of bacteria, gram staining, gram positive and gram negative bacteria. Growth of bacteria: Sampling and processing, Preparation of culture medium, Maintenance of pure culture, Bacterial growth curve, Measurement of bacterial biomass.

UNIT: III

Microbial metabolism: Generation of ATP, Biosynthesis: Co₂ fixation, Nutrition requirements, Microbial enzymes introduction and types.

UNIT: IV

Food microbiology: Food poisoning, food preservation and spoilage. Agricultural microbiology: Industrial microbiology: Antibiotics and production of Penicillin.

UNIT: V

Medical microbiology: Microbial diseases in Man (Brief study of each disease) a) Bacterial diseases: Diphtheria, Whooping cough, Tuberculosis, Leprosy, Syphilis, Gonorrhoea, b) Viral diseases : AIDS, Poliomyelitis, Chicken pox, Measles, Mumps, Influenza, Viral hepatitis, Common Cold.

Text Books:

1. Pelczar M.J., Chan, E C S and Krieg, N.R. (1993). Microbiology TATA McGraw Hill, Edition.
2. Arumugam .N.2000. Microbiology, Saras Publication Nagarcovil.
3. Dubey, R.C and Maheswari, D.K.(2000). A Text book of Microbiology. S.Chand & Co Ltd New Delhi.

Reference books:

1. Frazier W.C and D.C West Goff 1994. Food Microbiology
2. Power C.B and H.F. Dagainawala: 1997. General Microbiology Vol. I&II (Himalaya Publishing Co)
3. Black.J.G, (2008). Microbiology. VII, Edn. John Wiley & Sons Inc.

CC 11 – IMMUNOLOGY

Subject code: 18K6Z11

Hours:7
Credit:6

UNIT: I

Introduction- History of Immunology. Innate immunity; Physical and mechanical factors biochemical factors, Cellular factors, Genetic factors. Acquired immunity; Active immunity, Passive immunity. Lymphoid organs; Primary lymphoid organs; Thymus, bursa of Fabricius, bone marrow, Secondary lymphoid organs; Spleen, lymph nodes, tonsil.

UNIT: II

Cells of the immune systems: Origin of cells, stem cells. Cells of lymphoid lineage: Lymphocytes Null cells – structure and types. Cells of myeloid lineage: monocytes, polymorphonuclear leucocytes, neutrophils, basophils, eosinophils. Accessory cells: Mast cells, antigen presenting cells, platelets.

UNIT:III

Antigens: Comparison between antigens and haptens, epitopes, paratopes. **Antibodies:** Basic structure of immunoglobulin, biological properties. **Immune response – humoral immunity:** B cells in antibody formation. **Cell mediated immunity:** Cells involved in CMI, cytokines and Lymphokines, immune responses to tumour cells.

UNIT: IV

Auto immunity: Auto immune disease – causes and brief description. Eg., Myasthenia gravis, lupus erythematosus, Rheumatoid arthritis, Hashimoto's disease, Vaccines ; Types, immunization, brief study on transplantation immunology. Types and mechanism of transplantation.

UNIT:V

Immunological techniques. Precipitation: VDRL test, immune diffusion, single and RIA immuno electrophoresis. Agglutination: ABO – Blood typing, Widal test.

Text Books:

1. **Dulsi Fatima, N.Arumugam 2001. Immunology, Saras Publications, Nagarcoil.**
2. **Kannan, I. (2007). Immunology. MJP Publications, Chennai..**
3. **Rajasekara Pandian, M and Senthilkumar, B. (2007). Immunology and Immunotechnology, Panima Publishing Corporation New Delhi.**
4. **Joshi, K.R and Osama, N.O.(2000). Immunology, Agrobios (India).**
5. **Vaman Rao, C. (2007). Immunology, Narosa Publishing house, New Delhi.**

Reference books:

1. **Delves, P.J, Martin, S.J, Burton, D.R and Roitt, I.M. (2011). Roitts Essential Immunology XII Edn. Wiley- Blackwell, Publications.**
2. **Roit, J.M, J. Brostoff and D.K.Male : Immunology (Moby International Ltd)**
3. **Kindt, T.J, Goldsby, R.A and Osborne, B.A.(2007). Kuby Immunology, VI Edn, W.H Freeman and company, New York.**

CC 12- ENVIRONMENTAL BIOLOGY AND ANIMAL BEHAVIOUR

Subject code: 18K6Z12

Hours: 6

Credit: 6

ENVIRONMENTAL BIOLOGY

UNIT: I

Scope – Branches of Ecology – A biotic factors – water, soil, temperature, light. Biotic components of the Ecosystem – Animal relationships – symbiosis – commensalism – mutualism – antagonism – antibiosis – parasitism – predation – competition.

UNIT: II

Habitat Ecology – characters and adaptations and fauna of pond, sea, estuary forest & desert. Biogeochemical cycle (P, N₂, C, and S₂)

UNIT: III

Biotic community – organization and characteristics of community – dominance, stratification, community – succession, Ecotone and Edge effect.

ANIMAL BEHAVIOUR

UNIT:IV

Animal behavior- Definition- Behaviour Patterns- Stereotypes behaviour (Reflexes and Instincts). Acquired behaviour - Learning- Non Associative Learning and Associative Learning - Classical conditioning and instrumental or operant conditioning. Sociobiology of elephant - Communications patterns (Chemical and auditory).

UNIT:V

Reproductive behaviour: evolution of sex and reproductive strategies, mating systems, courtship, sperm competition, sexual selection, parental care. Genetic and environmental components in the development of behaviour.

Text Books:

Environmental Biology

1. Arumugam,N (2015). Environmental Biology,Saras Publications, Nagarcoil.
2. Odum, E.P (1953). Fundamentals of Ecology, W.B. Saunders, Philadelphia.
3. Sharma.P.D (1994). Environmental Biology,Rastogi Publications

Animal Behaviour

1. Agarwal,V.K (2009). Animal Behaviour, S.Chand & Company Ltd, New Delhi

Reference books:

Environmental Biology:

1. Mellaanby, K., The Biology of Pollution.
2. Dash, M.C., Fundamentals of Ecology.

Animal Behaviour

1. Dowdeswell, W.H., An Introduction of Animal Ecology, Melthuen. London.
2. Allee, W.C. Emerson, A.E., Parm, O and Poak, T, (1950). Principles of Animal ecology, W.B. Saunders, Publications
3. Reena Mathur – Introduction to Animal Behaviour
4. URL : [http:// www.elephant voices.org](http://www.elephantvoices.org).

CC 13- PRACTICAL IV

IMMUNOLOGY, ENVIRONMENTAL BIOLOGY AND ANIMAL BEHAVIOUR, BIOTECHNOLOGY AND SERICULTURE.

Subject code: 18K6Z13P

Hours: 6

Credit: 5

IMMUNOLOGY

1. ABO blood grouping and Rh typing
2. Lymphoid organs of the mouse.
3. Spotters: Structure of antibody and Immuno electrophoresis.

ENVIRONMENTAL BIOLOGY AND ANIMAL BEHAVIOUR

1. Estimation of Dissolved oxygen
2. Estimation of Carbon di oxide
3. Estimation of salinity.
4. Estimation of Calcium

Spotters: Animal Association, Intertidal fauna. (Sandy, Rocky & Muddy shores.) Identification of planktons. Study of fauna and flora in college campus.

BIOTECHNOLOGY

Spotters:

1. Plasmids
2. Blotting techniques (Southern)
3. PCR.
4. Gene cloning – Agrobacterium.
5. Biofertilizer.

SERICULTURE

1. Life cycle of silkworm
2. Male and female moth,
3. Silk gland, silk thread, cocoon and Mulberry plant.

Field study (Tour report).

MBE 2- BIOTECHNOLOGY

Subject code: 18K6ZELZ2

Hours: 5
Credit: 5

UNIT: I

Biotechnology : An overview, scope and importance, Genetic engineering : gene cloning – cloning vectors – Plasmid, Cosmid and Agrobacterium.

UNIT: II

Molecular probes: Blotting techniques – Southern blotting. Genomic libraries, Polymerase Chain Reaction and Hybridoma technology. Production of insulin using recombinant DNA technology.

UNIT: III

Enzyme technology: Isolation and purification of enzymes, immobilization of enzymes; Production of recombinant proteins (vaccine and growth hormones).

UNIT: IV

Industrial Biotechnology: Production of organic compounds by microbial fermentation – Ethanol ; Fermentation technology - fermentor types, upstream and downstream process– Applications of biotechnology in industry.

UNIT:V

Agricultural biotechnology: Biofertilizers, Nitrogen fixation, Environmental Biotechnology: Bioremediation. Production of Transgenic animals and plants, significance and ethical issues.

Text books:

1. Kumaresan,N(2015). Biotechnology,Saras Publications,Nagercoil.
2. R.Dubey (2005),Text book of Biotechnology. S.Chand and company Ltd. New Delhi.
3. Ramawat ,K.G, and Shaily Goyal (2009).Comprehensive Biotechnology.S.Chand and company Ltd. New Delhi.
4. Sathyanarayana(2010).Biotechnology,Books and Allied (p)Ltd.Kolkata.
5. Balasubranabian.D,Bryce.A.F.C, Dharmalingham.K, Green.J and Jayaraman.K (1996). Concepts in Biotechnology, Universities Press.
6. Ashok.K and Ghauhan (2009). A Textbook of molecular Biotechnology,I.k. International Publishing house pvt.Ltd.
7. Chandrakant Kokate, Ss Jalalpure, and pramod.H.j (2011). Textbook of Pharamaceutical Biotechnology. A division of Reed Elsevier India Pvt.Led.

Reference books:

- 1. R. Primrose. Molecular Biotechnology (ASM Press, Washington)**
- 2. B.R. Glick and J.J. Pasternak. Molecular Biotechnology (ASM Press, Washington)**
- 3. S. Desmond and T. Nicholl. Genetic Engineering (Cambridge University Press)**
- 4. P.K. Gupta. Elements of Biotechnology (Rastogi Publications)**
- 5. R.C. Dubey .A Text Book of Biotechnology (S.Chand & Co)**
- 6. Bhattacharyya and Rintu Banerjee (2007). Environmental Biotechnology. Oxford Education Publication.**
- 7. Krishna B Ghimire.(2000). Social change and conservation. London Earthscan Publ.**

MBE 3 - SERICULTURE

Subject code: 18K6ZELZ3

Hours: 5

Credit:5

UNIT: I

Scope of sericulture - History of sericulture – Development of Sericulture in India – Economic importance. Non – mulberry silk worms – Tasar, Muga and Eri. Silk composition and economic importance

UNIT:II

Mulberry cultivation – Environmental conditions for cultivation - temperature, humidity and light – preparation of land. Mulberry varieties in India – Methods of propagation – irrigation – manuring – application of fertilizers. Pruning – mulching – Harvesting of leaves – preservation of leaves. Diseases and pests of mulberry.

UNIT: III

Morphology of Mulberry silkworm – larva and moth. Physiology of silk gland. Life cycle of *Bombyx mori* – Rearing facilities – rearing house – Rearing appliances – Rearing operation. Seed production – hatching – brushing – feeding – bed cleaning – spacing – rearing of young age silk worm – rearing of later stage of silkworm.

UNIT:IV

Mounting of silkworm for spinning cocoons – Methods of mounting. Harvesting of cocoons – Quality of cocoons. Diseases and pests of silk worm.- prevention and control measures.

UNIT:V

Reeling of cocoons – process of reeling – stifling and storage – storage and deflossing. Reeling equipments. Utility of sericulture by products-Economics of sericulture

Text book:

1. Ganga G. & Sulochana Chetty. J 1997.Sericulture- Oxford and IBH Co. New Delhi

Reference Books:

1. FAO, 1992. Sericulture Manual-2 (Silkworm rearing). Oxford &IBH.
2. FAO, 1994. Sericulture Manual-2(Silk reeling) Oxford & IBH.
3. FAO, 1992. Silkworm rearing Oxford & IBH
4. FAO, 1993. Silk egg production. Oxford & IBH
5. FAO, 1992. Sericulture Training Manual Oxford & IBH.

AC 1-BIOLOGY OF INVERTEBRATES AND CHORDATES

Subject code: 18K1B/CHAZ1

Hours: 5

Credit: 4

INVERTEBRATES

UNIT: I

General characters of Phylum Protozoa, Porifera and Coelenterata with suitable examples– Paramecium – Organization and life history.

UNIT: II

General characters of Phylum Platyhelminthes, Annelida with suitable examples – *Fasciola* – Organization and life history.

UNIT: III

General characters of Phylum Arthropoda, Mollusca and Echinodermata with suitable examples. Prawn (*Penaeus monodon*)– Organization and life history.

CHORDATES

UNIT:IV

General characters of Class: Pisces, Amphibia and Reptilia – Shark – Digestive, Respiratory, Nervous, Circulatory, Excretory and Reproductive system.

UNIT: V

General characters of the Class: Aves and Mammalia – Pigeon - Digestive, Respiratory, Nervous, Circulatory, Excretory and Reproductive system.

Text books:

1. Arumugam.N. Invertebrata, Saras Publications,Nagergovil.
2. Verma and Agarwal. Invertebrata,Chand & Co.,
3. Arumugam.N. Chordata, Saras Publications,Nagergovil.

Reference books:

1. Ayyer E.K. and T.N. Anathakrishnan 1992 A Manual of Zoology. Vol.1 (Invertebrata) Part I &II Viswanatan Pvt. Ltd.,
2. Jordon E.L and P.S Verma 1995. Invertebrate Zoology 12th edn. S. Chand & Co.,

**AC 2 – ALLIED ZOOLOGY – PRACTICAL
BIOLOGY OF INVERTEBRATES AND CHORDATES AND COMMERCIAL ZOOLOGY**

Subject code: 14K1B/CHAZ2P

Hours: 3
Credit: 3

Dissections:

- | | | |
|-----------|---|---|
| Earthworm | - | Digestive system and Nervous system . |
| Prawn | - | Appandages,Digestive system and Nervous system. |
| Frog/Rat | - | Video clipping. |

Mounting:

- | | | |
|--------------------|---|-----------------------|
| Earthworm | - | Body and penial setae |
| Honeybee/ Mosquito | - | Mouth parts |
| Shark | - | Placoid scales. |

Spotters:

Amoeba, Paramecium (entire and conjugation), *Fasciola* (W.M), Redia, Cercaria, Freshwater mussel, Star fish, Shark, Frog, Calotes and Pigeon.

Species of animal used:

- | | | |
|--------------|---|-----------------------------------|
| Vermiculture | - | Earthworm |
| Honey bee | - | Apis |
| Sericulture | - | <i>Bombyx mori</i> |
| Aquaculture | - | Major carps and 5 aquarium fishes |
| Poultry | - | Any three types. |

Products:

- honey
- Bee wax
- Silk
- Cod-liver oil
- Egg.

AC 3- COMMERCIAL ZOOLOGY

Subject code: 15K2B/CHAZ3

Hours: 4
Credit: 3

UNIT -I

Vermiculture and composting: - types of earthworm - rearing and management - economic importance.

UNIT - II

Apiculture : Species of honey bees - types of bee hives- care and management - honey extraction - Composition and value of honey.

UNIT -III

Sericulture: Life cycle of silk worm (*Bombyx mori*) feeding and feeding habits, economic importance of silk.

UNIT -IV

Aquaculture: Construction, management of a fish pond- Morphology, Food and feeding habit (Catla, Rohu and Mrigal). Ornamental fishes (Gold fish, Fighter and Angel fish).

UNIT - V

Poultry : Types of breeds - Feed - Diseases and control measures (Egg and Chicken).

Text book:

1. G.S.Shukla and V.B. Upadhyay - Economic Zoology .Rastogi Publications.

Reference books:

- 1.. B. Ansan ;and S.P. Sinna - A hand book of Economic Zoology (S. Chand& Co.)
Sarder Singh - Bee keeping in India
2. S.R. Uial and M.N. Narasimhanna - Central silk Board, Government of India, Bombay.
3. Santhanam - Aquaculture
4. Singh - Livestock and Poultry production.

CORE COURSE -1
FUNCTIONAL MORPHOLOGY OF INVERTEBRATES

Subject code: 18KP1Zo1

Hours: 6
Credit: 5

UNIT: I

Taxonomy: Binomial nomenclature – Rules of nomenclature systematic hierarchy – Out line classification of Animal kingdom

UNIT: II

Functional morphology of Locomotion, Nutrition and Respiration in invertebrates.

UNIT: III

Functional Morphology of Reproduction in invertebrates, Endocrine glands in crustaceans and insects

UNIT: IV

Minor phyla – Structural peculiarities and affinities of Phoronida, Acanthocephala, Nemertinea and Bryozoa.

UNIT: V

Invertebrates fossils – Trilobites, Ammonoids, Belemnoids, Nautiloids and Echinoderms

References

1. BARNES, R.D. (1982), *Invertebrate Zoology, IV Ed., Holt Saunders International Edition.*
2. BARRINGTON, E.J.W. (1979), *Invertebrate Structure and Functions, II Ed., ELBS and Nelson.*
3. MOORE, R.C., LOLICKER and FISCHER, A.G. (1952), *Invertebrate Palaeontology, McGraw Hill Book Co., Inc., N.Y.*
4. HIGHNAM, K.C. and HILL, L. (1979), *The Comparative Endocrinology and Invertebrates, ELBS & Edward Arnold (Publisher) Ltd., London.*
5. HYMAN, G.H., *The Invertebrates, Vol., I to VII, McGraw Hill Book Co., Inc., N.Y.*
6. VASANTIKA KASHYAP (1997), *Life of Invertebrates, Vikas Publishing House Pvt. Ltd., New Delhi.*
7. KOTPAL, R.L., *Minor Phyla, Rastogi Publication, Meerut.*

CORE COURSE II – FUNCTIONAL MORPHOLOGY OF CHORDATES

Subject code: 18KP1Zo2

**Hours: 6
Credits: 5**

UNIT I:

Chordate phylogeny: Origin of chordates – structural peculiarities of cyclostomata Evolutionary position of Ostrcoderms.

UNIT II:

Evolutionary significance of placoderms, crossopterygians , Labyrinthodonts and Dinosaurs – Adaptive radiation of Reptiles.

UNIT III:

Fossil history of Birds – Birds as glorified reptiles – Adaptive radiation in Birds.

UNIT IV :

Origin of Mammals- Structural peculiarities of prototheria , Metatheria and Eutheria Adaptive radiation of Mammals

UNIT V:

Comparative study &Functional Morphology of Exoskeleton , respiratory and Urinogenetal system.

References

- 1. WATERMAN, A.J. (1971), Chordate Structure and Function, The Macmillan Company.**
- 2. COLBERT, H. EDWIN (1989), Evolution of the Vertebrates, II Ed., Wiley Eastern Limited, New Delhi.**
- 3. HARREY POUGH, JOHN B. HEISHER, WILLIAM N. McFARLAND (1990), Vertebrate Life, Macmillan Publishing Co., N.Y.**
- 4. JOLLIE, M. (1962), Chordate Morphology, Reinholt Publishing Corporation, N.Y.**
- 5. KENT, G.C. (1976), Comparative anatomy of the Vertebrates, McGraw Hill Book Co., Inc., New York.**
- 6. ROMER, A.S. (1974), The Vertebrate Body, W.B. Saunders, London.**
- 7. ROMER, A.S. and (1979), Hyman comparative Vertebrate Anatomy, III Ed., the University of Chicago Press, London.**
- 8. WEICHERT, C.K. (1965), Anatomy of the Chordates, McGraw Hill Book Co., N.Y.**
- 9. NEWMAN, N.H. (1961), Phylum Chordata, The University of Chicago Press, Chicago.**

CORE COURSE-III- CYTOLOGY AND GENETICS

Subject code: 18KP1Z03

Hours :6
Credits: 5

Unit I:

- Cellular components and their structure, composition and functions
- Membrane models, permeability and Transport mechanisms
- Cytoplasmic matrix & vacuolar system
- Endoplasmic reticulum
- Golgi complex
- Ribosome: Ultra structure and functions
- lysosomes :Functions and intracellular digestion
- mitochondria: Organization and function, oxidative phosphorylation and biogenesis.
- Microsomes, peroxisomes, glyoxisomes & Spherosomes
- Centrioles and microtubules; Cilia and flagella

Unit II:

- Nucleus: Interphase nucleus, nucleoplasm, nuclear membrane, nucleolus, Chromatin
- Chromosomes: Ultrastructure, kinds (Giant chromosomes)
- Nucleic acids
- DNA structure and Replication
- DNA transcription and Protein synthesis
- Structure and kinds and RNA

GENETICS

Unit III: Concept of gene

- Cistron, recon and muton
- DNA the genetic material
- Regulation of gene action: Operon
- Gene mutations, Chromosomal aberrations (numerical and structural)
- Inherited genetic disorders in man.
- Genetic, chromosomal and metabolic disorders

Unit IV: Genes in population

- Hardy Weinberg law
- Gene frequencies and changes
- Inbreeding and outbreeding
- Application of genetic principles to plant animal breeding

Unit V: Genetic counselling and planned genotypes

- Germ cell storage and artificial insemination
- Amniocentesis
- Human genome project
- Ethical implication of biotechnology
- Principles of bioinformatics

References

1. **Winchester, A.M. 1996 Genetics: A survey of the principles of heredity. Oxford & India Book house,, New Delhi.**
2. **Buns,G.W. 1980 Science of Genetics: An introduction to heredity, Macmillan, New York.**
3. **Sinnott, E.M. Dunn, L.C.& Dobzhansky, T 1985.: Principles of genetics, Tata Mc Graw, Delhi.**
4. **Strickberger, M.W. 1976: Genetics, Macmillan, New York.**
5. **Dharmarjan, N 1989: Genetic Engineering, S. Viswanathan, Madras.**
6. **Srb.A.M.Owen, R.D.& R.S Edgar 1970 : General Genetics., Rurasia Pub. House, New Delhi.**

CORE COURSE IV PRACTICAL – I

FUNCTIONAL MORPHOLOGY OF INVERTEBRATES AND CHORDATES, CYTOLOGY AND GENETICS AND AVIAN BIOLOGY

Subject code : 18KP1Z04P

**Hours :6
Credits :4**

INVERTEBRATES AND CHORDATES

**Fossils- Trilobites, Ammonoids, nautiloids, Acanthodian, Labyrinthodont, Ichthyosaur,
Stegosaurus, Archaeopteryx
Minor phyla – Rotifer, Sagitta, Sipunculus, Phoronis**

CYTOLOGY

**Micrometry – calibration and measurement of cells.
Camera Lucida.
Preparation of Human buccal smear
Preparation Human blood smear
Chironomous larvae – giant chromosomes.**

GENETICS

**Drosophila – Culture and life cycle
Drosophila - Identification of sexes
Drosophila - identification of mutants.
Calculation of gene frequency for multiple alleles
Human pedigree analysis
Human karyotype - normal
Human karyotype - chromosomal abnormalities.**

**Eggs of Birds
Feet of Birds
Beak of Birds**

MBE I AVIAN BILOGY

Subject Code: 18 KP1ZELZ1

**Hours: 6
Credit: 4**

UNIT I:

Introduction – Birds as Glorified Reptiles- History of Avifauna – Classification of birds

UNIT II:

Birds of Biological Significances – Game Birds – Plumage Birds – Song Birds – Cage Birds

UNIT III:

Importance of Birds – Scavengers – Prey – Vector and Medicine

UNIT IV:

Birds in Agriculture – Horticulture and Forestry

UNIT V:

Migratory Birds – Bird watching and conservation of Birds

REFERENCES:

- 1. The book of Bird life-A. Allen (1961)**
- 2. The Wealth of India – Birds-(1990)
Publication and Information – CSIR**

CORE COURSE V- BIOCHEMISTRY AND BIOPHYSICS

Subject Code : 18KP2Zo

Hours : 6
Credits :5

A. BIOCHEMISTRY

UNIT – I

Structure, Properties, Classification and functions of Carbohydrates, proteins and lipids.

Unit – II

Enzymes :Classification and Properties ; enzyme Kinetics – Line Waver burk plot, Eddie hofslee Plot & Hanes plot. Mechanism of action of enzymes; Active Sites , coenzymes;Activators and inhibitors, Isoenzymes , Alloesteric enzymes, abszymes; regulation of enzymatic activity.

UNIT – III

Biological Oxidation: Nucleotides, Flavoproteins, Cytochromes – Redox Potential , Oxidative Phosphorylation and inhibitors. Energy relations; energy rich compounds and their roles. Mitochondrial Electron Transport chain, Structure ,functions and inhibitors.

B. BIOPHYSICS

UNIT – IV

Energy sources; principles and application of thermodynamic laws, electromagnetic spectrum and free energy from electromagnetic waves. Natural radiations ; properties of natural light, photo electric effect, photodynamic sensitization, LASER; effect of UV light and ionizing radiations. Radio activity: Disintegration; Measurement of radio activity, Gieger – Muller counter, Isotopes as tracers-Autoradiography.

Stabilizing interactions: Van der Waals, electrostatic, hydrogen bonding and hydrophobic interactions. Conformation of proteins : Ramachandran plot, secondary, tertiary and quaternary structure; domain; motif and folds. Conformation of nucleic acids: A-, B- and Z- DNA, t RNA and micro RNA.

UNIT – V

Spectroscopy: principles and applications ;NMR and ESR spectroscopy. Atomic absorption and Plasma Emission Spectroscopy. X-ray crystallography.NMR-CW NMR Spectrometer,FT-NMR; Atomic absorption spectroscopy, Atomic Emission spectroscopy and Plasma Emission spectroscopy.

Reference

1. Robert k, Muray, Daryl, K. Granner, Peter, A. Naves Victor W. Rodwell, (1993), Harper's Biochemistry (24th Edition) prentices Hall International Inc., London.
2. SMITH, et.al., (1985). Principles of Biochemistry, McGraw Hill (Mammalian Biochemistry)
3. VOET, D and VOET, J. (1995) Biochemistry, John Wileyand sons, New York.
4. Ambika Shanmugam, Principles of biochemistry.

BIOPHYSICS

1. DANIEL. M. (1989) Basic Biophysics for Biologists. Agro – Botanical Publishers, Bikaner, India.
2. De Robertis, E.D.P. and De Robertis E.M.F. (1987) Cell and Molecular Biology, VIII Edition, Lea anc Febiger, Philodelphia.
3. DOG. A. Douglas and James J.Leary (1992) Principles of instrumental Analysis, under golden sunbers series.
4. Bio instrumentation- L.Veerakumari-MJP Public (2006)
5. Biological instrumentation and methodology-P.K.Bajbai,S.Chand & Co New Delhi (2008 Ed)

COURSE VI- ANIMAL PHYSIOLOGY

Subject Code:18KP2Z06

Hours : 6
Credits : 5

UNIT – I

Carbohydrate metabolism : Glycolysis, Krebs cycle, Hydrogen transport system. Protein metabolism: Deamination, Transamination, Transmethylation of amino acids. Lipid metabolism: Oxidation and Biosynthesis of Fatty acid.

UNIT – II

Blood composition and functions - Heart - Working mechanism - circulation-oxygen dissociation curve ,Blood pressure , ECG, Blood clotting. Structure and function of Kidney - Nephron - mechanism of Urine Formation - Excretion in relation to different habitats.

UNIT – III

Physiology of respiration-respiratory organs, transport of respiratory gases, respiratory pigments. Neuromuscular coordination-types and properties of muscles, mechanism of muscle contraction and relaxation. Nerve structure, conduction of nerve impulse, Neuromuscular junction-nerve reflexes.

UNIT – IV

Homeostatic mechanisms: Ionic and osmoregulation in crustaceans and fishes; Temperature and pH regulations in animals. Light – Photobiological process , Pressure – Acclimatization to high altitudes, Hydrostatic pressure and Buoyancy. Electric organs. Bioluminescence-Chemistry and physiology.

UNIT – V

Reproductive Physiology-Male and Female. Endocrinology-Endocrine glands -secretion and function. Pituitary, Thyroid, Parathyroid, Adrenal, Islets of Langerhans. Hormonal control of growth and metabolism.

Reference

1. Hoar W.S. (1987) General and Comparative physiology. Prentice Hall Turner, C.D.
2. Baldwin, E. (1964). An Introduction to comparative physiology, CUP, London.
3. Beck, W.S. (1971). Human Design. Harcourt Brown Co.,
4. Echert, R. Andardall. D. (1987). Animal Physiology, CBS, publishers and distributors.
5. Giese, A.C. (1979). Cell physiology and biochemistry. Prentice hall.
6. M.Farland, D. (1986). Animal behavior – Psychology, Ethology and Evolution, English Language book society, London.
7. Wilson, J.A. (1979). Principles of Animal Physiology.
8. Wood, W.S. (1968). Principles of animal Physiology. Edward A Mold, London.

**CORE COURSE – VII
MICROBIOLOGY**

Subject Code:18KP2Z07

**Hours :
Credits :**

UNIT – I

Scope of Microbiology ; History of Microbiology , Wittaker’s classification Prokaryotes and Eukaryotes, Characteristics and Ultra structure of Bacterium and Virus.

UNIT – II

Sterilization techniques , culture methods: culture media- composition - types , culture techniques. Isolation and maintenance of pure culture. Nutritional requirements ;bacterial growth curve.

UNIT – III

Industrial Microbiology : Fermentors, structure of fermentor- Fermentation products – Ethanol,– Antibiotics (Penicillin). Single cell protein (SCP).Food Microbiology : Food spoilage, poisoning, preservation of Milk and Meat products.

UNIT - IV

Biofertilizer, composting soil microbes, and Biogeo chemical cycle(Nitrogen cycle, Carbon cycle)

UNIT – V

Microbial diseases: Respiratory- Tuberculosis and Whooping cough, Intestinal-Cholera , Amoebic dysentery, Urinogenital diseases-Syphilis, Gonorrhoea and HIV- Causative agent, pathogenesis, laboratory diagnoses, treatment and prophylaxis.

References

1. Benjamin Lewin (2000) fitness VII oxford university press, New York.
2. David Frifelder (1998), Microbial Genetics Narose publishing house New Delhi.
3. Power C.B. and Diginawala H.F. (1982) General Micro Biology volume I & II himalaya publishing House Bombay.
4. Michael T. Madigan, John M.Marinkl, Jhckparker (1997) Biology of micro organisms VIII Ed Prentice Hall international Inc, USA.
5. M.S. Pelcezar and Raid, R.D. Microbiology.
6. W.C. Frazier and D.C. West Goft food microbiology.
7. Tortora, Funk and case – Microbiology.
8. R.C. Dubey and Maneswari – Microbiology.
9. P.D. Sharma – microbiology.

COURE COURSE - VIII

PRACTICAL –II ANIMAL PHYSIOLOGY, BIOCHEMISTRY AND BIOPHYSICS, MICROBIOLOGY AND APICULTURE

Subject Code:18KP2Zo8P

Hours : 6

Credits : 4

BIOCHEMISTRY:

Preparation of solutions: Molarity, normality and percentage.

Calculation of moles, millimoles, micromoles and nano moles.

Buffer preparation

Quantitative estimation of proteins

Quantitative estimation of carbohydrates

Quantitative estimation of lipids

BIOPHYSICS :

Determination of Surface tension of liquids by drop weight method Colorimeter: determination of optical density of samples using standards. Centrifuge: Usage of low and high speed centrifuge.

ANIMAL PHYSIOLOGY

Estimation of Salivary amylase activity in relation to temperature.

Estimation of Salivary amylase activity in relation to pH

Preparation of Haemin crystals

Oxygen consumption of fish

Rate of salt loss and salt gain in fish using different experimental media

MICROBIOLOGY

Do's and don'ts in microbiology

Simple staining in bacteria

Gram staining in bacteria

Observation of live bacteria -hanging drop method

Determination of yeast growth curve.

APICULTURE

MBE II – APICULTURE

Subject Code:18KP2ZELZ2

**Hours : 6
Credits :4**

UNIT – I

History of Apiculture , Honey bee – Systematic position , Species of Honey bees and Life history of Honey bee.

UNIT – II

Bee colony : Castes – natural colonies and their yield, foraging of Bees.

UNIT – III

Apiary : Artificial bee hives- Newton’s bee hive; care and management. Pollen and nectar yielding plants. Natural Enemies and diseases of honey bee.

UNIT – IV

Honey : Extraction and Equipments used: chemical composition. Nutritive and medicinal values.

UNIT – V

Prospects of Apiculture : self - employment. Source of financial assistance and funding agencies.

Reference:

- 1. Cherian, R. & K.R. Ramanathan, 1992 – Bee keeping in India.**
- 2. Mishra, R.C. 1985 – Honey bees and their management in India. ICAR.**
- 3. Singh, S. 1982 – Bee Keeping – ICAR.**
- 4. Sharma, P. and Singh L. 1987 – Hand book of bee keeping, controller Printing and Stationery, Chandigarh.**
- 5. Rare, S. 1998 – Introduction to bee keeping, Vikas Publishing house.**

NANOTECHNOLOGY

Subject code: 18KP2SSZ1

Credit: 5

Unit : I

Nanomaterials

Introduction-definition-preparation of nanomaterials, Top down approach- Bottom up approach, Gas phase evaporation-sol gel processing, Reverse micellar techniques.

Unit: II

Properties and characterization of nano materials

Physico chemical properties, optical properties electrical and electronic properties, mechanical, magnetic properties, catalytic activities.

Characterisation of nanomaterials: Microscopy - SEM, TEM - Spectroscopy - UV visible spectroscopy.

Unit: III

Application of Nanotechnology in health

Application of Nanotechnology in Food, Diagnosis - Biosensors and Biolabelling, Quantum dots, Magnetic Nanoparticles devices based on Nanotechnology for diagnosis.

Unit : IV

Nano medicines:

Developing of Nanomedicines, Nanosystems in use, protocols for nano drug Administration - Nanomaterials as therapeutic agents - drug reduced nanofluids.

Unit: V

Application of Nanotechnology in environment:

Nanomaterials in pollution abatement - Nanomaterials in sensors- Green synthesis using Microbes and Plants - Application of synthesized Nanomaterials.

References:

1. Amit Chakaravarthy., Nanotechnology- An Introduction, Rajat Publications.
2. G.B. Sergeev., Nanochemistry Elsevier India Pvt. New Delhi.
3. Y.S.Raghavan, Nanostructures and Nanomaterials. Arised Publishers, New Delhi
4. B. Viswanathan, Nanomaterials. Narosha Publishing Home, New Delhi.
5. Michael Wilson and Kamali Kaannagara, Nanotechnology.

**CORE COURSE – IX
BIOTECHNOLOGY AND BIOINFORMATICS**

Subject Code: 18KP3Z09

**Hours: 6
Credits: 5**

UNIT – I

Recombinant DNA Technology : Cloning : Cloning vectors, plasmids, phages, cosmids, binary and shuttle vectors – expression vector – linkers, adapters, ligases – cloning – screening procedures. Restriction enzymes – construction and screening of genomic and cDNA libraries.

UNIT – II

Blotting techniques – Southern, Northern and Western blotting colony hybridization-DOT & BLOT, polymerase chain reaction (PCR), gene amplification, DNA sequencing methods (Sangers, Maxam and Gilbert) DNA finger printing techniques (RFLP & RAPD).

UNIT – III

Animal Tissue culture: primary culture, sub culture, cell lines and maintenance of cell and tissue culture, tissue engineering. Enzyme biotechnology, isolation and purification of enzymes, immobilization, enzyme engineering protein engineering immunotoxins, Biofertilizer, Biopesticides.

UNIT – IV

Environmental Biotechnology: Pollution control- Biosensors, environmental monitoring, Bioremediation, biogas, biomass from waste, production of biological molecules. Animal Biotechnology: Transgenic animal and ethical issue. Steroid hormones, gene therapy – IPR (Copy right, Trade mark, patent).

UNIT – V

Importance of Bioinformatics, pairwise sequence alignment- Dotmatrix method, Local vs Global alignment, Multiple sequence alignment, Biological databases- Nucleotide sequence databases, Protein sequence database, Molecular structure databases. Classification of bioinformatics Tools, phylogenetic analysis. Application of bioinformatics.

References

- 8. John Smith, Biotechnology**
- 9. Dieter and Alexander, Biotechnology**
- 10. Alan Wiseman, Principles of Biotechnology**
- 11. Gupta, Elements of Biotechnology**
- 12. Ignimuthu, Basic Biotechnology.**
- 13. R. Dubey, Text book of Biotechnology.**
- 14. Kumaresan, Biotechnology, Saras Publications.**
- 15. R. Sundaralingam and V. Kumaresan, Bioinformatics, Saras Publications.**

CCX - DEVELOPMENTAL BIOLOGY AND IMMUNOLOGY

Subject Code: 18KP3Z10

Hours :6
Credits :5

UNIT – I

Basic concepts of development: Potency, commitment, specification, induction, competence, determination and differentiation; morphogenetic gradients cell fate and cell lineages, stem cells genomic equivalence and the cytoplasmic determinants imprinting mutants and transgenics in analysis of development.

UNIT – II

Morphogenesis and organogenesis in animals: cell aggregation and differentiation in *Dictyostelium*; axes and pattern formation in *Drosophila*, amphibian and chick. Organogenesis vulva formation *Caenorhabditis elegans*; eyes lens induction, limb development and regeneration in vertebrates; differentiation of neurons, post embryonic development - larval formation, metamorphosis - environmental regulation of normal development, sex determination – Influence of hormones on growth and metamorphosis in Amphibians.

UNIT – III

Developmental biology and Human welfare. Structure of human sperm and ovum. Super ovulation. Development of human embryo up to child birth.

Invitro fertilization and embryo transfer in human. Infertility, Patient treatment for IVF, IVF and embryo transfer, birth control methods, Rh factor and its significance.

UNIT – IV

Antigen – antibody reaction. Binding sites of Ig – Ab, precipitation, Agglutination, Opsonisation, Cytolysis, flocculation, Complement fixation. Histocompatibility, Hypersensitivity, Allergic reactions. Classification – Type I, Anaphylatic hypersensitivity, Type II – antibody dependent hypersensitivity. Type III, - Immune complex mediated hypersensitivity. Type IV – cell mediated hypersensitivity, V – Stimulated hypersensitivity, Tolerance.

UNIT – V

Immunotechniques: Brief procedure of ELISA, HLA typing, VDRL test. Immunoelectrophoresis, Radioimmunoassay, Immunoblotting techniques and Immunohistochemistry.

References

1. Berrill, N.J. And Karp, G. (1976) **Developmental Biology**, McGraw Hill Inc. New York.
2. Browder, L.N. (1980) **Development biology**, Saunders College, Philadelphia.
3. Deuchar, E.M. (1976) **Cellular interaction in Animal Development**, Chapman and Hall, London.
4. Gilbert, S.F. (1995) **Developmental Biology**, II Edn, Sinamer Associates Inc. Publishers, Sunderland, Massachusetts, USA.
5. Stevan, B. And Oppenheimer (1980) **Introduction to Embryonic development**, Alley and Bern.
6. Timiras, P.S. (1972) **Developmental physiology and Aging**. The Macmillan Company, New York.
7. Willer, B.H. And Oppenheimer, J.M. (1964) **Fundamentals of Experimental Embryology**, Prentice Hall.
8. Glynn. L & Steward M.W. John Wiley & sons(1977), **Structure and Function of Antibodies** New York.
9. Hildemann W.H (1984). **Essentials Of Immunology** Elsevier Publication, Oxford.
10. Dulesy Fatima & N. Arumugam (2001) – **Immunology** – Saras Publications, Nagarcoil – 629 002.
11. Dubey A R.C and Maheswari. D.N.S(2001).**Text Book Of Microbiology**–. Chand and Co Ltd, New Delhi – 110 055.
12. R.C. Dubey (2001) .**A Text Book Of Biotechnology**–S. Chand and Co. Ltd, New Delhi 110 055.

CORE COURSE XI

PRACTICAL –III BIOTECHNOLOGY AND BIOINFORMATICS , DEVELOPMENTAL BIOLOGY AND IMMUNOLOGY, AQUACULTURE AND PUBLIC HEALTH AND HYGIENE
Subject Code:18KP3Z11P

Hours : 6
Credits :4

BIOTECHNOLOGY AND BIOINFORMATICS

Isolation of DNA

Estimation of DNA,

PCR - polymerase chain reaction

RFLP - restriction fragment length polymorphism

RAPD - random amplified polymorphic DNA

BLAST - basic local alignment search tool.

Immobilization technique

DEVELOPMENTAL BIOLOGY

- 1. Observation of spermatozoa and different types of eggs.**
- 2. Effect of thyroxin or iodine on the metamorphosis of frog.**
- 3. Observation of developmental stages of human (models only).**
- 4. Blastoderm mounting**

IMMUNOLOGY

- 1. Determination of Ag – Ab reaction with reference of blood grouping.**
- 2. Identification of Leucocytes - Differential count**
- 3. Immunodiffusion – double immunodiffusion.**

AQUACULTURE

- 1. Morphometry of fishes.**
- 2. Aquarium maintenance – Ornamental fish – identification.**
- 3. Identification of fish diseases.**
- 4. Induced ovulation using synthetic hormones (Demonstration only) – Ovaprim, Ovapel / Ovotide.**
- 5. Induced ovulation using hypophysation technique**
- 6. Fish food processing techniques - Fish pickle and dry fish.**

MBE III – AQUACULTURE

Subject Code:18KP3ZELZ3

Hours : 6
Credits : 4

UNIT – I

History , definition , scope and significance of aquaculture. Different aquaculture systems. General characters of fishes and shell fishes , criteria for the selection of species ,common species cultured . Types of culture systems– Mari culture, Dam culture , Riverine , coastel culture.

UNIT – II

Pond construction- site selection – water source- Lay out and design- Aeration and Aerators. Nutritional requirements of prawn and fishes; Feed formulation – supplementary feed and live feed (Artemia , Rotifer).

UNIT – III

Culture of carps and their biology (catla, Rohu,mrigal)- Nursery rearing and stocking ponds – composite fish culture , harvesting . Culture of air breathing fishes – *Channa punctatus* . Culture of prawn - Cultivable species of fresh water prawn and their biology- Culture of *macro brachium rosenbergii*.

UNIT – IV

Disease, management- Fish diseases

UNIT – V

Transport and marketing- Fish preservation and processing- Funding Agencies – Economics of aquaculture.

References

1. Jhingaran, V.G., 1982. Fish and fisheries of India. Hindustan Publishing Crop.,
2. Pilliai, T.V.R. 1988. Aquaculture: Principles and practices. Fishing News Books.
3. Ramasamy, P. 1992. Diseases of shrimps in aquaculture systems. Vanitha Puplications.
4. Santhanam, R., 1987. Fisheries Science. Days Publishing Houses.
5. Santhanam, R. Sugumaran N. and Nartarajan P. 1992. A Manual of Fresh waster Aquaculture. Oxford & I.B.H.
6. Santhanakumar, G. and M.Selvaraj 1993. Concepts of Aquaculture. Meenam Publications.
7. Shanmugham. K 1982. Fishery Biology and Aquaculture. Leo Pathiapagam.
8. Vijaraman, K, George John, Sivakumar, P and Rafi Mohamed, R. 1999. Nanneer Eral valarpu – A manual. Tamilnadu State Council for Science and Technology.

MBE IV : PUBLIC HEALTH & HYGIENE

Hours :6
Credits : 4

Subject Code:18KP3ZELZ4

UNIT –I

Scope of Public Health and hygiene – Concepts – History of Public health in India. Nutrition and health – Classification of food – Nutritional deficiencies – Vitamins deficiency diseases – Balanced diet – Nutritional requirements of special groups.

UNIT – II

Environment and Health – Water sources – Pollution – Purification – Water quality standard. Air – Ventilation Air pollution – Noise pollution – Radiation effect – Solid waste and Sewage treatment.

UNIT – III

Arthropod borne diseases (Malaria, Filariasis, Dengue, Zoonosis: (Japanese, encephalitis). Surface infections (Leprosy), Sexually Transmitted Diseases (HIV).

UNIT – IV

Non Communicable diseases: Coronary heart disease – Hypertension, Diabetes, and cancer. Occupational health hazards – Physical chemical, mechanical and biological. Mental health – Causes of mental illness – Psychological – alcoholism – drug abuse.

UNIT – V

Health Education – Health planning and programmes in India – WHO – Non – governmental Voluntary health Organizations – First aid and Nursing – Methods – Dressing care – duties – preparations.

Reference :

1. Park and Park 2005. Text book of Preventive and Social Medicine. M/s. Banarsidas Bha Not Publishers, Jabalpur.
2. Verma S. 1998. Medical Zoology, Rastogi Publications, New Delhi.

SS II: ENVIRONMENTAL TOXICOLOGY

Subject Code: 18KP3SSZ2

Credit: 5

Unit -1

Introduction to Ecotoxicology, Principles of toxicology, Types of toxic substances - degradable and non-degradable; Influence of ecological factors on the effects of toxicity.

Unit -2

Toxicants in the Environment: Toxic substances in the environment, their sources and entry routes, Eco-system influence on the fate and transport of toxicants; Transport of toxicants by air and water; Transport through food chain - bio-transformation and bio-magnification.

Unit- 3

Environmental Diseases : Asbestosis, Silicosis, Synosis, Asthma, Fluorosis and Allergies; Epidemiological issues - Malaria and Kalaazar

Unit -4

Environmental Health Hazard and Risk Assessment: Hazard and risk, Biological, chemical, physical and psychological health hazard; Health risk assessment and management.

Unit – 5

Man and Environmental Toxins: Routes of toxicants to human body – entry through inhalation, skin absorption, indigestion and injection; Response to toxin exposures – Dose response, Frequency response and cumulative response; Lethal and sub-lethal doses; Dose- Response relationships between chemical and biological reactions. Analysis of NOEL, LD 50, LC₅₀ and MLD detoxification in human body – detoxification mechanisms organs of detoxification.

Recommended Books

1. Principles of Environmental Toxicology: I. C. Shaw and J. Chadwick; Taylor & Francis Ltd
2. Basic Environmental Health (2001): Annalee Yassi, Tord Kjellström, Theo de Kok, Tee Guidotti
3. Environmental Health : Monroe T. Morgan
4. Handbook of Environmental Health and Safety – principle and practices : H. Koren; Lewis Publishers

**CORE COURSE XIII
ENVIRONMENTAL MANAGEMENT**

Subject Code :18KP4Z12

**Hours :6
Credits : 4**

UNIT – I

Environmental Education and Information: Objectives : Environmental education programmes; Environmental education in India.

UNIT – II

Environmental Organizations and Agencies: Government and Non government Organizations; International bodies – Man and the biosphere programme (MAB).

UNIT – III

Environmental Impact Assessment (EIA) : Remote sensing and Ecosystem management; Biosphere reserves of Tamilnadu

UNIT IV :

Biodiversity - definition, Importance and types of Biodiversity - Measures of Biodiversity- hotspots . Wild life of India-(Birds & mammals).

UNIT – V

Conservation Strategies – Measures of conservation; Insitu and Exsitu (each two). Wild life conservation projects in India – Crocodiles, project Tiger, project Elephant and Gir lion project.

References

1. V.B. Saharia (1990) Wildlife in India, Nataraj publications, Dehradun.
2. Giles (1990), Wildlife Techniques, Oxford Publications.
3. ENVIS
4. IWPA (1992) – Govt. of India.
5. IUCN – SSP.
6. CPR – environmental Education programmes.
7. CPR – Biodiversity.

**CORE COURSE XIII
RESEARCH METHODOLOGY & BIostatISTICS**

Subject Code:18KP4Z13

**Hours: 6
Credits: 4**

UNIT – I

Selection of research problem: Experimental approach and design. Library and research documentation. Preparation of reference cards – Source of Information: Internet websites, collection of literature. Thesis writing: Components of thesis, Preparation of research document, abstract, and papers.

UNIT - II

Principles of Micro techniques: Fixatives and Histological stains – Fixation, tissue processing and staining. Freezing microtomy (Cryostat). Histochemistry: Fixative, Histochemical stains, principles involved in identification of Carbohydrate, protein, lipid and DNA.

UNIT - III

Photomicrography : Principles and applications. Principles and applications of Chromatography – Paper, Thin layer – Column – Ion exchange – Gel filtration – Gas liquid – Gas liquid HPLC – GC MS – Principles and applications.

UNIT - IV

Principles and applications of Electrophoresis : Paper electrophoresis – Gel electrophoresis – SDS – PAGE, immunoelectrophoresis. Colorimetry: Spectrophotometer. Calorimetry – Bomb calorimeter – Principles and applications.

UNIT – V

Measures of Dispersion : Range – Standard Deviation and standard Error. Concept of Correlation: Correlation analysis – Karl Pearson’s Rank Correlation. Regression Analysis – Simple linear regression. Test of Significance: Student “t” – test – Chi – square test – Goodness of fit – Analysis of Variance – One – way.

Reference

1. N.Gurumani (2008). An Introduction to Biostatistics.
2. N.Gurumani, (2008). Research Methodology: For Biological Sciences.
3. Sokai, R.J. and Rohif. S.J., Introduction to Biostatistics (W.H. Freeman)
4. Hzar, J., Biostatistical Analysis (McGraw – Hill).
5. Palanichamy, S. and Monoharan, M., Statistical Methods of Biologics (Palani Paramount Publications).
6. Gupta, S.P., Text Book of Statistics.

CORE COURSE XIV
PRACTICAL IV: ENVIRONMENTAL MANAGEMENT, RESEARCH METHODOLOGY
AND BIO- STATISTICS AND CLINICAL LAB TECHNOLOGY.

Subject Code: 18KP4Z14P

Hours:6
Credits:4

ENVIRONMENTAL MANAGEMENT

1. **Endangered mammals of India.**
2. **Biodiversity – hot spots in India.**
3. **National parks and Sanctuaries in Tamil Nadu.**
4. **Collection and Identification of fresh water planktons from aqua culture farm.**
5. **Parameters of aquatic environment**
Gonad index
Hepatic index
Fecundity index
6. **Field visit report.**

RESEARCH METHODOLOGY,

1. **Preparation of reference cards, Abstract writing, key words, framing of research article**
2. **Important biological journal and their web sites.**
3. **Demonstration of Micro techniques: fixation - staining - mounting**
4. **Preparation of fixatives - Bouins , zenkers, cornoy's ,**
5. **Preparation of stain Eosin- haematoxylin, malariy's triple staining**
6. **Microtome, L – blocks and mountant.**
7. **Verification of Beer Lamberts Law using uv-vis Spectrophotometer**

BIOSTATISTICS

1. **Standard deviation, standard error, Correlation and regression using biological samples**
2. **Student “t” test, Chi – square test and One way ANOVA using biological samples.**

CLINICAL LAB TECHNOLOGY

Blood Test

1. **Estimation of ESR.**
2. **Estimation of Hemoglobin content using Hemoglobinometer.**
3. **Bleeding time and clotting time.**
4. **Quantitative analysis of Blood sugar**
5. **Quantitative analysis of Blood cholesterol.**

Urine Test

1. **Colour, odour, volume and pH.**
2. **Qualitative analysis of Albumin,**
3. **Qualitative analysis of Sugar,**
4. **Qualitative analysis of Bile salts**
5. **Qualitative analysis of bile pigments.**

MBE V : CLINICAL LABORATORY TECHNOLOGY

Hours : 6
Credits : 4

Subject Code:18KP4ZELZ5

UNIT – I

The laboratory : Code of conduct for clinical lab personnel – safety measures in the lab, chemicals, reagents, accidents and first aid in the lab. Instruments; microscope (compound), centrifuge, glasswares, serological water bath, incubator and hot air oven.

UNIT – II

Haematology: Blood collection, Haemoglobin estimation; Sahlis haemoglobinometer, bleeding time, clotting time, PCV, blood cell count, ESR. Blood film examination – fixing and staining. Differential count. Blood sugar, creatine and urea.

UNIT – III

Clinical diagnosis of bacterial diseases such as Tuberculosis, Typhoid, Cholera. Clinical diagnosis of viral disease such as AIDS, Jaundice, Measles. Examination of stool and sputum. Examination of urine – Sugar, albumin, bile pigments and ketone.

UNIT – IV

Semen analysis, motility studies. Pregnancy test – any two immunological methods. Hospital wastes, disposal of hospital wastes and infected material.

UNIT - V

Prenatal Diagnosis, Ultra Sound Scan, Amniotic fluid analysis, Karyotyping.

References :

1. KANNAI, I. Mukerjee, Medical Laboratory Technology, Vol. I, II, III Tata Mr Grand Hill, Publishing co., New Delhi.
2. Samual, K.M. Notes on Clinical Lab Techniques, published by M.K.Gopalan, Chrompet, Chennai.
3. Ramnick Sood, M.D. Medical Laboratory Technology – Jaypee Brothers, Medical Publishers (P) Ltd., New Delhi.
4. Arumugam N. Microbiology (General and Applied) Saras Publication Nagarkovil.
5. Park Benarsides Bharot J.E. – Text Book of Preventive medicine – Napier Town.
6. Baker P.J. Silvertan – Int. to Medical Laboratory Technology.
7. Lynch – Medical Laboratory Technology.
8. Moniks Chessbrough – Medical Laboratory Manual of Tropical countries.
9. Talib. V.H. – A Hand Book of Medical Laboratory Technology.
10. Jame H. Cella – Manual of Laboratory Tests.
11. Manual of Basic Techniques.
12. Arumugam A. Biological Instrumentation.
13. Philip Thomas. Clinical Microbiology.

**SEMESTER – I CC I
FUNDAMENTALS OF GEOMORPHOLOGY**

CODE: 18K1G01

**Credit – 5
Hours -6**

Unit I:

Geomorphology: Meaning – Scope and Content - Origin of Universe: Big Bang Theory and Nebula Theory – Solar System – Interior of the Earth.

Unit II:

Geomorphic Processes: Internal and External Processes – Diastrophism – Folds, Faults – Volcanism: Types and distribution – Earthquakes: Causes, Effects and zones of distribution.

Unit III:

External Processes: Weathering and its types – Mass Wasting: Land Slide, Soil Creep, Rock fall and Mudflow.

Unit IV:

Geomorphic agents and Processes: Landforms formed due to Erosion, Transportation and Deposition of Running water, Wind and Glacier.

Unit V:

Landforms formed due to Erosion, Transportation and Deposition of Waves and Underground water.

REFERENCE BOOKS:

- 1. Sivamoorthy.A., (1985):“Geomorphology Tamil Edition”,Tamil Nadu Text book Society,Chennai.**
- 2. Sharma.V.K., (1986):“Geomorphology”, Shukla Book Dept, Patna.**
- 3. Negi.B.S., (1993): “Physical Geography”, S.J.Publication, Meerut.**
- 4. Dayal. P., (1995): “Text book of Geomorphology”, Shukla Book Dept, Patna.**
- 5. Tikka. R.N.,(1998): “Physical Geography”, Kedarnath, Ramnath,Meerut.**
- 6. Das Gupta.A and Kapoor.A.N., (1988):“ Principles of Physical Geography”, S.Chand and Com., Ram Nagar, New Delhi.**

**SEMESTER- I & II –CII PRACTICAL-I
SCALES AND CLIMATIC DIAGRAMS**

CODE: 18K2G02P

**Credit – 5
Hours - 6 (3+ 3)**

Unit I:

Representation of Scales: Construction of Plain – Comparative – Diagonal Scales.

Unit II:

Measurement of distance, Area, Directions and Bearings.

Unit III:

Relief Diagrams: Contours – Interpolation of Contours – Drawing cross section – Calculation of gradients.

Unit IV:

Representation of Climatic data: Temperature, Rainfall and Humidity – Climograph – Hythergraph – Ergograph. Wind Rose Diagrams: Simple Wind rose, Star Wind rose, Super Imposed Wind rose, Octagonal Wind Rose, Located Wind Rose – Rainfall dispersion diagram.

Unit V:

Field Trip

REFERENCE BOOKS

- 1. Monkhouse, F.J., and Wilkinson, H.R., (1963): “Maps and Diagrams”, Methuen Company, London.**
- 2. Singh. R.L., (1979): “Elements of Practical Geography”, Kalyani Publishers, New Delhi.**
- 3. Jayachandran.S., (1983): “Practical geography” Tamil Nadu Text Book Publication, Chennai(Tamil Edition)**
- 4. Misra.R.P.and .Ramesh.A. (2002): “Fundamentals of Cartography”, Concept of Publishing Company, New Delhi-110059.**
- 5. PijushkantiSaha and ParthaBasu (2010):” Advanced Practical Geography”, Arunabha Sen, Books & Allied (P) Ltd. Kolkata.**

**SEMESTER - I – AC I
ELEMENTS OF CARTOGRAPHY – I**

CODE: 18K1GAG1

**Credit -3
Hours -4**

Unit I:

**Cartography: Meaning – Scope and Content, Types and Importance of Maps –
Cartography as a science of Human Communication.**

Unit II:

**The Earth: Shape, Size, Area – Geographic Co-ordinate System - Latitudes and
Longitudes - International Date Line, Directions: True North and Magnetic North.**

Unit III:

Symbolization: Types of Symbols – Point, Line, Area – Map format

Unit IV:

**Compilation: Meaning – Enlargement and Reduction of Maps – Procedures for
Compilation of Physical and Cultural details.**

Unit V:

Generalization: Meaning – Generalization of Maps – Finalization.

REFERENCE BOOKS

1. Misra R.P and A.P.Ramesh.,(1969): “Fundamentals of Cartography”, University of Mysore.
2. Lawrence G.R.P., (1971): “Cartographic Methods”, Methu & Co Ltd, London.
3. Keates J.S., (1973): “Cartographic Design and Production”, Longman, London
4. Monkhouse and Wilkinson.,(1963): “ Maps and Diagrams”, Methu & Co , Ltd. London.
5. Ramamurthy.K., (1982): “Map Interpretation” Pub:Rexy Printers, Mylapore, Madras.

**SEMESTER I & II –AC-II
ALLIED PRACTICAL
CARTOGRAPHIC TECHNIQUES**

CODE: 18K2GAG2P

**Credit -3
Hour –6(3 +3)**

Unit I :

**Maps : Types of Maps – Physical and Cultural Maps, Definition and Characteristics:
Meridians and Parallels, Time zones – Calculation of time with Longitude.**

Unit II:

Map Symbols: Point, Line and Area symbols – Pictorial Diagrams.

Unit III:

Compilation: Preparation of Base map – Compiling Physical and Cultural details.

Unit IV:

Enlargement and Reduction - Combination of Maps.

Unit V:

**Mapping the Relief Features: Contours, Spot Heights, Benchmarks, Trigonometrical
Stations, Hachuring and Layer Tinting Method.**

REFERENCE BOOKS

- 1. Misra R.P and A.P.Ramesh.,(1969): “Fundamentals of Cartography”, University of Mysore.**
- 2. Lawrence G.R.P., (1971): “Cartographic Methods”, Methu & Co Ltd, London.**
- 3. Keates J.S., (1973): “Cartographic Design and production”, Longman, London**
- 4. Monkhouse and Wilkinson.,(1963): “ Maps and Diagrams”, Methu & Co , Ltd. London.**
- 5. Ramamurthy.K., (1982): “Map Interpretation”Pub:Rexy Printers, Mylapore, Madras.**

**SEMESTER- II CC-III
INTRODUCTION TO OCEANOGRAPHY**

CODE: 18K2G03

**Credit -6
Hours -6**

Unit I:

Oceanography: Nature and Scope – Distribution of Land and Sea, Surface Configuration of the ocean floor – Continental Shelf – Continental Slope – Deep Sea Plain – Oceanic Deeps and Trenches.

Unit II:

Relief of the Ocean Basins: Major relief features of the Atlantic, Pacific and Indian Ocean floor.

Unit III:

Distribution of Temperature and Salinity: Vertical and Horizontal distribution of Sea water temperature – Salinity: Factors controlling salinity and distribution – Density of Sea water.

Unit IV:

Dynamics of Ocean Water: Ocean currents – Types – Currents of the Atlantic, Pacific and Indian Ocean – Waves and Tides: Types and Effects.

Unit V:

Marine Deposits: Classification and Geographical Distribution – Coral reefs: Growth and types – Ocean as a store house of resource for the future.

REFERENCE BOOKS

1. Shepard F.S., (1948): “Submarine Geology” Harper and sons, NewYork.
2. Thurnman H.B.,(1984): “Introductory Oceanography” Charles Webber, E.Merril Publishers, NewYork.
3. R.C.Sharma and M.Vital ., (1995): “Oceanography for Geographers”,Chaitanya Publishing House, Allahabad.
4. Savindra Singh., (2002): “Physical Geography”,Prayag Pustak Bavan, Allahabad.
5. Subbiah., (1982): “ Oceanography”, Tamil Edition, Arunabhasen Publisher, Chintamani Das Lane, Kolkata.

**SEMESTER- II - AC III
ELEMENTS OF CARTOGRAPHY – II**

CODE: 18K2GAG3

**Credit -3
Hours -4**

Unit I:

Map Design and Layout: Principles of Map Design – Constraints in Map Design - Lettering and Toponymy: Lettering Methods -Positioning of letters.

Unit-II:

Map Reproduction: Methods of Map Reproductions - Duplicating and Printing Process.

Unit III:

Sources of Data: Primary and Secondary data – Sampling: Types of Sampling - Automation in Cartography

Unit IV:

Quantitative and Qualitative data – Thematic maps – Distributional maps and their types

Unit V:

Computer assisted Mapping and GIS in Cartography -Components of GIS – Spatial entities – Raster and Vector Data. GNSS Survey Method– Components of GNSS.

REFERENCE BOOKS:

- 1. Misra R.P and A.P.Ramesh., (1969): “Fundamentals of Cartography” Concept Publishing Company, New Delhi.**
- 2. Lawrence G.R.P., (1971): “Cartographic Methods” Methu & Com, London.**
- 3. Keates J.S., (1973): “Cartographic Design and Production”, Longman, London.**
- 4. Monkhouse and Wilkinson.,(1976):“Maps and Diagrams”, Methu & Com, Ltd, London.**
- 5. Ramamurthy.K.,(1982): “Map Interpretation”, Remy Printers, Mylapore,Madras.**
- 6. Sethurakkayi.,(2004): “ Puvipadaviyal” (Tamil Edition), Shanmugam Pathipagam, Madurai.**
- 7. Anand.P.H. and Rajesh Kumar.V. (2002): “Principles of Remote Sensing and GIS”, Sri Venkateswara Publications, Kumbakonam**

**SEMESTER- III CC IV
SETTLEMENT GEOGRAPHY**

CODE: 18K3G04

**Credit: 3
Hours: 3**

Unit I:

Settlement Geography: Definition of Settlement Geography, Nature and Scope – Definition of Rural and Urban Settlements – Classification of Settlement: Hamlet, Village, Town, City, Metropolis, Megalopolis and Conurbation.

Unit II:

Site and Situation – Function of Settlement – Settlement Hierarchy – M.Aurousseau’s functional classification of Towns – Central place Theory – Rank Size Rule.

Unit III:

Rural Settlements Characteristics – Rural Settlement Type: Strong point, Spring line, Wet – point, Dry - point, Market Settlement, Foothill Settlement and linear Settlement – Rural Settlement Pattern: Dispersed, Clustered Linear and Ring pattern

Unit IV:

Urban Land use Models: Burgess Concentric Model – Harris – Ullman Multiple Nuclear theory, Hoyts Sector Theory – CBD and its characteristics – Rural - Urban fringe – Satellite towns.

Unit V:

World Urbanization- Pull and Push factors – Growth of Urbanization in India- Urban Regions in India – Urban Problems.

REFERENCE BOOKS

1. Majid Hussain, (2005), Human Geography, Rawat publications, New Delhi.
2. Cheng Leong G. & Morgan, G.C. (1995) Human and Economic Geography- Oxford University Press, Oxford.
3. Mandal R.B. , (2000) “A Text Book of Urban Geography” Concept Publishing Company, New Delhi.
4. Norman Pounds., (1985): “Success in Geography; Human and Regional”, John Murray Publishers, Delhi.
5. Bergwan, Edward.E. (1995): “Human Geography, Culture, Connections and Landscape”, Pub.Prentice - Hall, New Jersey.

**SEMESTER- III CC V
HUMAN GEOGRAPHY**

**Credit -3
Hours -3**

CODE: 18K3G05

Unit I:

**Nature and Scope of Human Geography – Man-environment Relationship -
Determinism, Possibilism and Probablism.**

Unit II:

**Races of Mankind: Caucasoid, Mongoloid, Negroid – Regions – Types of Regions –
Formal region and Functional region.**

Unit III:

**Human Occupation: Primary, Secondary and Tertiary occupations –Factors influencing
Agricultural, Industrial and infrastructural development- Per capita Income- National Income –
GDP - Standard of living.**

Unit IV:

**Population: Growth of Population –Distribution of Population - Factors Controlling population
– Problems of over population and Under population – Optimum population.**

Unit V:

**Migration: Causes of Migration – Migration Types: Internal migration, International
migration – Immigrants and Emigrants - Consequences and Problems.**

REFERENCE BOOKS:

1. Majid Hussain, (2005), Human Geography, Rawat publications, New Delhi.
2. Goh Cheng Leong G. & Morgan, G.C. (1995) Human and Economic Geography. Oxford University Press, Oxford.
3. Norman Pounds., (1985): “Success in Geography: Human and Regional”, John Murray, Publishers, Delhi.
4. Chancre, R.C.,(1986): “A Geography of population concepts, determine and patterns’, Kalian Publishers, New Delhi.
5. Bergwan Edward., (1995): “Human Geography, Culture, Connections and Landscape”, Prentice Hall, New Jersey.

**SEMESTER III & IV CC VI
PRACTICAL II – SOCIO ECONOMIC DIAGRAMS AND
WEATHER INTERPRETATION**

**Credit -6
Hours (6)-3+3**

CODE: 18K4G06P

Unit I:

Representation of Line Graph: Simple line Graph, Multiple Line graph –Bar Diagrams: Simple, Compound and Multiple Bars.

Unit II:

Representation of Circle Diagrams: Circle – Pie or wheel – Sphere, Located Pie – Block Diagram.

Unit III:

Representation of Population Diagrams: Pyramidal diagram for age and sex – Pictorial diagram.

Unit IV:

Representation of Distributional Maps: Isopleth – Choropleth – Choroschematic – Flow Diagram.

Unit V:

Weather Interpretation: Meteorological signs and symbols – Interpretation of Weather Map (North – East Monsoon Season).

REFERENCE BOOKS

- 1. Jayachandran.S.,(1983): “ Practical geography ” Tamil Nadu Text Book Publication, Chennai (Tamil Edition).**
- 2. Singh.R.L and Dutt.P.K., (1979): “ Elements of Practical Geography”, Kalyani Publishers, New Delhi.**
- 3. Sarkar.A.K., (1997): “ Practical Geography-A systematic Approach”, Oriental Longman, Kolkata.**
- 4. Pal, S.K.,(1998):“Statistics for Geo scientists–Techniques and Application, Concept’, Macro Hill Pub, NewYork.**

**SEMESTER III - NON MAJOR ELECTIVE I GEOGRAPHY
OF RESOURCE UTILISATION**

Credit -2

CODE- 18K3GEL01

Hours -2

Unit I:

Resources –Definition– Classifications –Conservation of Resources.

Unit II:

**Agricultural resource: Geographical factors influencing Agriculture –
Methods of cultivation- Major Crops: Rice, Wheat, Cotton, Tea, Coffee - Dairy Farming of
Denmark and New Zealand.**

Unit III:

**Fishery Resources: Geographical factors influencing fishing, Location of major fishing grounds,
Forest Resources: Distribution of forests.**

Unit IV:

Mineral Resources: Distribution of Iron, Coal, Petroleum and Natural Gas.

Unit V:

**Energy Resources – Thermal, Hydro Electric and Atomic Power ; Distribution - Non –
Conventional Energy Resources: Solar, Wind, and Tidal.**

REFERENCE BOOKS:

- 1. Van Royan and Bengtson.,(1964): “Fundamentals of Economic Geography”,
Prentice of India Private Ltd, New Delhi.**
- 2. Trewartha and Robinson, (1967): “Physical Elements of Geography”, McGraw Hill
Book Company, New York.**
- 3. Khanna.K.K.and GupthaV.K., (1988): “Economic and Commercial Geography”,
Chand& Company Ltd, New Delhi.**
- 4. Sadhukhan.S.K., (1994): “Economic Geography”, S.Chand & Company Ltd,
New Delhi.**
- 5.Majid Hussain., (2012): “Geography of India” Tata MCGraw Hill Education Private
Limited, New Delhi.**

**SEMESTER- III SS - I
ORIGIN OF THE EARTH**

Code: 18K3SSG1

Credit -5

Unit I :

Origin of the Universe – Big Bang – Origin of the Earth – Nebular Theory.

Unit II :

The Solar System – Asteroids – Comets – Meteors.

Unit III:

Earth Movements- Rotation of the Earth- Day and Night-Revolution of the Earth- Seasons.

Unit IV:

Latitudes – Parallels - Important Latitudes –Temperature Zones

Unit V :

Longitudes – Meridians – Local time – Standard Time – Time Zones – International Date Line.

REFERENCE BOOKS

- 1. Dayal.P, (1995): “Text book of Geomorphology”, Shukla Book Dept, Patna.**
- 2. Tikka R.N., (1998): “Physical Geography”, Kedarnath, Ram Nath Pub, Meerut.,**
- 3. Das Gupta.A& A.N. Kapoor., (2004) “Principles of Physical Geography”, S.Chand & Company Ltd, RamNagar New Delhi.110055.**
- 4. Majid Husain., (2004) “Fundamentals of Physical Geography Rawat Publications”, Jaipur -4.**

**SEMESTER- IV CC-VII
BASICS OF CLIMATOLOGY**

**Credit -5
Hours -5**

CODE: 18K4G07

Unit I:

Climatology: Definition - Nature and Scope – Climatic Elements – Weather and Climate – Composition and Structure of the Atmosphere – Insolation.

Unit II:

Horizontal and Vertical Distribution of Temperature – Range of Temperature – Diurnal, Seasonal and Annual.

Unit III:

Atmospheric Pressure and Wind: Vertical, Horizontal Distribution of pressure – Planetary, Periodic and Local Winds.

Unit IV:

Atmospheric Moisture – Forms of Precipitation and its types – Classification of Air Mass and fronts.

Unit V:

Cyclones – Tropical Cyclone – Temperate Cyclone – Anticyclone - Climate Classification – Koppen’s Classification.

REFERENCE BOOKS

- 1. Critchfield.H.,(1969): “General Climatology”, Prentice Hall of India Pvt, Ltd, New Delhi.**
- 2. Peter Haggett.,(1979):“Geography a Modern Synthesis”, Hoper and Row Publishers, Inc.NewYork.**
- 3. Keith Smith.,(1988): “ Applied Climatology”, Macro Hill Pub, NewYork.**
- 4. Lal.D.S., (1998): “Climatology”, Chaitanya Publishing House, Allahabad.**

**SEMESTER- IV – NON MAJOR ELECTIVE II
BASICS OF REMOTE SENSING**

CODE: 18K4GEL02

**Credit: 2
Hours: 2**

Unit I:

Remote Sensing: Definition-Scope and Content, Ideal Remote Sensing System, Growth and development of Remote Sensing in India.

Unit II:

Electro Magnetic Radiation, Electro Magnetic Spectrum, Energy interaction with Atmosphere and Earth's Surface

Unit III:

Platforms: Types of Platforms, Orbit of Satellites: Geo Stationary, Sun Synchronous - Indian Satellite (IRS Series).

Unit IV:

Sensor characteristics: Spatial Resolution, Spectral Resolution, Radiometric Resolution and Temporal Resolution.

Unit V:

Application of Satellite Remote Sensing in the field of Land use, Water Resources and Disaster Studies (Earthquake and Floods).

REFERENCE BOOKS:

- 1. Dickinson, G.C.,(1979): "Air Photographs", Arnold Heineman, second edition Maps, London.**
- 2.Lillies T.M. and Kiefer., (1987): "Remote sensing and image interpretation",John Wielyand sons New York.**
- 3. Robinson.A.H.et.al, (1995): "Elements of Cartography", John Wiely and Sons, Singapore.**
- 4. Bhatia.S.C., (2008): "Fundamentals of Remote Sensing", Atlantic Publishers, Delhi.**
- 5.Panda.B.C., (2009): " Remote Sensing Principles and Applications", Vinod Viva Books Private Limited, New Delhi.**

SEMESTER – IV SS-II OCEAN CIRCULATION

CODE: 18K4SSG2

Credit-5

Unit I:

Ocean: Definition –Importance of ocean –Distribution of land and sea.

Unit II:

Distribution of fresh water and ocean water- Open Sea and closed sea.

Unit III:

Ocean Currents, waves and tides- Types and Effects.

Unit IV:

Currents of the Ocean: Indian Ocean, Atlantic Ocean and Pacific Ocean.

Unit V:

Impact of Global Warming on ocean –El Nino and La Nina- Increasing sea level change, sea water Temperature.

REFERENCE BOOKS

- 1. Shepard F.S.,(1948): “Submarine Geology” Harper and sons New york.**
- 2. Thurnman H.B., (1984) “Introductory Oceanography “Charles Webber, E.Merril Publishers New york.**
- 3. R.CSharma and M.Vital., (1995):”Oceanography for Geographers”, Chaitanya Publishing House, Allahabad.**
- 4. Savindra Singh.,(2002):”Physical Geography” Prayag Pustak Bavan,Allahabad.
Subbiah.,(1982): “Oceanography”,Tamil Edition ,Arunabhasen Publisher,Chintamoni Das Lane Kolkata.**

**SEMESTER V –CC – VIII
PRINCIPLES OF REMOTE SENSING**

CODE: 18K5G08

**Credit: 5
Hours: 6**

Unit – I:

Remote Sensing: Definition of Remote Sensing – History of Remote Sensing – Development of Space Programme in India – Types of Remote Sensing.

Unit – II:

Electro Magnetic Radiation – Spectrum – Energy Interaction – Ideal remote Sensing System – Platforms.

Unit – III:

Aerial Remote Sensing – Types of Aerial Cameras –Types of Aerial Photographs – Stereo Vision- Elements of Aerial Photographs.

Unit – IV:

Satellite Remote Sensing: Types of Satellites - Sun Synchronous and Geo Stationary – Resolution: Spatial, Spectral, Radiometric and Temporal – True colour and False colour Images.

Unit –V:

Image Processing: Image Structure, Image Enhancement, Image Classification. Remote Sensing Applications in Land Use, Water Resource – Disaster management (Earthquake and Flood).

REFERENCE BOOKS

- 1. Lilles.T.M and Kieper., (1987): “ Remote Sensing and image Interpretation”, John Wiley and sons, New York.**
- 2. Campbell.B.James., (1987):“Introduction to Remote Sensing”, Oxford Press, New York.**
- 3. Rashid.S.M., (1993): “Remote Sensing in Geography”, Mano Publications, New Delhi.**
- 4. Thomes M.Lillesand, Ralph.andW.Kiefer.,(2002): “ Remote Sensing& Image Interpretation”, 4thEdition, John Wiley and Sons, NewYork.**
- 5. Panda.B.C., (2009): “Remote Sensing Principles and Applications”, Published by Vinod Viva Books Private Limited, New Delhi.**

**SEMESTER- V –CC-IX
REGIONAL GEOGRAPHY OF TAMIL NADU**

CODE: 18K5G09

**Credit: 5
Hours: 6**

Unit I:

Tamil Nadu: Extent and Administrative Divisions - Physiography: Relief Features, Soil, and Drainage - Climate: Seasons - Forest.

Unit II:

Agriculture: Types of Irrigation. Distribution of crops: Rice, Sugarcane and Cotton. Plantation crops – Tea and Coffee - Fisheries.

Unit III:

Minerals: Distribution of Coal, Bauxite, Iron-ore, Petroleum and Natural Gas. Power Resources – Hydro Electric Power, Thermal Power, Atomic Power, Wind and Solar Energy.

Unit IV:

Industries: Production and distribution of Cotton textiles, Sugar, Cement, Chemicals and Automobile Industries - IT Parks.

Unit V:

Population and Transport: Distribution and growth of Population- Development of Road ways, Railways, Airways and Ports.

REFERENCE BOOKS

1. A. Ramesh (2005) “Basic Resource Atlas of Tamil Nadu”, University of Madras.
2. Kumaraswamy.V.,(2003): “ Geography of Tamil Nadu’, (Tamil edition), Sakthi Publication, Sivakasi.
3. Kumaraswamy.V., (2014): “ Tamil Nadu Geography”, Sri Gajalakshmi Printers, Sivakasi.
4. Prithvish Nag and Smita Sengupta ., (1992): “Geography of India” , Concept Publishing Company, New Delhi.
5. Sharma T.C and Coutinho O., (1997): “Economic and Commercial Geography of India”, Vikas Publishing House Pvt, Ltd, New Delhi.
6. Majid Hussain., (2012): “Geography of India” Tata McGraw Hill Education Private Limited, New Delhi.

SEMESTER V&VI - CC - X
PRACTICAL-III
PROJECTIONS AND SURVEYING

CODE: 18K6G10P

Credit: 5
Hours: (6)3+ (3)

Unit I:

Map projections: General Principles - Classifications -Choice of Projections.

Unit II:

Constructions, Properties, limitations and uses of Projections: Conical: One standard, Conical Two standard, Conical Bonnes, Polyconic Cylindrical: Simple, Equal area and the Mercator projection, Zenithal: Equidistant, Equal Area (Polar cases only), Stereographic, Gnomonic, Orthographic.

Unit III:

Constructions, Properties, limitations and uses of Projections: Conventional: Sinusoidal, Mollweide`s (Normal cases), Sinusoidal interrupted and Mollweide interrupted.

Unit IV:

Surveying: Chain - Prismatic Compass - Plane table

Unit V:

Dumpy Level -Indian Clinometer -Abney Level.

REFERENCE BOOKS:

- 1. Monkhouse, F.J.,and Wilkinson,H.R.,(1963):“Maps and Diagrams”,Methuen and Co., London.**
- 2. Miller, A., (1964): “The Skin of the Earth”, Methuen and Co Ltd., London.**
- 3. Singh, R.L., and Dutt, P.K., (1978):“Elements of Practical Geography”, Kalyani Publication, Allahabad.**
- 4. Pijushkanti Saha and Partha Basu., (2004):“Advanced Practical Geography”,Books and Allied (P)Ltd, Kolkata -India.**
- 5. Misra R.P and A.P.Ramesh., (1969): “Fundamentals of Cartography” Concept Publishing Company, New Delhi.**

**SEMESTER- V& VI - CC XI
PRACTICAL- IV
INTERPRETATION OF GEO-SPATIAL DATA**

CODE: 18K6G11P

**Credit: 5
Hours: 6 (3+3)**

Unit I:

Cartographic Appreciation of Survey of India Sheets

Unit II:

Interpretation of SOI Toposheets: Hilly Region, Plain region.

Unit III:

Marginal information of Aerial photograph- Stereoscopic view -Elements of image interpretation – Interpretation of Aerial Photographs.

Unit IV:

Marginal information of Satellite Imagery – Elements of Satellite image – Interpretation of Satellite Imagery.

Unit V:

Comparative study of Maps, Aerial Photograph, and Satellite Imagery.

REFERENCE BOOKS:

- 1. Dickinson, G.C., (1979):“Air Photographs”, second edition Maps, E. Arnold, London.**
- 2. Lillies T.M. and Kiefer.,(1987):“Remote sensing and image interpretation”, Second Edition, John Wiley & Sons New York.**
- 3. Robinson, A.H., Morrison, J.L. and Muehrcke. P.C., (1980): “Elements of Cartography”, John Wiley and Sons New York.**
- 4. Bhatia.S.C., (2008): “Fundamentals of Remote Sensing”, Atlantic Publishers, Delhi.**

SEMESTER -V – MBE -I

GEOGRAPHY OF NATURAL REGIONS OF THE WORLD

CODE: 18K5GELG1

**Credit: 6
Hours: 6**

Unit I:

Natural Regions: Definition– Types of Natural Regions - Distribution.

Unit II:

Equatorial Region: Location – Extent – Climate – Distribution of Flora and Fauna – Human activities.

Unit III:

Tropical Region: Location – Extent – Climate – Distribution of Flora and Fauna - Human activities.

Unit IV:

Temperate Region: Location – Extent – Climate – Distribution of Flora and Fauna – Human activities.

Unit V:

Polar Region: Location- Extent – Climate – Distribution of Flora and Fauna – Human activities

REFERENCE BOOKS

- 1. Van Royan and Bengtson.,(1964): “Fundamentals of Economic Geography”, Prentice of India Private Ltd, New Delhi.**
- 2. Trewartha and Robinson.,(1967): “Physical Elements of Geography”, McGraw-Hill Book Company, New York.**
- 3. Sadhukhan.S.K., (1994): “Economic Geography”, Chand and Company Ltd, New Delhi.**
- 4. Jackson.R.H. and Hudman.L.E, (1991):“World Regional Geography: Issues for Today”, John Wiley, New York.**
- 5. Khanna.K.K.and GupthaV.K., (1988): “Economic and Commercial geography”, Chand & Company Ltd, New Delhi.**

CODE: 18K6G12

Unit I:

Introduction: Location, Extent – Sub continent – Unity in Diversity - Physiographic divisions of India.

Unit II:

Major River systems of India: North Indian and South Indian rivers –Multipurpose projects.

Unit III:

Agriculture: Significance of Indian Agriculture – Irrigation and its types- Distribution of major Crops: Rice, Wheat, Sugarcane, Cotton, Jute - Distribution of Plantation crops: Tea, Coffee and Rubber.

Unit IV:

Minerals and Industries: Metallic Minerals - Iron-ore, Manganese, Bauxite,) Non– Metallic minerals (Mica, Limestone, Gypsum) -Power Resources (Coal, Petroleum, Atomic Minerals) Distribution of Industries: Iron and Steel, Cotton Textiles and Automobile industries.

Unit V:

Population, Transportation and Trade: Population Distribution-Growth–Density– Population Problems- Major transport and its types: Land- Water- Air. Trade: Imports and Exports.

REFERENCE BOOKS

- 1. Singh.R.L, (1971): “India- A Regional Geography”, National Geographical Society, India, Varanasi.**
- 2. Sharma.T.C, (1998): “Economic and commercial Geography of India”, Vikas Publishing House Private Limited, New Delhi.**
- 3. Tiwari., (2002):“Geography of India”, Prayag Bhawan, Allahabad.**
- 4. Singh Gopal., (1970): “Geography of India”, S. Chand and Sons, New Delhi.**
- 5. Deshpande.C.D., (1992): “India a Regional Interpretation”, Northern Book Centre, New Delhi.**

**SEMESTER- VI - CC XII
RESOURCE UTILIZATION**

**Credit: 5
Hours: 6**

CODE: 18K6G13

Unit –I :

Resources: Definition – Types – Biotic and Abiotic – Potential and Developed Resources – Demand for National Resources.

Unit –II:

Agricultural Crops: Distribution and Production of Wheat – Cotton – Sugarcane –Tea – Coffee – Rubber, Livestock: Dairy Farming - Fishing

Unit –III:

Power Resources: Distribution and Production of Conventional Energy: Coal and Petroleum– Thermal Power - Hydel Power, Non – Conventional Energy: Tidal, Wind, Solar and Atomic Energy.

Unit – IV :

Mineral Resources and Distribution of Manufacturing Industries: Types of Minerals: Distribution and Production of Metallic and Non – Metallic (Iron – ore, Manganese, Bauxite, and Gold) – Manufacturing Industries; Iron and Steel – Cotton Textiles – Ship Building.

Unit –V :

Transport System and Trade: Transport : Road (Pan American Highway, Karakoram Highway, Golden Quadrilateral) – Rail (Trans – Siberian Railway, Canadian Pacific Railway, Cape to Cairo Railway) Air (International Airports of India) – Waterways (R.Danube International Waterway, St. Lawrence Waterway, Suez Canal) _ Trade: Objectives of WTO, EU, ASEAN, BRICS.

REFERENCE BOOKS

- 1. Van Royan and Bengtson.,(1964): “Fundamentals of Economic Geography”, Prentice of India Private Ltd, New Delhi.**
- 2. Trewartha and Robinson, (1967): “Physical Elements of Geography”, McGraw Hill Book Company, New York.**
- 3. Khanna.K.K.and GupthaV.K., (1988): “Economic and Commercial Geography”, Chand& Company Ltd, New Delhi.**
- 4. Goh Cheng Leong G. & Morgan, G.C. (1995) Human and Economic Geography.Oxford University Press, Oxford.**
- 5.Majid Hussain., (2012): “Geography of India” Tata MCGraw Hill Education Private Limited, New Delhi.**

INTRODUCTION TO POPULATION GEOGRAPHY

CODE: 18K6GELG2

Unit I:

Nature -Scope and Significance of Population Geography-Sources of population Data- Census-Registration-other sources.

Unit II:

Population Distribution-Density-Factors affecting population distribution- Growth of population - Theory of Population – Malthusian Theory.

Unit III:

Composition of Population-Age, Sex, Literacy, Occupation structure- Dynamics of Population-Fertility-Mortality- Rural and Urban Population.

Unit IV:

Migration-Types-Factors and Consequences of Migration.

Unit V :

Population Resources- Optimum Population-Under Population- Over Population – Population Resource Regions- Problems of population – Population Policies in India.

REFERENCE BOOKS:

- 1. Ghosh.B.N., (1987): “Fundamentals of Population Geography” Sterling Publishers Private Limited, New Delhi.**
- 2. Trewartha.G.T., (1972): “Geography of Population: World Patterns”, John Wiley and Sons, New York.**
- 3. Chancre, R.C., (1986): “A Geography of Population concepts-Determine and Patterns”, Kalyan Publishers, New Delhi.**
- 4. Peripilou A.V., (1982): “Human Geography”, Longman group Limited, Delhi.**
- 5. Shelar.S.K., (2012): ‘Human Geography’, Chandralok Prakashan, Delhi.**
- 6. Norman Pounds.,(1985):“Success in Geography Human and Regional”, John Murray, London.**
- 7. Lalit P. Pathak, (1998): “Population Studies “, Rawat Publications, Jaipur and New Delhi.**
- 8. Sachin Verma., (2014): “Demography and Population Problems”, Venus Books, NewDelhi.**

**SEMESTER- VI - MBE III
GEOGRAPHY OF TRAVEL AND TOURISM**

**Credit:5
Hours:5**

CODE: 18K6GELG3

Unit I:

Tourism: Definition – Components of Tourism, Role of Geography in Tourism – Factors Promoting Tourism.

Unit II:

Growth of Tourism: Ancient, Medieval, Modern Periods- Types of Tourism, Impact of Tourism.

Unit III:

Accommodations: Hotels and its types-Transportation: Its Influence in Promoting Tourism- Mode of transport Passport: Visa and its Types.

Unit IV:

Role of Indian Tourism Development Corporation (ITDC) – Role of Tamil Nadu Tourism Development Corporation – Role of Travel Agencies.

Unit V:

Distribution of Tourist spots in India: National Parks, Wildlife Sanctuaries, Pilgrim centres, Hill Resorts and Fort Towns.

REFERENCE BOOKS:

- 1. Thangamani.M.R.,(2003): “ Introduction of Tourism”,Kongu Pathipagam, Karur.**
- 2. Krishnaswamy, (2004): “Tourism Development”, Mani Vasagar Publishers, Chennai.**
- 3. Bhatia.A.K., (2006): “Tourism Development”, Sterling Publication, New Delhi.**
- 4. Bhatia.A.K., (1997): ‘Tourism Management and Marketing’, Sterling Publishers Private Ltd., New Delhi.**
- 5. Ratandeeep Singh., (1998): “Infrastructure of Tourism in India”, Kanishka Publishers New Delhi.**

M.SC GEOGRAPHY SYLLABUS

SEMESTER I - CORE COURSE I ADVANCED GEOMORPHOLOGY

CODE - 18KP1G01

Credit - 5
Hours - 6

UNIT I:

Geomorphology: Meaning, Scope and Content - Fundamental Concepts in Geomorphology – Geological timescale.

UNIT II:

Endogenetic Forces - Earth Movements: Orogenic Movements - Folds and Faults and their types - Eperogenic Movements - Volcanoes – Earthquakes - Causes, consequences and geographical distribution - Exogenetic forces-Weathering.

UNIT III:

Wegener's Theory of Continental Drift - Theory of Plate Tectonics - Cycle of Erosion: Davis and Penck - Concept of Slope development: W.M Davis and Penck.

UNIT IV:

Erosion, Transportation and Depositional landforms: Fluvial, Glacial, Aeolian, Karst.

UNIT V:

Applied Geomorphology: Geomorphology in Mineral Exploration - Engineering projects - Dams - Flood Management - Coastal zone management.

REFERENCE BOOKS

1. Dayal, P., (1990): "A Text book Geomorphology", Shukla Book Depot, Patna, India.
2. MajidHusain.Ed., (1994): "Geomorphology, Perspective in Physical Geography Series", Anmol Publications Pvt. Ltd., New Delhi.
3. Das Gupta.A and A.N. Kapoor., (1988): "Principles of Physical Geography",S.Chand and Company,RamNagar, New Delhi.
4. Savindra Singh., (2002): "Geomorphology",Prayag Pustak Bavan, Allahabad
5. William D Thornbury., (1958) "Principles of Geomorphology", Jhon Wiley and Sons Inc; London.

SEMESTER I - CORE COURSE II

PRINCIPLES OF CLIMATOLOGY

CODE - 18KP1G02

**Credit - 5
Hours - 6**

UNIT I:

Climatology: Definition- Nature Scope and Significance - Composition and Structure of Atmosphere-Insolation-Heat Budget - Distribution of Temperature – Vertical and Horizontal.

UNIT II:

Atmospheric Pressure: Pressure belts of the World - General circulation of wind: Planetary winds, Monsoon, Local winds - Jet Streams.

UNIT III:

Atmospheric Disturbances: Cyclones and Anticyclones – Tornadoes - El Nino and La Nina impacts.

UNIT IV:

Atmospheric Humidity: Evaporation – Condensation - Clouds: formation and Types - Air mass – Front - Precipitation Types - Classification of World Climates: Koppen's and Thornthwaite's schemes.

UNIT V:

Applied Climatology: Agro-climatology - Human Comfort Zone – Urban Climate - Micro climate – Weather Stations - Role and functions of Indian Meteorological Department (IMD) - Meteorological Satellites – Weather forecasting.

REFERENCE BOOKS

- 1. Lal D.S., (1989): “Climatology”, Chaitanya Publisher’s House, Allahabad.**
- 2. Savindra Singh., (2008): “Climatology”, Prayag Pustak Bhawan, Allahabad.**
- 3. Savindra Singh., (2004): “Physical Geography”, Prayag Pustakh Bhawan,Allahabad**
- 4. Critchfied., (1969): “General Climatology”,Printice Hall, London..**
- 5. Keith Smith., (1988): “Applied Climatology”, McGraw Hill, New York.**

SEMESTER I - CORE COURSE III
PRINCIPLES OF OCEANOGRAPHY

CODE - 18KP1G03

Credit - 5
Hours - 6

UNIT I:

Oceanography: Nature scope and significance. Hypsometric curve - Relief of ocean floor: Continental shelf, continental slope, deep sea, plains, ocean deeps, Sea mounts, guyots and submarine canyons.

UNIT II:

Major Relief features of the Atlantic, Pacific and Indian Ocean floor.

UNIT III:

Sea water temperature: Horizontal and vertical distribution - Salinity: Controlling factors - Horizontal and vertical distribution.

UNIT IV:

Dynamics of ocean water: Waves - Tides - Ocean currents: Types - Currents in the Atlantic, Pacific and Indian Ocean.

UNIT V:

Ocean deposits: Types - Coral reefs: Conditions for growth and types - International Coastal Research Center (ICRC) - Integrated Coastal and Marine Area Management (ICMAM).

REFERENCE BOOKS

- 1. Siddhartha K.,(2011): "Oceanography", A brief Introduction Kitab Mahal Publishers, Delhi.**
- 2. Lal D S., (2007): "Oceanography", Sharda Pustak Bhawan, Allahabad.**
- 3. Negi B.S., (2003): "Climatology" and Oceanography. Kedar Nath Ram Nath,Meerut.**
- 4., Savindra Singh.,(2004): "Physical Geography" Prayag Pustakh Bhawan,Allahabad**
- 5. Sharma RC.,Vatal M.,(2001):"Oceanography for Geographers",C.S. Jain for Chaitanya Publishing House, Allahabad.**

**SEMESTER I - CORE COURSE IV
PRACTICAL I: TERRAIN AND CLIMATIC DATA ANALYSIS**

CODE - 18KP1GO4P

**Credit - 4
Hours - 6**

UNIT I:

Representing Relief - Profiles: Serial, Super imposed, Projected and Composite.

UNIT II:

Terrain Analysis: Wentworth and Smith method - Hypsometric curve- Altimetry frequency curve.

UNIT III:

Morphometric analysis of drainage basin – numbers, order, length area - Streams Orders – Bifurcation Ratio – Drainage Density - Shape of the Basin –Thalweg.

UNIT IV:

Climatic Data Analysis: Climatic graph, Hythergraph, Climograph, Foster's and Taylor's Climatograph, Ergo graph, Ombrothermic graph.

UNIT V:

Water surplus graph, Rainfall dispersion diagram - Deviation graphs - Rainfall variability maps – Isopleth maps.

REFERENCE BOOKS

- 1. Miller A., (1964): "The Skin of the Earth", Met hue and B.I.Publications, Delhi.**
- 2. Monk house F.J., and Wilkinson, H.R., (1963): "Maps and Diagrams", Methuen and Co., London.**
- 3. Singh R L and Dutt P K., (1978): "Elements of Practical Geography", Students and Friends, Allahabad.**
- 4. Pijush Kanti Saha and ParthaBasu.,(2004): "Advanced Practical Geography", Books and Allied (P) Ltd, Kolkata-India.**

**SEMESTER I – MAJOR BASED ELECTIVE I
ADVANCED CARTOGRAPHY**

CODE - 18KP1GELG1

**Credit - 4
Hours - 6**

UNIT I:

Cartography: Nature, Meaning and Scope of Cartography - Types of maps - Scientific base of Cartography – Cartography as a Science of Communication - Development of cartography.

UNIT II:

Map as a tool in geographical studies - Thematic and composite mapping - Choropleth, Isoleths, Chorochromatic Maps

UNIT III:

Map design and layout - Constraints in map designing - Lettering and toponomy - Base map - Compilation and generalization of maps.

UNIT IV:

Symbolizing and processing data – Statistical data base – Use of diagrams on maps – Point, line, area and volume symbols – Qualitative and Quantitative maps.

UNIT V:

Computer application in Cartography - Digital cartography - Cartography and GIS - Mapping organization and services in India: SOI, NATMO and NRSC.

REFERENCE BOOKS

- 1. Erwin Raisz, (2007): “Principles of Cartography”, Surjeet Publications, NewDelhi.**
- 2. Misra R.P., (1989): “Fundamentals of Cartography”, Concept Publishing Company, New Delhi.**
- 3. Pijush Kanti Saha and ParthaBasu, (2004): “Advanced Practical Geography, Books and Allied”, (P) Ltd, Kolkata-India.**
- 4. A.H. Robinson et.al, (1995): “Elements of Cartography”, John Willey and Sons, Singapore.**
- 5. Monkhouse and Wilkinson, (1976): “ Maps and Diagrams”, Methuen and Co., Ltd. London.**

SEMESTER II – CORE COURSE V DEVELOPMENT OF GEOGRAPHICAL THOUGHT

CODE – 18KP2GO5

**Credit - 5
Hours - 6**

UNIT I:

Ancient Geographical Thought - Greek contribution to Physical geography, Mathematical geography – Contribution of Romans: Strabo, Ptolemy – Arab contribution to geography - Contribution of Ancient Indians - Major exploration and discoveries: Contribution of Megallan, Vasco da gama, James cook and Christopher Columbus

UNIT II:

Modern Geographical Thought –German: Alexander Von Humboldt, Carl Ritter, Ratzel and Albert Penck - France: Vidal de la Blache, Jean Brunches, Elisee Reclus and Albert Demangeon.

UNIT III:

Americans: Hartshorne, William Morris Davis, Ellen Churchill Semple and Ellsworth Huntington - British: .Mackinder, Herbertson, Roxby, Dudley stamp - Development of Geography in India.

UNIT IV:

Four Traditions in Geography - Quantitative revolution- Paradigms in Geography - Dualism of Dichotomies - Systems concept - Regional Concept.

UNIT V:

Recent trends in Geography: A New synthesis - Scientific explanation/analysis- Trend towards a new synthesis – Multidisciplinary approach – Data explosion - Remote Sensing.

REFERENCE BOOKS

- 1. Adhikari, S., (1992): “Fundamentals of Geographical Thought”, CatenaPublishing House, Allahabad, India.**
- 2. Hussain, M., (1994): “Evoluation of Geographical Thought”, Rawat Publications, New Delhi, India.**
- 3. Hartshorne., (1959): “Perspective on Nature of Geography”, AAAG, Washington D.C.**
- 4. Freeman, R., (1970): “Hundred Years of Geography”, Hutchinson, London.**
- 5. Harvey, D., (1972): “Explanation in Geography”, Edward Arnold Publications, London.**
- 6. Negi, B.S., (1994): “Geographical Thought”, KedarNath Ram Nath, Meerut, India.**

SEMESTER II - CORE COURSE VI

FUNDAMENTALS OF GEOINFORMATICS

Credit - 5
Hours – 6

CODE – 18KP2GO6

UNIT I:

Introduction to Geoinformatics - Remote sensing, GIS and GNSS – Remote sensing: Historical development – Development of Remote Sensing in India – Electromagnetic Radiation – Interaction of EMR with earth surface and atmosphere – Ideal Remote Sensing - Platforms – Sensors.

UNIT II :

Aerial Remote Sensing – scale of photography - Types of aerial photographs – Elements of Interpretation – Visual Interpretation – Satellite Remote Sensing – Visual Image Interpretation – Digital Image Processing – Image Rectification – Image Enhancement techniques – Image Classification: Supervised and unsupervised classification.

UNIT III:

Introduction to GIS - Definition - Advantages of GIS - Components of GIS- Data Capture – Data Storage – Data base management system - Data Retrieval, Analysis and Display.

UNIT IV:

Data Analysis: – Spatial data - Non-spatial data, Raster and Vector data model and structures - GIS analysis: query – overlay – buffer analysis - Digital elevation model.

UNIT V:

GNSS - Definition – Components-Space segment, Control segment, User segment – GPS - Galileo - GLONASS - Regional System: IRNSS - Application of Geoinformatics in Geomorphology, Water Resources, Land use, Agriculture and Disaster Studies.

REFERENCE BOOKS

1. Anand P.H., (2003):“Principles of Remote Sensing & GIS”, Sri Venkateswara Publishers, Kumbakonam.
2. Panda B.C.,(2009): “Remote Sensing Principles and Applications”,VinothVasishtha for Viva Books,(P). Ltd., New Delhi.
3. Kali Charan Sahu., (2008): “Text Book of Remote Sensing and Geographical Information Systems”, Atlantic Publishers and Distributors (p) Ltd. Delhi.
4. Lillesand TM and Keifer, R.W., (1994): “Remote Sensing and Image Interpretation”, John Wiley & Sons, New York.
5. Ram Paul, K.K., (1999): “Handbook of Aerial Photography and Interpretation”, Concept Publishing Co., New Delhi.

**SEMESTER II CORE COURSE VII
SOCIAL GEOGRAPHY**

CODE – 18KP2GO7

**Credit - 5
Hours - 6**

UNIT I:

Social Geography: Nature and Scope of Social Geography-Social Structure-Social Processes.

UNIT II:

Elements of Social Geography-Ethnicity, tribe, dialect, language, caste and Religion - Concept of Social well-being.

UNIT III:

Political Geography: Definition and Scope of Political Geography- Geopolitics- Global strategic views (Heartland and Rimland theories)

UNIT IV:

Concept of Nation, State and Nation State: Boundaries and Frontiers - Classification of boundaries -Politics of world resources - Geography and Federalism

UNIT V:

Cultural Geography: Nature and Scope of Cultural Geography - Environment and Culture - Concept of cultural areas - Cultural regions - Tribes of the World - Dwelling places and cultural expressions.

REFERENCE BOOKS

- 1. Hussain M.,(1994): “Human Geography,”Rawat Publications, New Delhi, India.**
- 2. Ahmad A., (2010): “Political Geography”, Omega Publications, New Delhi.**
- 3 Shelar S.K., (2012): “Human Geography”, Published by ChandralokPrakashan, Kanpur.**
- 4. Deep Shikha., (2013): “Social and Cultural Geography”, Ancient Publishing House,Delhi.**
- 5. Sudepta Adhikari., (2011): “Political Geography of India”, – A contemporary Perspective – Harada Pustak Bhawan – Allahabad.**

SEMESTER II - MAJOR BASED ELECTIVE COURSE II

DISASTER STUDIES

Credit - 4

CODE - 18KP2GELG2

Hours - 6

UNIT I:

Disaster management – Meaning, Content and Scope-Types of disasters - Natural and Man-made.

UNIT II:

Natural Disasters - Cause and Effects of Earthquake, Volcanoes, Cyclones, Landslides and Tsunami.

UNIT III:

**Man-made Disasters- Cause and Effects-Nuclear accident-Chernobyl incident
Industrial accident –Bhopal Gas Tragedy.**

UNIT IV:

Biological Disaster-Desertification, Global Warming, Bio-Diversity issues

UNIT V:

**Disaster Mitigation and Management –National Crisis Management Committee –
National Disaster Management Authority -State Agencies.**

REFERENCE BOOKS

- 1. Anu Kapoor and Neeti, Meeta, Deeptima, Roshani, “Disasters in India- Studies of Grim Reality”, Debanjali Rawat Publications, New Delhi.**
- 2. Subramanian V.,“A Text Book in Environment Science”, Narosa publishers.**
- 3. Savindra singh.,(1991): “Environmental Geography”, Prayag Pushatak Bhawan, Allhabad.**
- 4. Bruce Mitchell.,(1991): ‘Resources and Management’, Longmen, London.**

SEMESTER II - CORE COURSE VIII

PRACTICAL II: MAP ANALYSIS AND WEATHER MAP INTERPRETATION

CODE - 18KP2G08P

**Credit – 4
Hours - 6**

UNIT I:

Appreciation and Interpretation of Indian Toposheets

UNIT II:

Appreciation and Interpretation of U.S. Sheets.

UNIT III:

Appreciation and Interpretation of O.S Sheets

UNIT IV:

Interpretation of Indian daily weather reports (North East Monsoon) - Cyclonic Track - Pressure gradient analysis of cyclones

UNIT V:

Appreciation and Interpretation of NATMO Map.

REFERENCE BOOKS

- 1. Monkhouse, F.J., and Wilkinson, H.R.,(1963):“ Maps and Diagrams”,Methuen and Co., London.**
- 2. Miller, A., (1964): “The Skin of The Earth”, B.I.Publications, Delhi.**
- 3. Singh, R.L., and Dutt, P.K., (1978): “Elements of Practical Geography”, Students and Friends, Allahabad.**
- 4. Misra, R.P., (1989):“Fundamentals of Cartography”, Concept Publishing Company, NewDelhi**
- 5. Pijush Kanti Saha and Partha Basu, (2004) “Advanced Practical Geography”, Books and Allied (P) Ltd, Kolkata-India.**

SEMSTER II (SELF STUDY)

ENVIRONMENTAL GEOGRAPHY

Credit -5

CODE – 18KP2SSG1

UNIT I:

Environmental Geography: Meaning and Scope – Elements of Environment - Atmosphere - Hydrosphere - Lithosphere – Biosphere.

UNIT II:

Biomes: Concept – Major Biomes –Tropical Biome- Temperate Biome – Temperate Grassland Biome – Tundra Biome.

UNIT III:

Pollution: Air Pollution cause and effect - Water Pollution cause and effect- Land Pollution cause and effect – Noise Pollution cause and effect.

UNIT IV: -

Green House Effect - Ozone Depletion - Global Warming - Sea level changes - Acid Rainfall - Cloud Burst.

UNIT V:

Disaster Definition -Types : Natural Disaster- Manmade Disaster – Biological Disasters- Cause and Effect - National Disaster Management Authority.

REFERENCE BOOKS

- 1.Alexander John W.,(1991) “Economic Geography”, Prentice Hall of India Ltd., New Delhi.**
- 2. Allen J L., (1994), “Student Atlas of Environmental Issues”, Dushkin Publications, New Delhi.**
- 3. Arunachalam, P.Karthikeyan and S.Shantha Kumar.,(1998), “ Environmental Science and Engineering”, Chrulatha Publications-Chennai.**
- 4. SavindraSingh,(2002),“Environmental Geography”,Prayag Pustak Bhavan, Allahabad.**
- 5. Kumrasamy K.,(2004),Remote Sensing for Environmental Studies, Department of Geography, Bharathidasan University, Tiruchirappalli.**
- 6. Dikshit R.D., (2006), “Frontier in Environment Geography”, Prayag Publication, Allahabad.**

**SEMESTER III - CORE COURSE IX
RESEARCH METHODS IN GEOGRAPHY**

CODE - 18KP3G09

**Credit - 5
Hours - 6**

UNIT I:

Meaning and definition of research–Objectives of Research-Types of Research- Research approaches - Significance of Research- criteria of good research - Research and Scientific Method - Role of Computer in research.

UNIT II:

Logic in research- Hypothesis, Concepts and Facts, Principles and Law, Theory - Role of Models –Research problems - selecting the research problem - defining the problem - Research paper - article -workshop - Seminars -Conference and Symposia.

UNIT III:

Research design: Meaning - need - Features of Good design - Important concepts relating to research design - Steps involved in research design - Time Schedule- Literary survey - Review of literature- need for review of literature.

UNIT IV:

Sources of Data: Primary and Secondary - Methods of Data Collection - - Sampling Techniques and Fundamentals Processing and Analysis of Data: Preparation- Editing – Coding – Tabulation – Classification - Interpretation of Data - Construction of Hypothesis and their testing.

UNIT V:

Research Report Writing - Stages in preparing the research report — Organisation - write up - First draft - Second draft - Third draft - Structure of Research Report: Preliminaries - Text - Reference Materials: Foot notes and Bibliography - and Final evaluation - Writing of Abstract, Research papers , Project Proposal - Plagiarism.

REFERENCE BOOKS

- 1. Kothari C.K., (2004): “Research Methodology Methods & Technologies”, (Second Edition) New Age International Publishers – Jaipur.**
- 2. Saravanavel P.,(2000): “Research Methodology” Kitab Mahal Publications, Allahabad.**
- 3. Hammond and Rand McCullough, P., (1978) “Quantitative Techniques in Geography” An Introduction, Clarendon press, Oxford.**
- 4. Cooray, P.G., (1992): “Guide to Scientific and Technical Writing”, Hindgala, Srilanka.**

**SEMESTER III - CORE COURSE - X
URBAN GEOGRAPHY**

CODE – 18KP3G10

**Credit - 5
Hours – 6**

UNIT I :

Nature, Scope and Significance of Urban Geography – Census concept of urban areas - Definition of Urban Settlements - Urbanization –Factors affecting urban growth - World Urbanization – Urbanization in India.

UNIT II:

Economic Base and Urban Functions- Basic and Non-Basic - Hierarchical patterns of Indian cities - Zipf's Rank-Size Rule - Functional Classification of Towns by C.D. Harris and H.J. Nelson - –CBD and its characteristics – Christaller's Central Place Theory.

UNIT III:

Urban Morphology-Urban population structure – Age and Sex ratio - Literacy - Occupational structure - Urban Land use Models-Burgess' Concentric Model- Harris- Ullman's Multiple Nuclear Model – Hoyt's Sector Model - Urban ecology – Social Area analysis.

UNIT IV:

Urban expansion - Vertical and Horizontal-Urban Sprawl - Urban fringe-Sub urban -City Region - Primate City - Satellite town and New Town –Umland - Conurbation - Metropolis - Megalopolis.

UNIT V:

Urban problems – Slums, Solid Waste management, Drinking water Supply - Transport – Pollution – Urban renewal and Urban Planning - National urbanization policy.

REFERENCE BOOKS

- 1.Mandal R.B., (2000): "A Text Book of Urban Geography" Concept Publishing Company – New Delhi.**
- 2. Siddhartha K.(2004): "Cities Urbanisation and Urban Systems",Kislaya Publications Pvt. Ltd. Delhi.**
- 3.Carter, H. (1964): "The Study of Urban Geography" Edward Arnold, London.**
- 4 Mayer and Kohn, (1967): "Urban Geography, John Wiley and Sons" New York.**
- 5. Bourne, L.S. (1971): "Internal Structure of the City" Oxford University Press, New York.**
- 6. Johnson, J.H. (1972): "Urban Geography"Pragan Press, London.**

SEMESTER III - CORE COURSE XI

PRACTICALIII: GEO SPATIAL DATA ANALYSIS

CODE - 18KP3G11P

**Credit - 4
Hours - 6**

UNIT I:

Aerial Photo Interpretation – Marginal Information – Interpretation of Physical and Cultural features.

UNIT II:

Satellite Image Interpretation: Marginal Information – Visual Interpretation of Imagery - Physical and Cultural.

UNIT III:

GNSS Survey: Principles and Components - Data Collection: Point – Line – Area – Integration with GIS data.

UNIT IV:

GIS Spatial Data Creation: Scanning – Georeference - Digitization – Database Creation: Point, Line and Polygon.

UNIT V:

GIS Analysis: Buffering - Interpolation – IDW, Krigging - Overlay Analysis – Model Building.

REFERENCE BOOKS

- 1. Sabins F.F.,(1987):“Remote Sensing Principles and Interpretation”,W.H.F. Freeman and Company, NewYork.**
- 2. Lillisand T M and Keifer R.W., (1994): “Remote Sensing and Image Interpretation”, John Wiley and Sons, New York.**
- 3. Rampall, K.K.(1999); “ Hand Book of Aerial Photograph and Interpretation Concept”, New Delhi.**
- 4. Kumaraswamy.K.,(2005): “Remote sensing for Environmental Studies”.Printed by Bharathidasan University, Tiruchirapalli.**

**SEMESTER III - MAJOR ELECTIVE COURSE III
GEOGRAPHY OF INDIA**

CODE -18KP3GELG3

**Credit - 4
Hours - 6**

UNIT I:

Physical Setting: Location- Extent- Size – Administrative Divisions – Physiographic Divisions, Drainage: North and South Indian River Systems.

UNIT II:

Climate, Vegetation and Soils: Factors affecting Indian Climate– Seasons of India –Impact of Monsoon - Natural Vegetation: Types - Soils: Types.

UNIT III:

Irrigation And Agriculture: Irrigation and its Types – Multi-Purpose Projects. Agriculture: Distribution of Food Crops (Rice and Wheat), Cash Crops (Cotton, Jute, Sugarcane and Oilseeds), Plantation Crops (Tea and Coffee) Revolution: Green Revolution, Blue Revolution and White Revolution.

UNIT IV:

Minerals and Industries: Distribution of Metallic Minerals (Iron, Manganese and Bauxite), Non-Metallic Minerals (Mica, Gypsum), Mineral Fuels (Coal and Petroleum), Non-Conventional Energy (Solar and wind Energy). Industries: Cotton Textiles, Ship- building, Automobile, Multi National Corporation (MNC) – Industrial regions of India.

UNIT V:

Population, Transport and Trade: Population: Growth and distribution. Transport: National Highways, State Highways, Indian Railways, Airways- Domestic and International Airports, Trade: Imports, Exports, Balance of Trade - Liberalization- Globalisation.

REFERENCE BOOKS:

- 1. Prithvish Nag and Smita Sengupta, (1992): “Geography of India”, Concept Publishing Company, New Delhi.**
- 2. Sharma.T.C and Countinho.O.C, (1997): “ Economic and Commercial Geography of India”, Vikas Publishing House Pvt, Ltd, New Delhi.**
- 3. Majid Husain.,(2012): “Geography of India” Tata MCGraw Hill Education Private Limited, New Delhi.**
- 4. Rupali Chatterjee.,(2012): “Geography of India”, Global Academic Publishers & Distributors, New Delhi.**

**SEMESTER III – MAJOR BASED ELECTIVE 1V
GEOGRAPHY OF ECONOMIC ACTIVITIES**

CODE-18KP3GELG4

**Credit - 4
Hours - 6**

UNIT I:

Concept of Natural Resources - Meaning, definition, importance and characteristics of resources – Types of resources - Renewable & Non-renewable resources - Factors affecting utilization of resources – Resource conservation

UNIT II:

Economic Geography: Location of economic activities and spatial organization of economies: Classification of economies: Sectors of economy: Primary, Secondary, Tertiary and quaternary.

UNIT III:

Agricultural Geography : Concept and techniques of delimitation of agricultural regions – Measurement of agricultural productivity and efficiency – Von Thunen’s Model – Whittlesey’s classification of Agricultural systems of the world - Agricultural Regions of India.

UNIT IV:

Industrial Geography: Classification of industries – Weber’s and Losch’s approaches – Resources based and footloose industries

UNIT V:

Geography of Transport and Trade: Models of transportation and transport cost – Gravity and Allocation models (Edward Ullman and Hurst) - Accessibility and connectivity – inter-regional and Intra-regional – Comparative cost advantages.

REFERENCE BOOKS

- 1. Khanna and gupta (1982),”Economic and commercial Geography”, Sultan Chand and sons, New Delhi**
- 2. Negi, B.S (2002), “Geography of Resources”, Kedar Nath Ram Nath, Meerut.**
- 3. Sadhukan, S.K (1990),”Economic Geography”, S.Chand and Company, New Delhi**
- 4. Prithwish kumar Roy (1992),”Economic Geography”, New Central Book Company, Calcutta.**
- 5. Coh Cheng Leong et al (1995) “Human and Economic Geography”, Oxford University Press, New Delhi.**
- 6 B.S.Negi (1986), Agricultural Geography, Kedarnath Ramnath, Meerut,Delhi.**
- 7. Majid Hussain(1996), Agricultural Geography, Rawat Publications Jaipur & New Delhi.**

**SEMESTER III (SELF STUDY)
POPULATION GEOGRAPHY**

Credit -5

CODE – 18KP3SSG2

UNIT I:

Population: Demography – Definition – Importance of population study - Population growth – Birth rate – Death rate.

UNIT II: -

Composition of Population: Age – Sex Ratio – Literacy – Occupational Structure -Population distribution – Density

UNIT III:

Migration – Types – Causes of Migration – Consequences of Migration – Pattern of Migration

UNIT IV:

Population problems - Under population – Over population – Population Explosion

UNIT V:

Population policies: Population Policy in India - Planning measures and Implementation in India.

REFERENCE BOOKS

- 1. Trewartha , G.T.(1972): “Geography of Population World Patterns”, John Wiley and Sons , Inc , NewYork .**
- 2. Shelar.S.K., ,(2012): “Human Geography”, ChandralokPrakashan, Delhi.**
- 3. Norman Pounds (1985): “Success in Geography- Human and Regional”, John Murray, London.**
- 4. Gosh B.N., (1985): “Fundamentals of Population Geography”, Sterling Publishers, New Delhi.**

SEMESTER IV - CORE COURSE XII

REGIONAL PLANNING

CODE - 18KP4G12

**Credit - 5
Hours - 6**

UNIT I

Meaning and Concept of planning – Objectives of Regional Planning – Inter disciplinary nature of Regional planning - Approaches to Regional Planning.

UNIT II

Planning Regions and its types - Regionalism - Sectionalism - Regional Hierarchy - Need for Spatio, Temporal and Sectoral planning.

UNIT III

Regional Imbalances and problems in the distribution of natural resources: Agriculture and industries - Regional Analysis: Growth pole Theory - Multi level planning - Planning in Agriculture - Micro- level planning - - Panchayath Raj and Decentralized Planning.

UNIT IV:

Regional planning in India - Short term plans - Annual plans - Five Year Plans - Long term plans - Integrated Rural Development Programmes: Planning for Backward Area - Drought prone area - Hill and Tribal Area Development planning.

UNIT V:

Role of Planning commission - Regional planning at District level - block level - PanchayathRaj - Rural Industrial Project – NABARD – NCDDBA – CADA - Special Economic Zones.

REFERENCE BOOKS

- 1. Chand, M. and Puri, V. (1983): Regional Planning in India, Allied Publishers Ltd., New Delhi.**
- 2. Chandra, R.C. (2000): Regional Planning and Development, Kalyani Publishers, Ludhiana.**
- 3. Cook. P. (1983): Theories of Planning and Spatial Development, Hutchinson & Company Ltd. London.**
- 4. Misra, R.P. Sundaram K.V. & Rao, V.L.S. Prakasa (1974): Regional Development Planning In India.**
- 5. Misra, R.P. (1992): Regional Planning. Concept Publishing Company. New Delhi.**
- 6. Reddi, K. V. (1988): Rural Development in India, Himalaya Pub, Mumbai.**
- 7. Singh, R.L.(2008): Fundamentals of Human Geography, Sharada Pustak Bhawan, Allahabad.**

SEMESTER IV - CORE COURSE XIII

BIO GEOGRAPHY

CODE – 18KP4G13

Credit - 5
Hours - 6

UNIT I:

Bio Geography: Definition, Scope and significance – Basic Ecological Principles - Eco-system - Tropical level , food chain - Carbon cycle, Nitrogen cycle.

UNIT II:

Evolution of life on Earth: Origin of Fauna and Flora throughout the geological times- Distribution of plant life on the earth- Concepts of Biome, Eco-tone and Community.

UNIT III:

Bio- Diversity: Problems of Extinction of plant and animal life- Habitat decay and need for conservation- Process of Desertification and its Consequences- Industrial Effluents and their affects on fresh water Biology.

UNIT IV:

World Biomes: Tropical forest- Tropical Grasslands- Temperate Grassland and Tropical Deserts.

UNIT V:

Environmental Conservation and Management - Global Environmental Problems: Pollution - International cooperation - Earth Summit, Kyoto protocol.

REFERENCE BOOKS

1. Robinson.H.,(1982): “ Biogeography”,ELBS- McDonald and Evana, London.
2. Savindra Singh., (2004): “Biogeography”, Prayag Pustak Bhavan,Allahabad,
3. Sharma, P.D., “Ecology and Environment”, Rastog publications, Meerut.
4. Hussain, M., (1994): “Human Geography”, Rawat Publications, New Delhi, India.
5. Savindra Singh., (2009): “Environmental Geography”,Prayag Pustak Bhawan, Allahabad.
6. Nigel Pears., (1985) Basis Biogeography, Longman, London and New York.
7. Barry.C. (1977) Biogeography- An Ecological and Evolutionary Approach, Cod Black Well, Oxford.

SEMESTER IV - CORE COURSE XIV

PRACTICAL IV: STATISTICAL ANALYSIS IN GEOGRAPHY

CODE – 18KP4G14P

**Credit - 4
Hours - 6**

UNIT I:

Mapping of Population data: Mono Dot, Multiple Dot and Choropleth, - Nearest Neighbour Analysis.

UNIT II:

Mapping of Agricultural data: Crop Combination (Weaver's Method), Crop Diversification (Bhatia's Method)

UNIT III:

Mapping of Transport Data: Connectivity Measure: Alpha, Beta and Gamma indices - Accessibility Measures: Binary Matrix, Shortest Path Matrix, Associated Numbers and Shimmel Index.

UNIT IV:

Mapping of Industrial Data: Location Quotient - Index of dissimilarity - Index of diversification (Gibbs Method).

UNIT V:

Hypothesis Testing – Parametric and Non-Parametric test - Chi-Square test - F-test and t-test.

REFERENCE BOOKS

- 1. Khan,Z.A. (1998): “Text Book of Practical Geography”, Concept Publishing Company,New Delhi.**
- 2. Gobal Singh, (1996): “Map Work in Practical Geography”, Vikas Publishing House, Pvt.Ltd. New Delhi.**
- 3. Singh .R.L. and Dutt .P.K, (1979): “Elements of Practical Geography”, Kalyani Publishers,NewDelhi.**
- 4. PijushKantiSaha, ParthaBasu, (2007,): “Advanced Practical geography”, A Laboratory Manual, Books &Allied (P) Ltd., Kolkata.**
- 5. Misra,R.P.and.Rames.A,, (2002): “Fundamentals of Cartography”, Concept Publishing Company, New Delhi.**
- 6. Kothari, C.R. (1996): Research Methodology: Methods and Techniques, Vishwas Prakashan,New Delhi**

SEMESTER IV – MAJOR BASED ELECTIVE V

GEOGRAPHY OF TOURISM

CODE-18KP4GELG5

Credit - 4

Hours - 6

UNIT I:

Tourism: Definition Scope and Content - importance - classification of travellers: Tourists, Merchants, Explorers, Pilgrims - Basic components of Tourism attraction:

Climate, Accessibility and Accommodation - Tourism types - Religious, Recreational, Cultural, Ecological, Sporting, Medical - Domestic and International.

UNIT II:

Tourist facilities and Services - Transport - Accommodation - Catering - Entertainment - Travel Documents: Passport - Visa - Travellers cheque - credit cards.

UNIT III:

Tourism Promotion: Advertisement - Sales support activates - Public relations - Tourist products - Travel Agencies - Tour Operators and their functions - Types of Hotels - Motels - Chaultries - Guest house.

Unit IV:

World Tourism Organization - Tourism organisation in India: Development of Tourism in India - Indian Tourism Development Corporation - Tamilnadu Tourism Development Corporation

Unit V:

Major Tourist spots in India: Delhi - Mumbai - Kolkata - Jaipur - Hyderabad - Major Tourism spots in Tamilnadu - Chennai - Madurai - Ooty - Kodaikanal.

REFERENCE BOOKS

1. Thangamani.M.R.,(2003): “ Introduction of Tourism”,Kongu Pathipagam, Karur.
2. Krishnaswamy. (2004): “Tourism Development”, Mani Vasagar Publishers, Chennai.
3. Bhatia.A.K., (2006): “Tourism Development”, Sterling Publication, New Delhi.
4. Bhatia.A.K., (1997): ‘Tourism Management and Marketing’, Sterling Publishers Private Ltd., New Delhi.
5. Ratandeep Singh., (1998): “Infrastructureof Tourism in India”, Kanishka Publishers New Delhi.

Semester – I
CC – I

Hours - 6
Credit - 5

Data Structures and Algorithms(18K1CS01)

Objective: To provide basic understanding on common Data Structures and Algorithms.

Unit -1:

Introduction: History of Algorithms – Definition, Structure and Properties of Algorithms – Development of an Algorithm – Data Structures and Algorithms – Data Structure - Definition and Classification. Analysis of Algorithms: Efficiency of Algorithms – Asymptotic Notations - Time Complexity of an Algorithm Using O Notation – Average, Best and Worst Case Complexities. Arrays: Introduction – Array Operations – Number of Elements in an Array – Representation of Arrays in Memory - Applications.

Unit –II:

Stacks: Introduction – Stack Operations – Applications. Queues: Introduction – Operations on Queues – Circular Queues – Other Types of Queues – Applications. Linked Lists: Introduction – Singly Linked List – Circularly Linked Lists – Doubly Linked Lists – Applications.

Unit –III:

Trees and Binary Trees: Introduction – Trees: Definition and Basic Terminologies – Representation of Trees – Binary Trees: Basic Terminologies and Types – Representation of Binary Trees – Binary Tree Traversals – Threaded Binary Trees – Application. Graphs: Introduction – Definitions and Basic Terminologies – Representations of Graphs – Graph Traversals – Applications.

Unit- IV:

Binary Search Trees and AVL Trees: Binary Search Trees: Definition and Operations – AVL Trees: Definition and Operations. Hash Tables: Hash Table Structure – Hash Functions – Linear Open Addressing- Chaining.

Unit –V:

Searching: Linear Search – Binary Search – Fibonacci Search. Internal Sorting: Bubble Sort – Insertion Sort – Selection Sort – Merge Sort – Quick Sort – Heap Sort.

Text:

“Data Structures And Algorithms Concepts, Techniques and Applications” – G.A.V Pai - Published by Tata McGraw Hill Education Pvt. Ltd., - Sixth reprint 2011.

Chapters:1,2.1,2.3,2.4,2.6,3,4,5,6.1–6.4,6.6,8,9,10.2,10.3,13.2,13.5,15.2,15.5,15.6,16.2-16.5,16.7,16.8

Reference:

- 1.”Data Structures” – LIPSCHUTA -Tata Mcgraw Hill,Schaum’s Outline Series.-2006.**
- 2.”Fundamentals of Data Structure” – Ellis Horowitz, Sartaj Sahni and Sanguthevar- 2006.**
- 3.”Data Structure and Algorithm”- Alfred V.Aho,John E.Hopcroft,Jeffrey D.Ullman-pearson education – 2012.**

Office Automation Lab (18K1CS02P:A)

MS - WORD:

1. Prepare a Bio-data and a letter
 - i) Change the font size and its type.
 - ii) Align and justify the text.
 - iii) Underline and indent the text
2. Prepare a document with bullets, headers and footers.
3. Create a mark sheet using table and find out the total marks.
4. Prepare a Greeting Card.
5. Prepare an invitation to be sent to specific addresses in the data source using Mail Merge concept

MS - EXCEL:

6. Prepare a worksheet using formula and built-in functions.
7. Prepare a worksheet to sort given data in Ascending and Descending order (Numeric & Alphabetic)
8. Prepare a mark sheet for a student.
9. Prepare an individual pay slip.
10. Prepare an electricity bill.

MS - POWER POINT:

11. Prepare a Slide Show Presentation for a Seminar (Choose your own topics)
 - i) Insert Clip Art and Pictures:
 - ii) Enter the text in outline view.
 - iii) Create Non-bulleted and bulleted Body Text.
 - iv) Apply the appropriate text attributes.
12. Prepare a Slide Show
 - i) Insert Bar chart to display the percentage of a student.
 - ii) Enter the text in the slide view.
 - iii) Apply appropriate text attributes.
 - iv) Rotate the object to 45 degree (approximately)
 - v) Apply Shadow to the object.
13. Prepare a slide show using Design Templates.
 - i) Create a Slide Show Presentation to display Percentage of Marks.
 - ii) Use Bar Chart (X-axis : Semester, Y-axis:% of Marks)
 - iii) Use Different Presentation Template and Different transition effect for each slide.
 - iv) Use different text attribute in each slide.

MS – ACCESS:

- 14. Create a Table for an Employee with various fields such as Empno, Empname, Design, Salary, Sex, Date-of-Joining, etc.,**
- 15. Create a Table for an Student with various fields such as Studno, Studname, Date-of- birth, Mark details, etc.,**
- 16. Create a table for a book with various fields such as bookno, Bookname, Author, Publishers, Edition, Price, etc.,**
- 17. Process of SQL queries for an Employee table.**
- 18. Process of SQL queries for a Student table.**
- 19. Process of SQL queries for a Book table.**

Note: Questions should be framed from any two modules.

C Programming Lab (18K2CS02P:B)

1. **Program to check Prime or not.**
2. **Program to find the sum of series.**
3. **Program to find Largest among three Numbers.**
4. **Program to create Floyd Triangle.**
5. **Program to solve a Quadratic Equation**
6. **Program to Swap two numbers without third Variable.**
7. **Program to sort the numbers in ascending and descending order.**
8. **Program to sort the names in Alphabetical Order.**
9. **Program to perform Matrix Addition.**
10. **Program to perform Matrix Subtraction.**
11. **Program to perform Matrix Multiplication.**
12. **Program to find the factorial of n numbers using function.**
13. **Program to generate Fibonacci series using recursive function.**
14. **Program to manipulate strings**
15. **Program to create Mark list using Files.**

Semester –II
CC – III

Hours - 6
Credit – 6

Programming in C (18K2CS03)

Objective: To provide a better understanding on primitive constructs of Language C.

Unit - I:

Overview of C : History of C - Importance of C - Sample Programs-Basic structure of C programs - Executing C programs - Constants, Variables and Data types: Keywords and Identifiers - Operators and Expressions.

Unit - II:

Managing Input and Output Operations. Decision Making and Branching: Introduction - Decision making with If statement - Simple If statement - If...Else statement - Nested If - Else-If Ladder - Switch Statement - Ternary operator - Goto statement. Decision Making and Looping: While, do, for, jumps in loops.

Unit - III:

Arrays: Introduction – One-dimensional Arrays – Two-dimensional Arrays – Multi-dimensional Arrays. Character Array and Strings: Introduction – Declaring and Initializing String Variables – String Handling Functions.

Unit - IV:

User-defined Functions: Introduction - Category of Functions – Nesting of Functions. Structures and Unions: Introduction – Defining a structure - Giving values to Members - Structure Initialization - Arrays of Structures – Structure and Functions – Unions.

Unit - V:

Pointers: Introduction – Pointers and Arrays – Pointer and Character Strings – Array of Pointers – Pointers as Function Arguments. File Management in C: Defining and Opening a File - Closing a File - Random Access to Files.

Text: 1. “Programming in ANSI C” - E. Balagurusamy - McGraw Hill Education(India) Pvt. Ltd., – Sixth Edition – Reprint 2013.

Chapters: 1 - 12

Reference:

1. “Programming with C” - Schaum’s outlines - Byron Gottfried, Jitender chabra - TMH – Third Edition - 2010.
2. “Programming in C” – Ashok N. Kamthane – Pearson Education – 2nd Edition - 2011.
3. ” Let us C”-Yashavant Kanetkar-BPB Publications-13th Edition - 2013.

Semester – III
CC – IV

Hours – 6
Credit -5

C++ and Java Programming (18K3CS04)

Objective: To give Complete Knowledge on OOP concept.

Unit - I :

Principles of Object Oriented Programming: Software Crisis - Software Evolution -Basic Concepts of Object Oriented Prograqmming - Benefits of OOP- Application of OOP . Beginning with C++, Tokens, Expressions and Control Structures, Functions in C++.

Unit - II :

Classes and Objects: Specifying a Class - Defining member function - Nesting of Member Functions - Arrays within a Class - Static Member Functions - Friendly Functions. Constructors and Destructors: Constructors – Destructors. Operator Overloading and Type Conversion: Introduction - Defining Operator overloading – Rules for Overloading Operators - Type conversions.

Unit - III :

Inheritance: Extending Classes : Single Inheritance – Multilevel Inheritance-Multiple Inheritance – Hierarchical Inheritance - Hybrid Inheritance - Virtual Base Classes. Pointer, Virtual Functions and Polymorphism: Pointers - Virtual Functions.

Unit - IV :

Java Evolution : Java History – Java Features - Web Browser - Java Environment. Overview of Java Language : Introduction-Simple Java Program - More Of Java - An Application with two Classes - Java Program Structure - Implementing a Java program - Java Virtual Machine - Command Line Arguments.Classes, Object and Methods : Inheritance : Extending a Class - Overriding Methods.

Unit – V :

Classes, Object and Methods : Final Variables and Methods - Visibility Control . Arays, Strings, and Vectors: Wrapper Classes - Enumerated Types. Interfaces: Multiple inheritance , Packages: Putting Classes Together: Java API packages, Applet Programming: Introduction - Preparing to write Applet - Building Applet Code - Applet Life Cycle - Creating An Executable Applet.

Text : Unit I - III

“Object Oriented Programming with C++” – E.Balagurusamy- McGraw Hill Education(India) Pvt. Ltd., Seventh Edition,Coprright 2018.

Chapters: 1-4, 5.1 – 5.16, 6, 7.1, 7.2, 7.7, 7.8, 8, 9 (Relevant Topics only)

Unit IV- V

“Programming with Java – A Primer” – E.Balagurusamy – McGraw Hill Education (India) Pvt. Ltd. – Fifth Edition – Reprint 2015.

Chapters: 2,3,8,10,11, 14

Reference

1. **“Object Oriented Programming with C++” - Robert Lafore - Galgotia Publication Pvt. Ltd -1994 – Second Edition.**
2. **Java 2 Complete Reference” - Herbert Schildt - TMH - Fourth Edition - 2001.**
3. **“Internet And Java Programming”- Vipin Kumar,Amit,Kumar,Madhu, Gaur- A.B.Publication-Second Edition -2010.**

Semester – III
CC – V

Hours – 3
Credit - 3

Java Programming Lab (18K3CS05P:A)

- 1. Program using Classes and objects.**
- 2. Program using Inheritance & Polymorphism.**
- 3. Program using String Handling functions.**
- 4. Program using Packages and Interfaces.**
- 5. Program for Exception Handling :**
 - i) any three default exceptions**
 - ii) user defined exceptions**
- 6. Program for Vector Manipulation.**
- 7. Program for String manipulation using Applets.**
- 8. Program to prepare a Bio-Data using Applets.**
- 9. Program to develop an Applet using buttons.**
- 10 . Program to develop a Java Graphics program.**

VB.NET Lab (18K4CS05P:B)

1. Program for Temperature Conversion
2. Program to Design a Calculator.
- 3 Program to Sort the Numbers in Ascending and Descending Order
4. Program using CheckBox, Radio Button , and GroupBox Controls
5. Program using Controls Panel , PictureBox , ProgressBar and Timer Controls.
6. Program using Menu and Built-in-Dialog Box Controls.
7. Program to Implement polymorphism by Method Overloading.
8. Program for Exception Handling.
9. Program to Access Student Data with ADO.NET Using DataGrid View Control
 - a. Create and Open a Connection of Student Database.
 - b. Insert , Update and Delete Records in the Student Table.
10. Program to Access Employee Data With ADO.NET Using Standard Controls.

Semester – IV
CC – VI

Hours - 5
Credit – 4

VB.Net (18K4CS06)

Objective: To provide basic Knowledge on .NET programming concepts.

UNIT I:

Introduction to Programming – Converting Source Code to Machine Language Code - Explaining Program Development Cycle. Introducing .NET Framework 4.5 and Visual Studio 2012. Exploring Visual Studio 2012 IDE . Developing a Console Application.

UNIT II :

Visual Basic: Getting started with Visual Basic 2012: Visual Basic 2012 keywords –operators – Variables – Constants – Arrays. Windows Forms: Adding Controls to a Forms – Resizing and Moving Forms and Controls at Runtime – Creating Input Boxes –Creating Dialog Boxes.

UNIT III :

Windows Forms Controls- I: Introducing the Control Classes – Using the Label Control – Using the TextBox Control - Using the Button Controls – Using the Radio Button – Using the CheckBox Control – Using the Panel Control - Using the PictureBox Control – Using the ProgressBar Control.

UNIT IV :

Windows Forms controls II : Using the ToolStrip Control – Using the MenuStrip Control – Using the StatusStrip Control – Working with Dialog Boxes: Using FolderBrowser DialogControl – Using the OpenFileDialogControl – Using the Save File DialogControl – Using the FontDialogControl – Using the ColorDialogControl.

UNIT V:

Windows Presentation Foundation: Exploring the Improvements in WPF4.5: The Ribbon Control - Support for Binding to Types that Implement ICustomTypeProvider- New Virtualizing Panel Features - Extensions for Events. Explaining WPF 4.5 Architecture: Windows Base – The Milecore Component . Exploring WPF4.5 Designer , Using XMAML in WPF , Working with WPF Controls.

Text: “.NET Programming” - Vikas Gupta - DreamTech Press – Edition- 2014.

Preface : 1 , 2 (Relevant topics only)

Chapters: 1 – 5

Reference:

- 1. Visual Basic .Net, Jesse Liberty, 1st Edition , O'RELLY ASSOCIATES Inc, 2002.**
- 2. “Visual Basic.NET Programming Black Book”, Steven Holzer, 13th reprint Edition, dreamtech Press, 2005.**
- 3. “Visual Basic .NET The Complete Reference”, Jeffrey R. Shapiro, , Tata McGraw-Hill Publishing Company Ltd., Eleventh reprint 2007.**

Semester – V
CC – VII

Hours – 6
Credit – 5

Microprocessor Architecture (18K5CS07)

Objective: To Impart basic understanding of advanced processor & hardware.

Unit - I :

Introduction: Word Length of a Computer or Microprocessor - Evolution of Microprocessors - Evolution of Digital Computers - Computer Generations – Single-Chip Microcomputers - Embedded Microprocessors - Hardware, Software and Firmware-CPU – Memory: Semiconductor Memory , Buses: Processing Speed of a Processor.

Unit - II :

Microprocessor Architecture : Introduction - Intel 8085 - Instruction Cycle - Timing Diagram – Instruction set of Intel 8085: Introduction - Instruction and Data Formats - Addressing Modes - Status Flags - Symbols and Abbreviations - Intel 8085 Instructions.

Unit - III :

Examples of Assembly Language Programs : Introduction – Simple Examples – Addition of two 8 Bit Numbers; Sum: 8-Bit - 8-Bit Subtraction – Addition of two 8-bit Numbers sum: 16-bit - Move a Block of Data from One Section of Memory to Another Section of Memory.

Unit - IV :

Intel 8086 And Intel's Other 16-bit Microprocessors: Introduction - Intel 8086 : Pins Description - Operating Modes of 8086 - Pin Description for Minimum Mode - Pin Description for Maximum Mode. Assembler Directives: Assembler Directives of Intel 8086 - Assembly Language Programs Using Assembler.

Unit - V :

Microcontrollers: Introduction: Intel 8051 series of Microcontrollers(MCS-51) –Registers - Pins of Intel 8051 - I/O Lines - The 8051 Interrupts –Instruction set - Memory organization of Intel 8051 - Addressing Modes.

Text :

“Fundamentals of Microprocessors and Microcontrollers” - B. Ram & Sanjay Kumar–Dhanpat Rai publications – Eighth Revised Edition, Reprint - 2014.

Chapters : 1.1 – 1.9 ,1.10 ,1.11, 3, 4, 6.1- 6.37 , 10 - 10.1.4, 10.1.7, 10.1.13-10.1.14, 11 - 11.2.4, 11.7 - 11.9 (Relevant topics only)

Reference:

1. **“Microprocessors and microControllers” ,M.Saravanan, S.Jeevanathan, N.Senthikumar, Oxford University Press 5th edition,2010.**
2. **“Microprocessor And Programming and Applications with the 8085”,Ramesh Gaonkar,5th Edition ,CBS Publications,2011.**
3. **Microprocessor and Microcontrollers”,Nagoor Kani ,2nd Edition,TaTa Mcgraw Hill Publication,2012.**

Semester – V
CC – VIII

Hours – 6
Credit – 5

Digital Design (18K5CS08)

Objective: To Impart basic knowledge on Digital Electronics.

Unit - I :

Number Systems: Review of decimal number systems - Binary number system - Binary to decimal conversion - Decimal to binary conversion - Hexadecimal number system - Hexadecimal to decimal conversion - Decimal to hexadecimal conversion - Hexadecimal to binary conversion - Binary to hexadecimal conversion - Octal number system - Octal to decimal conversion - Decimal to octal conversion - Octal to binary conversion - Binary to octal conversion.

Unit - II :

Binary Arithmetic: Binary Addition - Binary Subtraction - Binary Multiplication - Binary Division - 1's and 2's Complements - Subtraction using complements - Signed Binary Numbers –Binary Codes: BCD codes - 8421 code – 2421 and 4221 codes – Excess-3 code – Gray code – ASCII code.

Unit - III :

Logic Gates and Logic Circuits: Introduction - Analog and Digital Signals - Basic logic gates, NOT,OR, AND - Logic circuits and Logic expressions - Sum of Product (SOP)- Product of Sums(POS) - NAND and NOR Gates - Ex-OR and Ex-NOR Gates - Boolean Algebra: Laws of Boolean Algebra - DeMorgan's Theorem - NAND as Universal Gate –NAND-NAND network - NOR as Universal Gate.

Unit - IV :

Karnaugh Map: Minterms and Maxterms - Relationship between K Map and truth table – 2-variable K-map using minterms - 3-variable K-map using minterms - 4-variable K-map using minterms - Don't care conditions – Arithmetic Circuits: Binary addition - Half adder and Full adder.

Unit - V :

Combinational Logic: Combinational circuits-Analysis Procedure-Decimal Adder-Decoders-Encoders-Multiplexer. Synchronous Sequential Logic: Sequential Circuits-Storage Elements: Flip-flops. Register and Counters: Registers-Synchronous Counter.Text : Unit I - IV

“Digital Fundamentals” - V.Vijayendran - S.Viswanathan (Printers & Publishers), Pvt.. Ltd., - Reprint 2011

Chapters: 1, 2, 3, 4, 5.1 - 5.5, 6.1 - 6.6, 8.1 - 8.2.

Unit - V

“Digital Design” - M.Morris Mano Michael D. Ciletti –Fifth Edition - Pearson India Education Services Pvt. Ltd., - Secdond Impression 2016.

Chapters:4.1-4.11,5.1-5.4,6.1-6.5.

Reference:

- 1. “Digital Design” - M.Morris Mano PHI - Fifth Edition - 2001**
- 2. “Digital Computer Fundamentals” – Thomas L.Floyd, Prentice Hall - Tenth Edition - 2008.**
- 3. “Fundamentals of Digital Circuits” – A.Anand Kumar – PHI - 2009.**

Data Structures using C++ Lab(18K5CS09P)

1. **Program to evaluate an Expression using Stack.**
2. **Program to implement Stack Operations.**
3. **Program to implement Queue Operations.**
4. **Program to implement Single Linked List.**
5. **Program to implement a Binary Search.**
6. **Program for Binary Tree Traversal.**
7. **Program for Merge Sort.**
8. **Program for Quick Sort.**

**Semester – V & VI (Examination in Semester – VI)
CC – X**

**Hours - (3) + 3
Credit - 5**

Digital and Microprocessor Lab (18K6CS10P)

Semester – V:

I. Experiments with Digital ICs :

1. i) Study of Logic Gates
- ii) Construction of Fundamental Logic Gates using Universal Gates.
2. Construction of Half Adder and Full adder using logic gates.
3. Karnaugh Map reduction of Boolean expression (Three variables expression only)
4. Study of Counters (Up / Down)
5. Study of Shift Registers (Serial & Parallel)

Semester – VI

II. Experiments with Microprocessor Kits :

1. 8-bit addition, subtraction, multiplication, division.
2. Multi-byte addition, subtraction.
3. Data transfer from one part to other part of memory.
4. Sorting (Ascending & Descending)
5. Number Conversion (Hex to Decimal & Decimal to Hex)

Semester – VI
CC – XI

Hours - 4
Credit - 3

RDBMS Lab (18K6CS11P)

- 1. Create a Table and Perform Insertion, Deletion & Updation.**
- 2. Check Integrity constraints and Perform Fundamental Operations.**
- 3. Perform Aggregate Functions, Set Operations and Nested Queries.**
- 4. Create a view and Perform Insertion, deletion through view.**
- 5. Create a PL / SQL - block using cursor.**
- 6. Create a PL/SQL –block for Functions.**
- 7. Create a PL/SQL –block for Procedures.**
- 8. Create a PL/SQL –block for Packages & Package Bodies.**
- 9. Create a PL/SQL –block to handle Database Triggers.**

Semester – VI
CC – XII

Hours – 6
Credit - 6

Data Communications and Networks (18K6CS12)

Objective: To impart knowledge on applications in communication and network field.

Unit - I :

Introduction: Data Communication. Basic Concepts : Line Configuration–Point To Point-Multipoint-Topology ,Mesh, Star, Tree, Bus, Ring-Hybrid Topologies-Transmission Modes-Simplex, Half Duplex, Full Duplex - Categories Of Networks- LAN, MAN, WAN – Internetworks. The OSI Model: Layered Architecture - Functions Of The Layers - TCP / IP Protocol Suite.

Unit - II :

Signals : Analog And Digital . Signals - Periodic, Aperiodic Signals-Analog Signals - Time And Frequency Domains - Composite Signals - Digital Signals. Transmission Media: Guided Media-UnGuidedMedia. ErrorDetection and Correction: Types Of Errors-Detection-VRC-LRC-CRC-Checksum-Error Correction.

Unit - III:

Data Link Protocols: Asynchronous, Synchronous, Character-Oriented, Bit Oriented - Link Access Procedures. LAN: Ethernet Networks - Token Bus - Token Ring – Access Method, Token Passing, Addressing, Electrical Specification, Frame Format, Implementation-FDDI.

Unit - IV :

Switching : Circuit, Packet, Message. Networking And Internetworking Devices : Repeaters – Bridges – Routers – Gateways - Other Devices - Routing Algorithms - Distance Vector Routing - Link State Routing.

Unit - V :

TCP/IP Protocol Suite: Part1: Overview Of TCP/IP - Network Layer - Internetnetwork Protocol - Addressing - Subnetting - Other Protocols in the Network Layer -Transport Layer: UDP, TCP. Part2: Client Server Model – BOOTP,DHCP-DNS – Telnet- FTP - TFTP – SMTP: User Agent, Addressing, MTA, MIME, POP – SNMP: SMI, MIB – HTTP- WWW.

Text : “Data Communications And Networking” - Behrouz A. Forouzan – TMH Publishing – Second edition – 22nd reprint 2008.

Chapters: 1.2, 2 to 4, 7.1, 7.2, 9, 11-12, 14, 21, 24, 25

Reference :

- 1.“Computer Networks” - Andrew S. Tanenbaum - PHI – Fourth Edition.-2002.**
- 2,“Modern Digital And Analog Communication” - B.P. Lathi - Oxford Press – Fourth Edition - 2009**
- 3.“Communication networks Fundamentals concepts and key Architecture”- Alberto Leon Garcia-MCH-Second Edition-2004.**

Semester – VI

Hours - 6

CC – XIII

Credit - 6

Mini Project (18K6CS13PW)

Guidelines:

- 1. The students have to do the mini-project work as far as possible individually in the lab itself. In case of group project, the group size should not exceed three.**
- 2. Any application either system oriented or application oriented may be selected.**
- 3. One internal examiner and one external examiner shall evaluate the mini-project.**
- 4. During the evaluation there should be online demonstration.**
- 5. The final copy of project report should be submitted to the department.**
- 6. Individual member of the group should contribute to at least one module.**

Scheme of Valuation:

- | | |
|---|-------------------|
| 1. Selection of application & design | - 20 marks |
| 2. Preparation of source code | - 20 marks |
| 3. Demonstration / Execution | - 20 marks |
| 4. Documentation | - 20 marks |
| 5. Viva Voce | - 20 marks |

Semester – V
MBE – I

Hours - 6
Credit – 5

Database Systems (18K5CSELCS1:A)

Objective: To impart knowledge in Database concepts with an overview on SQL and Oracle.

UNIT I :

Introduction : Database System Applications – Purpose of Database Systems – View of Data – Database Languages – Relational Databases – Database Design – Data Storage And Querying - Transaction Management – Database Architecture – Data Mining and Information Retrieval – Specialty Databases - Database User and Administrators History of Database Systems.

UNIT II :

Relational Databases : Introduction to the Relational Model : Structure of Relational Databases – Database Schema - Keys – Schema Diagrams – Relational Query Languages – Relational Operations.

UNIT III :

Introduction to SQL : Overview of the SQL Query Language – SQL Data Definition Basic Structure of SQL Queries – Additional Basic Operations - Set Operations – Null Values – Aggregate Functions - Nested Subqueries - Modification of the Database. Intermediate SQL : Join Expressions – Views - Transactions – Integrity Constraints - SQL Data Types and Schemas – Authorization.

UNIT IV :

Database Design and E-R Model – Overview of the Design Process – The Entity-Relationship Model Constraints – Removing Redundant Attributes in Entity Sets - Entity-Relationship Diagrams. Relational Database Design: Features of Good Relational Design - Atomic Domains And First Normal Form – Decomposition using Functional dependencies.

UNIT V :

Critical Database Concept : Oracle Sharing Knowledge and Success: The Cooperative approach – Familiar Language of Oracle. The dangers in a Relational DataBase – Codes, Abbreviation and Naming Standards – Normalizing Names – Understanding the Data. Basic Parts of Speech in SQL : Style – Logic and Value – Combining Logic.

TEXT: Unit I - IV

“Database System Concepts” – Abraham Silberschatz, Henry F.Korth, S.Sudarshan– McGraw Hill Education (India) Pvt. Ltd., – Sixth Edition - Second Reprint -2013.

Chapters : 1, 2, 3, 4, 7.1 - 7.5, 8.1 - 8.3.

Unit – V

“Oracle 9i – The Complete Reference” – Kevin Loney, George Koch And the Experts at TUSC – Tata McGraw-Hill Edition – 2002.

Chapters: 1 – 3 (Relevant Topics Only).

Reference:

- 1. “Database Management System” – Ramakrishnam – McGraw – Hill Higher Education - Third Edition - 2002.**
- 2. “Database Management System the Complete Book”- Jennifer widom,Jeffrey D. Ullman,Hector Garcia –molina Pearson - First Edition - 2003.**
- 3. “Database Management System” - G.K.Gupta – Tata Mcgraw Hill Education Private Limited - First Edition - 2011.**

Semester – V
MBE – I

Hours - 6
Credit – 5

MIS & ERP (18K5CSELCS1:B)

Objective: To give basic understanding in Management Information System.

UNIT I:

An Overview of Management Information System: Definition of a Management Information System – Structure of a Management Information System: MIS as an Evolving Concept – MIS and Other Academic Disciplines – Subsystems of an MIS – MIS as Seen by the User – The MIS Professional – Purpose and Organization. Structure of a MIS: Operating Elements – MIS Structure-based on Management Activity – based on Organisational function.

UNIT II:

Hardware, Software and Communications Technology for Information Systems: A Computer System : Data Representation for Computers – MicroElectronics: Logic and Memory Chips – Boards and Buses – Microcode and Machine-Language Instructions.

UNIT III:

The Decision-Making Process: Phases in the Decision-Making Process – Intelligence and Design Phases – Concepts of Decision Making – Behavioral Models of Decision Maker: Classical Economic Model of Decision Maker – Administrative Model of Decision Maker – Human Expectations and Decision Making –Behavioural Model of Organization Decision Making.

UNIT IV:

ERP: An Overview: Reasons for the Growth of ERP Market – The Advantages of ERP– Enterprise-An Overview: Business Modeling – Integrated Data Model.

UNIT V:

ERP and Related Technologies:Business Process Reengineering – Data Warehousing – Data Mining – On-line Analytical Processing – Supply Chain Management – Business Process Reengineering: Introduction - The Evolution of BPR – BPR-The Different Phases.

TEXT:

UNIT I –III:

**”Management Information Systems” – Gordon B.Davis, Margrethe H.Olson
Tata McGraw Hill – International Edition – 2000.**

Chapters:1, 3.1 – 3.3, 6.1 – 6.4.

UNIT IV –V:

“ERP Demystified” – Alexis Leon - Tata McGraw Hill –Fourteenth Reprint – 2006.

Chapters:1 – 5

Reference:

- 1. “Management Information Systems” – W.S. Jaswadekar – Tata McGraw Hill – 2005.**
- 2. “Management Information Systems” – Dr. P.C. Reddy – S.K.Kataria & Sons – 2010.**
- 3. “Enterprise Resource Planning” – Mahodeo Jaiswal, Ganesh Vanapalli – Macmillan – 2005.**

Software Engineering (18K6CSELCS2:A)

Objective: To provide implementation – oriented skills in software design.

UNIT I :

Introduction to Software Engineering : Some Definitions – Some Size Factors – Quality and Productivity Factors – Managerial Issues – Planning a Software project : Introduction – Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities: Planning for Configuration Management and Quality Assurance – Planning for Independent Verification and Validation – Planning Phase-Dependent Tools and Techniques.

UNIT II :

Software Cost Estimation – Introduction – Software Cost Factors: Programmer Ability – Product Complexity – Product Size – Available Time – Required Level of Reliability – Level of Technology - Software Cost Estimation Techniques: Expert Judgment – Delphi Cost Estimation – Work Breakdown Structures – Algorithmic Cost Models – Staffing-Level Estimation – Estimating Software Maintenance Costs –The Software Requirements Definition: The Software Requirements Specification – Formal Specification Techniques.

UNIT III :

Software Design: Introduction - Fundamental Design Concepts – Abstraction – Information Hiding – Structure – Modularity – Concurrency – Verification – Aesthetics - Modules and Modularization Criteria – Coupling and Cohesion – Other Modularization Criteria - Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections – Design Guidelines .

UNIT IV :

Implementation Issues: Introduction - Structured coding Techniques – Single Entry, Single Exit Constructs – Efficiency Considerations – Violations of Single Entry, Single Exit – Data Encapsulation – The Goto Statement – Recursion - Coding Style – Standards and Guidelines – Documentation Guidelines: Supporting Documents – Program Unit Notebooks – Internal Documentation.

UNIT V :

Verification and Validation Techniques: Introduction – Quality Assurance – Walkthroughs and Inspections: Walkthroughs – Inspections - Static Analysis – Symbolic Execution – Unit Testing and Debugging: Unit Testing – Debugging - System Testing: Integration Testing – Acceptance Testing - Formal Verification: Input- Output Assertions – Weakest Preconditions – Structural Induction.

Text:

“Software Engineering Concepts” – Richard E.Fairely , Tata McGraw Hill Edition , Eleventh Reprint 2001.

Chapters: 1, 2, 3, 4.1, 4.2, 5, 6, 8.

Reference :

- 1. “Software Engineering” – A Practitiner’s Approach - Seventh Edition - Roger S.Pressman Atlantic Pbblisher and Distributors 2009.**
- 2.“Software Engineering” – Rajib mall – Third Edition - PHI Learning Private Limited (2009).**
- 3. “Software Engineering” – Lan Sommerville – Pearson 2010 Ninth Edition.**

Software Testing (18K6CSELCS2:B)

Objective: To provide complete knowledge on software testing.

UNIT I :

Software Testing Fundamentals : Introduction – Software Testing Perspective – Effective Software Testing – Types of Testing – Principles of Software Testing – Testing and Debugging. Software Testability - Testability Artifacts – Testability Facilitators : Internal Facilitators - Levels of Testability – Testability Analysis – Incorporating Testability – Testability and Object Oriented Software Quality.

UNIT II :

Static Testing : Introduction – Principles of Static Testing – Static Testing Perspective - Manual Techniques – Automated Techniques : Syntax Parser – Static Verification – Symbolic Execution - Static Vs Dynamic Testing.

UNIT III :

Black Box Testing : Introduction – Black Box Techniques – Equivalence Partitioning - Boundary Value Analysis – Robustness Testing – Syntax Testing - Finite State Testing. White Box Testing : Introduction - White Box Techniques – White Box Modeling - Basis Path Testing – Control Structure Testing – Mutation Testing – Gray-box Testing.

UNIT IV :

Software Testing Strategies : Introduction - Strategic Issues – Strategic Premises – A Generic Testing Strategy - Completion of Testing – Testing Real Time Systems – Models For Software Testing. Planning for Software Testing : Introduction - Leveled Test Plan – Development of Test Plan – Master Test Plan – Phase Wise Test Plan.

UNIT V :

Software Fault Tolerance : Introduction – Need for Software Fault Tolerance – Software Failure – Principles of Software Fault Tolerance – Techniques of Software Fault Tolerance – Fault-Based Testing Methods .

Text: “Software Testing- Concepts and Practices” K.Mustafa R.A. Khan - Narosa Publishing House Pvt. Ltd., - 2007.

Chapters: 1 – 7, 9.

Reference:

1. ”Software Engineering a Practitioner’s Approach – Roger S.Pressman – Fifth Edition McGraw –Hall INTERNATIONAL EDITION 2001.
2. ”Software Testing”-: Ron Patton Publisher:Pearson – Second Edition -2005.
3. ”Foundation of Software Testing “ - Dorothy Graham,Erikvan Veenendaal,Isabel Evans,Block Rek – Third Indian Reprint Edition - 2008.

Operating Systems (18K6CSELCS3:A)

Objective: To provide understanding on system level resource handling.

UNIT I:

Introduction: What Operating Systems Do - Computer-System Organization – Computer-System Architecture – Operating-System Structure – Operating-System Operations – Process Management – Memory Management – Storage Management. System Structures: System Calls – Types of System Calls.

UNIT II:

Process Management: Process Concept: Overview – Process Scheduling – Operations on Processes – Interprocess communication. Process Scheduling: Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling – Thread Scheduling.

UNIT III

Deadlocks: System Model – Deadlock Characterization – Methods for Handling Deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Recovery from Deadlock. Memory Management: Memory-Management Strategies: Background – Swapping – Contiguous Memory Allocation – Paging – Structure of the Page Table – Segmentation.

UNIT IV:

Virtual Memory Management: Background – Demand-Paging – Copy-on-Write – Page Replacement – Allocation of Frames – Thrashing – Memory-Mapped Files.

UNIT V:

Files System: File Concept – Access Methods – Directory Structure – File-System Mounting – File Sharing – Protection. Distributed Operating Systems: Types of Distributed Operating Systems – Network Structure – Network Topology

Text :

“Operating System Principles” –Abraham Silberschatz ,Peter Baer Galvin and Greg gange – Wiley India Pvt. Ltd., - Seventh Edition – Reprint 2011.

Chapters : 1-1 – 1.8, 2.3, 2.4, 3.1- 3.5, 5.1-5.5, 7, 8.1-8.6, 9.1-9.7,10, 14.2 - 14.4

Reference:

- 1.Modern Operating Systems” Third Edition (GOAL Series) – Andraws Tanenbaum. – 2007.**
- 2.“Operating Systems” –Stuart E.Madnick and John J.Donovan – TMH – Twentieth Reprint 2010.**
- 3. The Busy Coder's Guide to Android Development - Mark L. Murphy -Commons Ware LLC - Jul 2008: Version 1.0**

Semester – VI
MBE- II

Hours -5
Credit - 5

Parallel Processing (18K6CSELCS3:B)

Objective: To improve understanding level on parallel processing and distributed computing.

Unit - I :

Introduction : Introduction to Parallel Processing –Warnings - Laws of Caution - Shared Memory Multiprocessing – Distributed Memory – Using Parallelism – Tools and Languages. Parallel Processing Architectures: Introduction – Parallelism in Sequential Machines – Abstract Model of Parallel Computer – Multiprocessor Architecture – Pipelining – Array Processors.

Unit - II :

Programmability Issues: Overview – Operating System Support – Types of Operating Systems - – Parallel Programming Models – Software Tools. Data Dependency Analysis: Introduction – Types of Dependencies – Loop and Array Dependence – Loop Dependence Analysis – Solving Diophantine Equations – Program Transformations.

Unit - III :

Shared Memory Programming: Shared Memory Programming – General Model of Shared Memory Programming - Process Model under UNIX – Thread-Based Implementation: Introduction – Thread Management – Example with Threads – Attributes of Threads – Mutual Exclusion with Threads – Mutex Usage of Threads – Thread Implementation – Events and Condition Variables – Deviation Computational with Threads-Java Threads.

Unit - IV :

Distributed Computing – I: Message Passing Model – General Model – Programming Model – PVM. Distributed Computing –II: Remote Procedure Call: Parameter Passing – Locating the Server – Semantics in the Presence of Failures – Security – Problem Areas – Java Remote Method Invocation – DCE - Developing Applications in DCE.

Unit - V :

Debugging Parallel Programs: Introduction - Debugging Techniques – Debugging Message Passing Parallel Programs – Debugging Shared Memory Parallel Programs. Other Parallelism paradigms: Introduction – Dataflow Computing – Systolic Architectures – Functional and Logic Paradigms – Distributed Shared Memory.

Text :

“Introduction to Parallel Processing” – M.Sasikumar, Dinesh Shikhare, P.Ravi Prakash – Prentice Hall of India Pvt. Ltd.,- 2000.

Chapters: 1.1 – 1.8, 2 – 8, 11, 12.

Reference :

- 1.“Programming Massively Parallel Processors” – David.B. Kirk & Wen Mei W. HWU – Elsevier – 2012.**
- 2.“Fundamentals of Parallel Processing Algorithms & Architectures” – Harry F.Jordan, Gita Alagband – Prentice Hall – 1Edition 2002.**
- 3.“Introduction to Parallel Processing Algorithms & Architectures” – Behrooz Parhami - Springer – 1999.**

Semester:I
Part-IV

Hours: 2
Credit: 2

Value Education (18K1VE)

Unit – I:

Introduction: Definition of Value Education – Need for Value Education – Teachings of various religions like Hinduism, Buddhism, Christianity, Jainism, Islam etc.

Unit-II:

Living & Social Values - Living Values: Peace, respect, co-operation, freedom, happiness, honesty ,humility, love, responsibility, simplicity, tolerance, optimism and positive thinking - Social Values: Love and Compassion, Sharing and Generosity, Politeness and Courtesy Gratitude Duty and Responsibilities towards Society, Tolerance and Unity.

Unit-III:

Role of Visionaries and Leaders in Social Reforms: Rajaram Mohan Roy, Mahatma Gandhi, Swami Vivekananda, EVR Periyar, and Mother Therasa. Value Crisis: Religious Fundamentalism and Terrorism Corruption in Society –Commerce without Ethics –Education without Character – Wealth without effort – Time Management.

Unit-IV:

Yoga: Teaching Yoga –Manavalakkalai –by qualified Yoga Teachers- The aim is to acquire Physical Health –Mental Acuteness –Strength of Life Forces and Wisdom – to achieve a holistic way of life –to take up and get involved in Social Welfare Activities – to learn their commitment to society.

Unit –V:

Project Work (Any one of the following activities) - Collecting News details about Value Education from News Papers- Journals and Magazines and /or Collecting Short Stories or Anecdotes to stress Social and Living Values. Writing Poems, Stories or Essays high Lighting Moral Values or Erosion of Moral Values - Drawing, paintings, collages or posters to highlight Living and social values or the erosion of these values.

(Questions may be asked from Unit I, II and III only.

The marks may be distributed as

Project Work and Yoga+ Cycle Test:	15 Marks (5+5+5),
Model Exam & Attendance:	10 Marks (5+5),
Written Exam :	75 marks)

Reference:

1. Radhakrishnan. S., “Religion & Culture” (1968), Orient Paperbacks, New Delhi.
2. Das M.S., & Gupta. V.K., (1995), “Social Values Among Youth Adults: A Changing Scenario”, New Delhi, M.D. Publications.
3. Venkataiah. N (ed.), (1998), “Value Education”, New Delhi, A PH Publishing Corporation.
4. Sharma. O.P., (1997), “Value Education in Action”, Delhi, University Book House.
5. Chakraborti, Mohit., (1997), “Value Education: Changing Perspectives”, New Delhi, Kanisha Publishers & Distributors.

Semester:II
Part-IV

Hours: 2
Credit: 2

Environmental Studies (185K2ES)

Unit – I: Definition – Scope and importance – Need for public awareness.

Unit – II: Natural resources – Forest Resources – Water Resources – Mineral Resources – Food Resources – Energy Resources - Land Resources.

Unit – III: Ecosystem Meaning – Forest Ecosystem – Grassland Eco system – Desert eco system – Aquatic eco system – Bio geographical classification of India – Hot-Spots of biodiversity.

Unit – IV: Environmental pollution – Air pollution – Water pollution – Soil pollution – Noise pollution – Thermal pollution – Nuclear hazards – Pollution case studies.

Unit – V: Human Population and the Environment – Population Explosion – Family welfare programme - Environment and human health – Human Rights – HIV/AIDS –

Women and child welfare.

Text:

N. Arumugam – Concepts of Ecology

N. Arumugam – Environmental Studies

N. Arumugam – Survey of the Environmental

B. Chandrasekaran – Environmental Studies

V. Kumaresan – Plant Ecology and Phytogeography

Purohit – A Textbook of Environmental Science

D. Tharmaraj - Environmental Science

M.P. Mishra – Our Environmental Pollution control and future strategies

Bharathidasan University Publication – Environment Studies (Tamil & English)

Semester-IV
SBE:I

Hours: 2
Credit: 2

Life Skills (18K4SBEC1)

UNIT-I :ACCOUNTING, BANKING AND MARKETING (6 hours)

Accounting: Meaning – Process – Users – Branches. Accounts: Kinds – Rules – Final Accounts. Banking: Meaning – Deposits – Opening an account – Cheque – Demand Draft – Internet Banking. Marketing: Consumer Rights and Duties.

UNIT-II: ECONOMICS (6 hours)

National Income: Per capita Income – National Income Accounting – Methods of calculating National Income. Indian Money Market: Functions – Capital Market - Sensex. Planning: Long-term objectives – Employment Generation Programmes.

UNIT-III: VITAL STATISTICS AND COMPUTER (6 hours)

Vital Statistics: Meaning – Uses – Rate of vital events. Measurement of fertility – Crude Birth Rate – General Fertility Rate – Specific Fertility Rate – Total Fertility Rate – Gross Reproduction Rate – Net Reproduction Rate. Measurement of Mortality: General/Crude Death Rate – Age Specific Death Rate. Measures of Central Tendency: Objectives of Averaging – Types: Arithmetic Mean – Weighted Arithmetic Mean. Interest: Simple Interest–Compound Interest. Computer: Introduction – Components – Communication Systems – Internet – World Wide Web – E-mail – E-Commerce.

UNIT-IV:HOME REPAIRS AND SAFETY TIPS (6 hours)

Working of Electricity – Static Electricity – Electric Circuit – Electrical Grounding – Uses of Electricity – Commercial Electrical Building – Electrical Safety – Dangers from Electricity – Electric Fire – First Aid for Electric injury – Prevention tips. Acid in Eye – Alkali in Eye – Acid Burns – Alkali Burns – Poisoning – Inhalation of Gases – Cut by glasses – Heat Burns. LPG Safety Measures at home.

UNIT-V :HEALTH, HOUSE PLANTS AND DISASTER (6 hours)

Health Care System: Safety Education – Definition – Need – Safety at Home – Fire Safety in Living Room, Dining room, Kitchen and Bed Room. House Plants as Hygenics: Introduction – Need – House Plants, Hydroponics – Health reasons such as Air Purification. Plants: *ACALYPA HISPIDA*, *AGAVE AMERICANA*, *BOUGAINVILLE GLABRA*, *BAMBUSA AURINDINACEA*, *EUPHORBIA SPLENDENSIS* and *SANSIVIERA TRIFASCIATA*. Disaster: Flood and Deforestation – Cause Effect and Controlling Measures.

Text:

Unit I:

1. Vinayagam.N, Mani.P.L, Nagarajan.K, *Principles of Accountancy*, S.Chand & Co., New Delhi.
2. Gordon & Natarajan, *Banking Theory Law and Practice*, Himalaya Publishing House, New Delhi.

Unit II:

1. Dutt & Sundaram, *Indian Economy*, S.Chand & Company, New Delhi.
2. Dr.S.Sankaran, *Indian Economy*, Margham Publications, Chennai.

Unit III

1. Pillai.R.S.N, Bagavathi, *Statistics*, S.Chand & Company, New Delhi.
2. Vital.P.R, *Business Mathematics*, Margham Publications, Chennai.
3. Alexis Leon, Mathews Leon, *Information Technology*, Vikas Publishing House, New Delhi.

Unit IV

1. Gopalan.R, Subramanian.P.S and Rengarajan.K, *Elements of Analytical Chemistry*, Sultan Chand and Sons, New Delhi.
2. Theraja.B.L, *Basic Electronics Solid State*, S.Chand & Co., New Delhi.

Unit V

1. Periyayya, *Safety Education and First Aid*, Sri Susee Data Processing Centre, Coimbatore.
2. Day. S.C, *Indoor Gardening*, Agrobios Publications, India.
3. Savindra Singh. 2009, *Environmental Geography*, Arti Printers, Allahabad

Semester-III
NME:I

Hours: 2
Credit: 2

Introduction to IT (18K3CSEL01)

Objective: To provide fundamental knowledge in Information Technology.

UNIT I :

Introduction to Computers: - What is Computer? - What is so Special About Computers?: Speed – Accuracy – Consistency – Storage Capacity – Flexibility – History of Computers : Evolution – The First Computer – Next Generations.

UNIT II:

Basic Anatomy of Computers: The Basic Components – Functioning of the Components: Memory - RAM - ROM -Software Components - The applications software – The Systems Software – The utility software - Input/Output Devices : Input Devices – Output Devices – External Storage Devices: Examples of Storage devices – Floppy Disk – Hard Disk – Compact Disk (CD) –Digital Versatile Disc (DVD) – Types of Computers: Personal Computer – Personal Computer Types – Work Station – Mainframes – Supercomputers.

UNIT III :

Networking : Introduction – Advantages of Networks – Save money by sharing resources - Remote services : Types of Networks - Benefits. Network Roles – Network Categories – Server Type - Network Topology –Network hardware connections – TCP/ IP Port and Addresses – Network Devices – Network Addressing.

UNIT IV :

Network Cabling – Wireless Networking – Firewalls – Network Broadcasting and Multicasting : Internet Group Management Protocol -Dynamic Routing - Route Discovery Methods – SMTP - Mail Protocols.

UNIT V :

Internet Basics: Networking – Internet – Important Features –Prerequisites for Internet: Hardware - Software – Factors Affecting the Speed of Internet Connectivity: Speed - Internet Protocols : IP Address – Domain naming System(DNS) – Communication Protocols – Configuring the Modem – Configuring a TCP/ IP Connection - Configuring Dial UP Networking.

Text:

“Introduction to Information Technology”-Sanjay Saxena - Vikas Publishing House Pvt. Ltd., – Reprint 2011,2013.

Chapters : 1, 2, 3, 4, 8.

Reference :

- 1.”Fundamentals of Information Technology” – C.S.V. Muthy & others – Himalaya Publishing House – First edition 1999.**
- 2.”Information Technology and Computer Applications” – V.K.Kapoor – Sultan Chand & Sons Publishers – 2000.**
- 3.”Fundamentals of Information Technology” – Jaiswal – Galgotia publications – revised edition – 2000.**

Semester – IV
NME - II

Hours - 2
Credit - 2

Fundamentals of Web Designing (15K5CSEL02)

Objective: To provide basic knowledge in web concepts.

Unit - I :

Introduction to Internet : Computers In Business - Networking - Internet - E-Mail - Resource Sharing - Gopher - WWW : Hyper - Text, Browsers, Search Engines - Usenet - Telnet - Bulletin Board Services - Wide Area Information Service.

Unit - II :

Internet Technologies : Modem - Internet Addressing - Physical Connections - Telephone Lines: Leased Lines, Speed of Telephone Lines, Frame relay, ISDN, Internet Browsers : Internet Explorer – Window - File Menu - Edit Menu - View Menu – Options Command - Navigation Window - Favorites Menu -Tool Bar - Netscape Navigator.

Unit - III :

Introduction to HTML : Designing a Home Page - History of HTML - HTML Generations - HTML Documents - Anchor Tag - Hyperlinks - Sample HTML Documents. Head and Body Sections : Header Section - Title - Prologue - Links :Previous and Next, Banner, Base Element, Colorful Web Page, Background, Colors, Background Color, Text Color ,Link Colors - Comment Lines – Some Sample HTML Documents.

Unit - IV :

Designing the Body Section : Heading Printing - Aligning the Heading - Horizontal Rule : Size of the Horizontal Rule , Width of the Horizontal Rule, Alignment of the Horizontal Rule, Source, Paragraph: Binding Spaces - Tab Settings - Formatting Characters, Physical Styles Format ,Font Tag , Base Font , Preformatting Text , Special Characters.

Unit - V :

Ordered and Unordered Lists : Lists - Unordered Lists : Bullets in a List , Plain Attribute - Headings in a List - Ordered Lists –Type Attribute - Nested Lists-Table Handling: Tables - Tables Creation in HTML –Width of the Table and Cells.

Text :

“World Wide Web Design With HTML” - C. Xavier – Mc Graw Hill Education (India) Pvt. Ltd.,2000 -Twenty Nineth Reprint 2015

Chapters : 1 – 5, 6- 6.5, 7, 8.1-8.3.

Reference :

1. “ Web Technology”- M. Auxilia - Charulatha Publication – 2010.
2. “Web Design (Principles)” - Joel Sklar- Course Technology.-Fifth Edition-2011.
3. “Introduction To Web Technology” –Pankaj Sharma-Fifth Edition-Katsons Books-Reprint - 2013.

Semester – III
AC – I

Hours - 4
Credit – 3

Programming with C++ (15K3MACS1)

Objective: To provide knowledge in object oriented programming concept.

Unit - I:

Overview of C : Introduction - Importance of C - Basic structure of C programs –Constants Variables and Data Types : Operators and expressions: Arithmetic, Relational, Logical, Assignment, Increment, Decrement, Conditional, Bitwise, Special Operators - Arithmetic Expression - Evaluation of Expressions - Type conversion - Operator precedence and Associativity.

Unit - II:

Beginning with C++ - Applications of C++ - More C++ Statements - Structure of C++ Program - Tokens, Expressions and Control Structures: Tokens - Keywords - Identifiers and Constants - Data Types - Declaration and Initialization of variables - Operators in C++ - Expressions and their types - Operator precedence - Control structures.

Unit - III :

Functions in C++: Introduction - Main Function – Function Prototyping –Call by Reference – Return by Reference - Inline Functions – Default Arguments – const Arguments - Function Overloading - Friend and Virtual Functions - Math Library Functions.

Unit - IV :

Classes and Objects : Introduction - Specifying a class - Defining Member Functions - Nesting of Member Functions - Private Member Functions- Arrays within a class - Memory Allocation for objects - Arrays of objects - Objects as Function Arguments - Friendly Functions – Returning Objects- Local Classes .

Unit - V:

Constructors and Destructors: Constructors – Parameterized Constructors – Multiple Constructors – Dynamic Initialization of Objects – Copy Constructors – Destructors - Exception Handling: Introduction – Basics of Exception Handling - Exception Handling Mechanism – Throwing Mechanism - Catching mechanism - Rethrowing an Exception - Specifying Exceptions.

Text: Unit - I:

1.“Programming in ANSI C” - E. Balagursamy - Mc Graw Hill Education(India) Pvt. Ltd., – Sixth Edition – Fifth Reprint 2013.

Chapters: 1 – 3.

Unit - II to V:

2.“Object Oriented Programming with C++” - E. Balagurusamy – Tata McGraw Hill–Seventh Edition .

Chapters: 2 - 4, 5.1 - 5.10, 5.13 - 5.17, 5.19, 6.1 - 6.7, 6.11, 13

Reference:

1.“Object Oriented Programming with C++” - Robert Lafore - Galgotia Publication Pvt. Ltd - 1994 – Second Edition.

2.“Teach Yourself C++” – Yashvanth Khanithkar - TMH Education 1998.

3.“Object Oriented Programming with C++” – Saran - PHI Pvt., Ltd - 2004.

**Semester – III & IV (Examination in Semester – IV)
AC – II**

**Hours - (3) +3
Credit – 3**

C++ and Java Programming Lab (15K4MACS2P)

Semester – III:

C++ Programs:

1. Write a C++ program using class.
2. Write a C++ program to handle function overloading.
3. Write a C++ program to Generate Fibonacci Series.
4. Write a C++ program to arrange the given numbers in the Ascending order.
5. Write a C++ program using class with constructor

Semester – IV:

JAVA Programs :

1. Develop a Java Program using Classes and Objects.
2. Develop a Java program to print multiplication table for n number.
3. Develop a Java program using Single Inheritance.
4. Develop a Java program for String Manipulation
5. Develop a Java program for Exception Handling.

Note: Questions should be framed for Practical Examination with internal choice (ie. Either C++ or Java)

Semester – IV
AC – III

Hours - 3
Credit - 3

Programming with Java (15K4MACS3)

Objective: To provide knowledge in object oriented programming concept.

Unit - I :

Fundamentals of OOP : Object Oriented Paradigm - Basic Concepts - Benefits & Applications - Java Evolution: History - Features -Overview of Java Language: Program Structure - Tokens & Statements - Implementing Program – Java Virtual Machine - command line arguments.

Unit - II :

Constants, Variables and Data types : Constants, Variables, Data types - Declaration & Scope of Variables - Symbolic Constants - Type Casting - Operators and Expressions: Operators - Arithmetic Expression - Evaluation of Expression - Type Conversions - Operator Precedence of Associativity.

Unit - III:

Decision Making and Branching: Simple if, if...else, nesting of if...else, elseif ladder, switch, Ternary Operator - Decision Making and Looping : while..Do, do...while, for, Jumps in Loops- Labeled loops - Sample Programs.

Unit - IV:

Classes, Objects and Methods: Defining a Class - Declaring variables and Methods - Creating Objects - Accessing Class members - Constructors - Method Overloading - Nesting of Methods - Inheritance - Overriding – Final Variables, Methods and Classes- Finalizer Methods- Abstract Methods and Classes- Visibility Control .

Unit - V:

Arrays - Strings – Vectors - Wrapper Classes - Managing Errors & Exceptions: Introduction - Types of errors-Exception –Syntax of Exception Handling Code-Multiple Catch Statements – Using Finally Statement- Throwing Our Own Exceptions - Using Exceptions for Debugging.

Text:

“Programming with Java - A Primer ” - E. Balagurusamy – Mc Graw Hill Education (India) Pvt. Ltd., Fifth Edition - Reprint 2015.

Chapters: 1, 2.1 - 2.2, 3 to 9, 13

Reference:

- 1.“Java 2 Complete Reference” - Patrick Naughton - McGraw Hill Publication - 1997.**
- 2.“The Complete Reference Java 2” - Herbert Schildt - McGraw Hill - 4th edition-2000.**
- 3.“Internet and Java Programming “ – Vipin Kumar , Amit Kumar, Madhugaur – 2ED –AB Publication - 2010**

Semester – III
CCSS 1

Hours - 6
Credit - 5

Quantitative Ability (18K3SSCS1)

Objective: To improve capability in Aptitude tests.

Unit I:

Numbers: Decimal Fractions – Irrational Numbers – Surds and Indices – Square Root and Cube Roots – Average – Problems on Numbers – Problems on Ages – H.C.F and L.C.M of Numbers.

Unit II:

Ratio and Proportion: Profit – Loss – Discount – Percentage – Clock – Calendar – Simple Interest and Compound Interest – Mixture.

Unit III:

Partnership – Chain Rule – Time and Work – Pipe and Cisterns – Time and Distance – problems on Train – Problems on boats and stream.

Unit IV:

Algebra – Linear Equation – Quadratic Equations – Logarithms – Area – Volume and Surface Area – Set Relations – Polynomial.

Unit V:

Permutation and combinations – Probability – Odd man out and series – Data interpretation – Stocks and Shares.

Text:

“TANCET - Tamilnadu Common Entrance Test” – Sakthi’s Superior Guide – Sakthi Publishing House.

Reference:

“Quantitative Aptitude” R.S.Aggarwal – S.Chand and Company Ltd., - Reprint 2008
“TNPSC Group – I Aptitude Test” V.V.K. Subburaj – Sura Books Pvt., Ltd – Edition- 2013.
www.careerbless.com
www.itacumens.com
www.elinx.com

Semester – IV
CCSS 2

Hours - 6
Credit - 5

Reasoning Ability (18K4SSCS2)

Objective: To improve capability in Aptitude tests.

Unit I:

General mental ability: Verbal Analogy – Verbal Classification: Letter classification – Number classification – Word/Item classification – Series completion – Coding and Decoding – Blood Relations.

Unit II:

Direction sense test – Logical Venn diagrams - Alphabet test – Number - Ranking and Time sequence Test – Mathematical Operations – Logical sequence of Words – Asserts and Reason – Verification of Truth of the Statement.

Unit III:

Logical Reasoning: Logic – Statement and Arguments – Statement and Assumption – Statement and Courses of action - Statement and Conclusions.

Unit IV:

Multi-dimensional logical diagrams: Type 1 – Type 2 – Type 3 – Type 4 - Miscellaneous logical puzzles.

Unit V:

Critical Reasoning: Logical diagrams – Deriving conclusion from passage – Problem solving – Synonyms and Antonyms – Miscellaneous Reasoning.

Text:

“TANCET - Tamilnadu Common Entrance Test” – Sakthi’s Superior Guide – Sakthi Publishing House.

Reference:

- 1.“A Modern Approach to Verbal and Non-Verbal Reasoning” – R.S.Aggarwal - S.Chand and Company Ltd., - Reprint 2008**
- 2.“ MCA Entrance Examination” – Victory Publishers**
- 3.www.careerbless.com**
- 4.www.itacumens.com**
- 5.www.elinx.com**

Semester – I
- 6
CC – I
- 5

Hours

Credit

Advanced Java (18KP1CS01)

Objective: To provide complete knowledge in advanced features of Java.

Unit - I :

Introduction To Java : Features of Java - Java System Architecture- Tools Used with Java. Object Oriented Programming: Classes and Objects -Inheritance - Method Overloading. Java Classes: Access Modifiers - Interfaces - Operators - Vectors.

Unit – II:

Java Applets: Life Cycle of a Java Applet - Drawing Images on the Applet. Java AWT Working with User Interfaces: Window Fundamentals – Basic UI Components - Layout of an Interface.

Unit - III:

Java Exception Handling: Catching Java Exceptions - Creating User-Defined Exceptions - Java Multithreading: Thread Control Methods – Thread Life Cycle – Creating a Thread – Thread Synchronization – Writing Applets with Thread - Java Database Connectivity: Java.SQL Package - The JDBC Exception Classes - Data Manipulation.

Unit – IV:

Java Servlets: Lifecycle of a Java Servlet - Creating And Running Servlets. Java Remote Method Invocation(RMI) : RMI Architecture - Steps Involved In Running The RMI Application.

Unit - V:

Java Swing: JFC - Swing Features - Swing Components - Java Swing Packages - Working With Swing - Swing Basic Containers - Buttons - Labels - Text Fields - Text Areas - Check Boxes - Radio Buttons - Japplet - Combo Box With Japplet. - Networking Basics: TCP / IP Protocol – UDP.

Text:

“Web Enabled Commercial Application Development using Java 2.0”- Ivan Bayross - BPB publications – First Indian Edition 2001.

Chapters: 1 - 3, 5, 6, 8, 10 – 15.

Reference:

1. “The complete reference - Java” - Patrick Naughton & Herbert Schildt – 3rd Edition, Tata McGraw Hill Publication, 1999.
2. “Java and Object Oriented Programming Paradigm – Preliminary Edition” – Debaissh Jana, Second Printing 2005, PHI Learning Pvt. Ltd.
3. “Object Oriented Programming in Java – A graphical approach” – Kathryn E. Sanders, Andries Van Dam, Addison Wesley Longman Publication, 2006.

Semester – I
CC – II

Hours - 6
Credit -

5Open Source Technology (18KP1CS02)

Objective: To learn the basics of Linux and Apache Web Server, PHP scripting language and deploying application on Apache Web Server, MySql databases

UNIT I :

The Web Explained: How Its Works – Security – Linux: The Choice of GNU Generation: Introduction – Linux Distributions – Accounts –Security-Basic Unix: Shell- Owner, Groups ,Permissions, Ownership-Processes-PATH and Environment- Commands-Basic File system Essentials – Useful Programs.

UNIT II :

Apache Web Server : Introduction- Starting, Stopping and Restarting Apache-Configuration – Securing Apache – Create the Web Site –Apache Log Files.

UNIT III :

Perl: Introduction – Perl Documentation - Perl Syntax Rules: A first Perl programs – Example- Declaring Variables with use strict – Variables – Operators – Flow-Control Constructs – Regular Expressions-Functions - File I/O - Additional Perl Constructs- Making Operating System calls - A Quick Introduction to OOP.

UNIT IV :

MY SQL: Introduction - The SHOW DATABASES and CREATE DATABASE commands – The USE command – CREATE TABLE and SHOW TABLES command – DESCRIBE, INSERT, SELECT, UPDATE, AND DELETE commands –Database Independent Interface- Table Joins– Loading and Dumping a Database.

UNIT V :

PHP: Introduction: Embedding PHP into HTML- Configuration – Language syntax : Variables, Data Types - Web Variables- Operators - Flow-Control Constructs - Writing PHP functions – Built-in PHP Functions: Important Functions – Array functions- String Functions – Other Functions – PHP and MySQL: MySQLFunctions

Text Book

“Open Source Web Development with LAMP using Linux, Apache, MySQL,Perl and PHP”- James Lee and Brent Ware, Pearson Education and Dorling Kindersley (India) Pvt. Ltd., Fourth Impression, 2009.

Chapters : 1-5, 12.

Reference:

- 1. “Open source technology”, Kailash Vadera , Bhavyesh Gandhi, Laxmi Publications, Jan -2009**
- 2. J. Hajiram Beevi, Khairunnisa, S. Munavara Banu, Primer on PHP, Published by Yazhini Publications,2016**

Semester – I
CC – III

Hours - 6
Credit - 4

Operations Research (18KP1CS03)

Objective: To impart knowledge in fundamental mathematical concepts.

Unit - I:

Introduction- Origin and Development of O.R – Nature and Characteristic Features of O.R – Models in O.R – General Solution Methods for O.R Models – Methodology of O.R – Scientific Method in O.R – Operation Research and Decision-making – Applications of O.R- Uses and Limitations of O.R – Linear Programming Problem: Introduction – Mathematical Formulation of the Problem - Graphical Solution Method – General Linear Programming problem – Canonical and Standard Forms of L.P.P.

Unit – II:

The Simplex Method – Introduction – The Computational Procedure – Artificial Variable Techniques – Problem of Degeneracy – Applications of Simplex Method.

Unit - III:

The Transportation Problem – Introduction – Mathematical formulation of the Problem – Triangular Basis – Loops in a Transportation Table – Finding Initial Basic Feasible Solution – Moving Towards Optimality – Unbalanced Transportation Problems – Transshipment Problem.

Unit IV:

The Assignment, Routing, Problems- Introduction – Mathematical formulation of an A.P – Assignment Algorithm – A Typical Assignment Problem – Routing Problem – Games and Strategies: Introduction – Two-Person Zero-Sum Games – The Maximin-Minimax Principle – Games without Saddle points - Mixed Strategies – Solution of 2×2 Rectangular Games.

Unit – V:

Network Scheduling by PERT/CPM – Introduction – Network and Basic Components – Rules of Network Construction – Time calculations in networks – Critical Path Method(CPM) – PERT – PERT Calculations.

Text: Unit: I – V : “Operations Research” – Kanti Swarup, P.K.Gupta, Man Mohan – Sultan Chand & Sons, New Delhi – Eighth Edition – Reprint 1999.

Chapters: 1,2.1-2.3, 2.5,2.6, 3.1, 3.3-3.7, 6.1-6.6, 6.9, 6.10, 7, 9.1-9.5, 21.1 – 21.7

Reference:

- 1.“ Problems in Operation Research “ – P.K. Gupta, Man Mohan – Sultan Chand & Sons – Twelfth Edition – 2009.**
- 2.“ Operation Research Theory and Applications “ – Sharma – Macmillan Publishers India Ltd – Fourth Edition -2009**
- 3.“ A Text book of Graph Theory” – Balakrishnan, Ranganathan – Springer – Second Reprint.**

Programming and Modeling Lab (18KP1CS04P)

Sample Programs which include the following concepts:

1. **Create a program using Classes and objects.**
2. **Create a program for Constructor and destructor.**
3. **Create a program on interfaces.**
4. **Create a program on packages.**
5. **Create a program using function overloading.**
6. **Create a program using inheritance.**
7. **Create a program using IO streams.**
8. **Create a program using files.**
9. **Create a program using Exception Handling mechanism.**
10. **Create a program using AWT.**
11. **Create a program on Swing.**
12. **Create a program using JDBC.**

Semester – II
CC – V

Hours - 6
Credit - 5

Compiler Design (18KP2CS05)

Objective: To provide basic concepts on the construction of debugging software tools.

Unit –I:

Introduction To Compilers : Compilers and Translators – Structure of Compiler – Lexical & Syntax Analysis - Bookkeeping - Compiler Writing Tools – Finite Automata & Lexical Analysis: Role of Lexical Analyzer – Regular Expressions – Finite Automata – Implementation of Lexical Analyzer.

Unit – II:

Syntactic Specification of Programming Languages: Context Free Grammars – Derivation And Parse Trees. Basic Parsing Techniques: Parsers – Shift-Reduce Parsing – Operator - Precedence Parsing – Top Down Parsing – Predictive Parsers.

Unit – III:

Automatic Construction of Efficient Parsers: – LR Parsers – Constructing SLR Parsing Tables – Constructing Canonical LR Parsing Table – Constructing LALR Parsing Tables – Using Ambiguous Grammars.

Unit – IV:

Syntax-Directed Translation: Schemes – Implementation of Syntax Directed Translators : Intermediate Code – Postfix Notation – Parse Trees And Syntax Trees – Three Address Code, Quadruples And Triples – Translation of Assignment Statements – Boolean Expressions – Postfix Translations.

Unit – V:

Symbol Tables: The Contents of a Symbol Table – Data Structures For Symbol Tables – Representing Scope Information – Error Detection and Recovery: Errors – Lexical-Phase Errors – Syntactic-Phase Errors – Semantic Errors - Code Optimization: Principal Sources of Optimization – Loop Optimization - DAG Representation of Basic Blocks.

TEXT: “Principles of Compiler Design”, Alfred V. Aho and Jeffery D. Ullman – Narosa Publishing House – TwentyFifth Reprint 2001.

Chapters: 1, 3.1, 3.3 – 3.5, 3.8, 4.1, 4.2, 5, 6.1, 6.3 – 6.6, 7, 9, 11, 12.

Reference:

1. “Principles of Compiler Design”, D. Thenmozhi, Bharathi Ashok – Sree Magnus Publicaitons – Revised Edition – 2012.
2. “Compiler Design Principles, Techniques and Tools”, Alfred V.Aho, Monica S.Lam – Pearson – Second Edition.
3. “Principles of Compiler Design”, V.Raghavan – Tata MCGraw Hill Education – 2009.

Semester – II
CC – VI

Hours - 6
Credit - 5

.Net Framework (18KP2CS06)

Objective: To impart knowledge in .NET programming oriented software design.

Unit -I:

Preface: Introduction to Programming: Converting Source Code to Machine Language Code – Explaining Program Development Cycle. Visual Basic : Getting Started with Visual Basic 2012 – New Features - keywords – Operator Precedence – Data types in Visual Basic 2012 – Windows Forms: Introducing the Form Class – Performing Common Form Operations – Creating Input boxes, Dialog boxes.

Unit - II:

Windows Forms Controls – I: Using the Label, TextBox, Button, RadioButton, CheckBox, ComboBox, ListBox, GroupBox. Windows Forms Controls – II: Using the ToolStrip, MenuStrip, StatusStrip controls – Working with Dialog Boxes. Windows Presentation Foundation: Exploring the Improvements in WPF 4.5 - Describing types of WPF applications – Exploring WPF 4.5 Designer –Working with WPF Controls – Working with Resources and Styles.

Unit - III:

Windows Workflow Foundation: Exploring the Improvements in WF – Explaining WF Architecture – Developing a Sample Workflow Application. LINQ in Visual Basic 2012: Creating a simple LINQ Query – Working with Standard Query Operators – Implementing LINQ to ADO.NET – Using Anonymous Types in Queries.

Unit - IV: C#: Getting Started with C# 2012: Exploring New Features – Introducing Keywords and Identifiers – Describing Operators and Operator – Describing Variables and Constants – Exploring Control Flow Statements. Object Oriented Programming: Exploring Basic Principles of OOP – Working with Classes and Objects – Implementing Inheritance, Using Structures. Errors and Exception Handling: Exploring Types of Errors – Handling Exceptions.

Unit - V:

ASP.NET: Navigations Controls: Working with the SiteMapPath Control – Working with the Menu Control – TreeView Control. Validations Controls: BaseValidator Class, RequiredFieldValidator, RangeValidator, RegularExpresionValidator, CompareValidator, CustomValidator, ValidationSummary Control. Login Controls: Creating an User Account – Login, LoginName, LoginView, LoginStatus, PasswordRecovery Control.

Text: “.NET 4.5 Progamming Course Kit” - Vikas Gupta, DreamTech Press – Edition 2014.

Chapters: Introduction, VB.Net:- Chapters: 1-7, C#:- 1,2,7, ASP.NET:- 3-5.

Reference:

- 1. “.NET Programming- Black Book” – Kogent Solutions Inc., New Edition, DreamTech Press 2007.**
- 2. “Introducing Microsoft .NET” – David S. Platt, Microsoft Press 2003.**
- 3. “Introducing .NET 4.5” – Alex Mackey, Willam Stewart Tulloch & Mahesh Krishnan, APress.**

Semester – II
CC - VII

Hours - 6
Credit - 5

Internet of Things (18KP2CS07)

Objective: To understand the underlying concepts in Internet of Things(IoT).

Unit I :

Introduction to Internet of Things: Introduction – Physical Design of IoT- Logical Design of IoT – IoT Enabling Technologies – IoT Levels & Development Templates.

Unit II :

Domain Specific IoTs: Introduction – Home Automation – Cities – Environment – Energy - Retail – Logistics – Agriculture – Industry – Health & Lifestyle . IoT and M2M : Introduction – M2M – Difference between IoT and M2M – SDN and NFV for IoT.

Unit III:

Network Operator Requirements. Developing Internet of Things : IoT Platforms Design Methodology: Introduction – IoT Design Methodology Case - Study on IoT System for Weather Monitoring – Motivation for Using Python.

Unit IV:

IoT Systems – Logical Design using Python : Introduction – Installing Python – Python Data Types & Data Structures – Control Flow – Functions – Modules – Packages – File Handling – Date / Time Operations - Classes.

Unit V:

IoT Physical Server & Cloud Offerings: Introduction to Cloud Storage Models & Communication APIs – WAMP-AutoBahn for IoT – Xively Cloud for IoT – Python Web Application Framework – Django. Case Studies Illustrating IoT Design: Introduction – Home Automation – Cities.

Text:

“Internet of Things- A Hands-on Approach” - Arshdeep Bahga , Vijay Madiseti - Universities Press(India) Private Limited - Reprint 2018.

Chapters:1-3, 5, 6.1-6.10, 8.1 – 8.4, 9.1 – 9.3.

Reference:

- 1.”Rethinking the Internet of Things – A scalable approach to connecting everthing” - Francis DaCosta – Apress open Publication - 2013**
- 2.”Learning Internet of Things “ – PACKT Publishing – Birmingham – Mumbai – 2015.**
- 3.Getting started with Internet of Things”- Cuno Pfister –O’Rielly Publication .**

.NET Programming Lab (18KP2CS08P)

VB.NET

1. Sort the numbers in ascending and descending order.
2. Create a MDI Application.
3. Create menu and submenus.
4. Add the items into the columns of the ListView Control.
5. Create a rectangle with color using Gradient tool.

ASP.NET

1. Create a program using List and ComboBox and DropDown List.
2. Create a web page using navigation controls and check for password.
3. Create a program using Custom, Range and Compare Validators.
4. Create a program using Ad-Rotator Control.
5. Create Student Database program using ADO.NET.

C#

1. Create a program to calculate the employee salary using array.
2. Create a program for operator overloading.
3. Create a program for exception handling.
4. Create a calculator using function.
5. Create a program count letters in a file.

Semester – III
CC – IX

Hours - 6
Credit - 5

Cloud Computing (18KP3CS09)

Objective: To acquire knowledge in cloud based computing environment.

Unit - I:

Understanding Cloud Computing : Introduction - History of Cloud Computing- Cloud Computing Works, Matters – Computing in the Cloud: The Pros And Cons of Cloud Computing – Benefits of Cloud Computing - Collaborators – Road Warriors – Cost-Conscious Users – Cost — Conscious IT Departments.

Unit – II:

Developing Cloud Services: – The Pros And Cons of Cloud Service Development – Types of Cloud Service Development – Discovering Cloud Services Development Services and Tools - Cloud Computing For Everyone of the Family: – Centralizing Email Communications – Collaborating on Schedules, Grocery Lists, To-Do Lists, Household Budgets, Contact Lists – School Projects – Sharing Family Photos.

Unit – III:

Cloud Computing for the Community: – Collaborating on Schedules – Collaborating on Group Projects and Events – Cloud Computing for the Corporation: – Managing Schedules, Contact Lists, Projects – Collaborating On Reports, Marketing Materials, Expense Reports, Budgets, Financial Statements, Presentations - Presenting on the Road- Accessing Documents on the Road.

Unit – IV:

Collaborating on Calendars, Schedules and Task Management:- Exploring Online Calendar Applications – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management- Collaborating on Event Management: Understanding Event Management Applications – Exploring Event Management Applications.

Unit – V:

Collaborating on Contact Management: Understanding Contact Management and CRM – Exploring Contact Management and CRM Applications – Collaborating on Project Management: Exploring Project Management Applications.

Text:

“ Cloud Computing - Web based Applications that change the way you work and collaborate online” – Michael Miller- Pearson Education, First Impression, 2009.

Chapters : 1-10

Reference :

- 1. “Cloud Computing A Practical Approach” – Anthony T.Velte, Toby J.Velte, Robert Elsenpeter – Tata McGraw Hill – Fourth Reprint 2010.**
- 2. “Cloud Computing Principles, Systems, and Applications” – Nick Antonopoulos, Lee Gillam – Springer-2010**
- 3. “Cloud Computing- SaaS,PaaS,IaaS, Virtualization, Business Models, Mobile, Security, and More” – Kris Jamsa — Jones and Barlett India Pvt. Ltd - First Indian Edition 2014.**

Soft Computing (18KP3CS10)

Objective: To apply Soft computing based techniques in research.

Unit I:

Artificial Intelligence – The AI problems – The Underlying Assumption – AI Techniques – The Level of Models - Criteria of Success - Heuristic Search Techniques: Generate-and-test – Hill climbing – Best-first search – Problem Reduction – Constraint satisfaction - Means-ends Analysis.

Unit – II :

Introduction to Artificial Intelligence(AI) Systems – Neural Networks(NN) – Fuzzy Logic(FL)– Genetic Algorithms(GA) – Fundamentals of NN: Basic Concepts – Human Brain – Model of an Artificial Neuron – NN Architectures – Characteristics of NN – Learning Methods – Taxonomy of NN Architectures – History of NN Research – Early NN Architectures – Application Domains.

Unit – III :

Backpropagation Networks(BPN): Architecture of BPN – Backpropagation Learning – Applications – Effect of Tuning Parameters in BPN – Selection of Various Parameters in BPN – Variations of Standard Backpropagation Algorithm – Research Directions.

Unit – IV :

Fuzzy Logic(FL): Fuzzy Set Theory – Crisp Sets – Fuzzy Sets – Crisp Relations – Fuzzy Relations – Fuzzy Systems: Crisp Logic – Predicate Logic – Fuzzy Logic – Fuzzy Rule based Systems – Defuzzification Methods – Applications.

Unit – V :

Genetic Algorithms(GA): Fundamentals – Basic Concepts – Creation of Offsprings – Working Principle – Encoding – Fitness Function – Reproduction – Genetic Modelling: Inheritance Operators – Cross Over – Inversion and Deletion – Mutation Operator – Bit-wise Operators – Generational Cycle – Convergence of GA – Applications.

Text:

1. “Artificial Intelligence” – Elaine Rich, Kevin Knight – McGraw Hill Education Private Ltd – Third Edition.

Chapters : 1,3.

2. “Neural Networks, Fuzzy Logic and Genetic Algorithms Synthesis and Applications” – S.Rajasekaran, G.A.Vijayalakshmi Pai – PHI Learning Pvt. Ltd.. Fourteenth Printing 2010.

Chapters: 1, 2, 3.1 – 3.2, 3.4 – 3.8, 6, 7, 8, 9.1 – 9.9

Reference:

1. “Soft Computing and Intelligent Systems - Theory and Application” – Naresh K. Sinha and Madan M. Gupta – Academic Press – 2000.
2. "Soft Computing and Intelligent Systems Design - Theory, Tools and Applications" – Fakhreddine karray and Clarence de Silva – Addison Wesley – 2004.
3. "Soft Computing : Integrating Evolutionary, Neural, and Fuzzy Systems" – Tettamanzi, Andrea, Tomassini, and Marco. – Springer – 2001.

Semester – III

Hours - 6

CC – XI

Credit - 4

RDMBS and PL/SQL Lab (18KP3CS11P)

- 1. Create, Alter, Drop and Truncate the Table.**
- 2. Insert, Update and Delete the content of the table.**
- 3. Sort and Filter data from the table**
- 4. Use Nested Queries.**
- 5. Perform String and Numeric Function.**
- 6. Perform Aggregate functions.**

PL/SQL

- 1. Create and Execute a Simple Procedure**
- 2. Create and Execute a Simple Function.**
- 3. Fetch Data Using Cursor.**
- 4. Create triggers to solve challenges.**
- 5. Create a Program for Package.**

Embedded System Design (18KP4CS12)

Objective: To apply hardware skills in embedded system design.

Unit – I :

Introduction : Embedded Systems Overview – Design Challenge – Common Design Metrics – Processor Technology – IC Technology – Design Technology – Design Productivity Gap – Custom Single-Purpose Processors(SPP) Hardware: Combinational Logic – Sequential Logic – Custom SPP Design – RT-Level Custom SPP Design – Optimizing Custom SPP.

Unit – II :

General-Purpose Processors(GPP) Software: Basic Architecture – Operation – Programmer’s View – Development Environment – Application-Specific Instruction-Set Processors(ASIP) – Selecting a Microprocessor – GPP Design. Memory: Memory Write Ability and Storage Performance – Common Memory Types – Memory Hierarchy and Cache – Advanced RAM.

Unit – III :

Interfacing: Introduction – Communication Basics – Microprocessor Interfacing: I/O Addressing – Interrupts – Direct Memory Access – Arbitration – Multilevel Bus Architecture – Advanced Communication Principles – Serial Protocols – Parallel Protocols – Wireless Protocols.

Unit – IV :

State Machine and Concurrent Process Models: Introduction – FSM – FSMD – HCFSM and Statecharts Language – Program-State Machine Model – Concurrent Process Model – Concurrent Processes – Communication among Processes – Synchronization among Processes – Dataflow Model – Real-Time Systems.

Unit – V :

IC Technology: Introduction – Full-Custom(VLSI) IC Technology – Semi-Custom(ASIC) IC Technology – Programmable Logic Device(PLD) Technology. Design Technology: Introduction – Automation: Synthesis – Verification: Hardware/Software Co-Simulation – Reuse: Intellectual Property(IP) Cores – Design Process Models.

Text : “Embedded System Design : A Unified Hardware / Software Introduction ” – Frank Vahid, Tony Givargis – Wiley India (P) Ltd., Reprint 2012.

Chapters : 1 – 3, 5 – 6, 8, 10 ,11.

Reference :

1. “Embedded System Design” – Peter Marwedel – Springer – 2010.
2. “Programming Embedded Systems: with C and GNU Development Tools” – Michael Barr – O’Reily Media – 2006, Edition 2.
3. “Designing Embedded Hardware” – John Catsoulis – O’Reily Media – 2005 Edition 2.

Semester – IV
CC – XIII

Hours - 6
Credit - 5

Big Data (18KP4CS13)

Objective: To improve research skills in Data-Centric fields.

Unit – I :

Introduction: Data Mining(DM) – Relational Databases – Data Warehouses – Transactional Databases – Advanced Data and Information Systems. DM Functionalities: Concept/Class Description – Mining Frequent Patterns, Associations and Correlations – Classification and Prediction – Cluster Analysis – Outlier Analysis – Evolution Analysis: Pattern Interestingness – Classification of DM Systems – DM Task Primitives – Integration of DM System – Major Issues in Data Mining.

Unit – II :

Introduction to Big Data – Big Data Characteristics – Types of Big Data – Traditional vs Big data Approach-Case study – Hadoop: Hadoop Ecosystem- Physical Architecture – Hadoop Limitations.

Unit – III:

NoSQL – RDBMS vs NoSQL – CAP Theorem – NoSQL data architecture patterns – Using NoSQL to manage big data – Distributed file systems – MapReduce – Algorithms using MapReduce.

Unit IV:

Finding similar Items – Distance Measures Mining Data Streams – The Stream Data Model – Filtering streams – Counting distinct elements in a stream – Counting ones in a window – Link Analysis – PageRank.

Unit V:

**Frequent Itemsets- The Market Basket model –Handling larger datasets in main memory – Counting Frequent item in a stream .
Clustering – CURE Algorithm – Stream-computing – A Stream-Clustering Algorithm – Initializing and merging Buckets.**

Text :

1. “Data Mining Concepts and Techniques” – Jiawei Han, Micheline Kamber – Morgan Kaufmann Publishers – Indian Reprint 2011.
Chapters : 1
2. “ Big Data Analytics” – Anuradha Bhatia – MUCBGS – 2015-16.
Chapters : 1- 9.

Reference :

1. “Advances in Knowledge Discovery and Data Mining” – Usama M.Fayyad, Gregory Piatetsky, Shapiro, et.al – The MIT Press – 1996.
2. “ Big Data” – Viktor Mayer – Schanberger and Kenneth Cukier – Hodder and Stoughton – May -2014.
3. “ Big Data Fundamentals” – Thomas Erl –Wajid Khattak – Paul Buber – Pearson Education – 2016.

Semester – IV
CC – XIV

Hours - 6
Credit - 4

Data Mining Lab (18KP4CS14P)

Sample programs in data mining using WEKA Tool:

1. **Classification**
2. **Clustering**
3. **Association**
4. **Comparing Algorithms**

Project (18KP4CS15PW)

Guidelines:

1. **The students have to do the project work individually in the organization.**
2. **Any applications either system oriented or application oriented may be selected.**
3. **One internal examiner and one External Examiner shall evaluate project work.**
4. **During the evaluation there should be online demonstration.**
5. **The final copy of Project Report should be submitted to the Department.**

Scheme of valuation

- | | |
|---|------------------|
| 1. Selection of Application & Design | -20 Marks |
| 2. Preparation of Source code | -20 Marks |
| 3. Demonstration /Execution | -20 Marks |
| 4. Documentation | -20 Marks |
| 5. Viva- Voce | -20 Marks |

Semester – I
MBE – I

Hours - 6
Credit - 4

Network and Cyber Security (18KP1CSELCS1:A)

Objective: To provide application level knowledge in security concepts.

Unit - I :

Introduction: The OSI Security Architecture – Security Attacks – Security Services – Security Mechanisms -A Model for Network Security. Classical Encryption Techniques: Symmetric Cipher Model – Steganography. Block Ciphers and the Data Encryption Standard: The Data Encryption Standard - Finite Fields: The Euclidean Algorithm.

Unit - II :

Introduction to Number Theory : Prime Numbers - Fermat’s and Euler’s Theorems. Public Key Cryptography and RSA: Principles of Public-Key Cryptosystems - The RSA Algorithm. Key Management; Others Public-Key Cryptosystems: Key Management -Diffie-Hellman key exchange.

Unit - III :

Message Authentication and Hash Functions: Authentication Requirements - Authentication functions - Message Authentication Codes - Hash functions. Digital Signatures and Authentication Protocols : Digital signatures .

Unit – IV:

IP Security: IP Security Overview –IP security Architecture: Security Associations –SA Parameters – SA Selectors – Transport and Tunnel Modes . Authentication Header-Anti-Replay service. Intruders: Intrusion Detection – Honeypots - Password management – Password Protection - Malicious Software - Viruses and related threats.

Unit - V : -

Cyber Security: Cyber Crime: Introduction – Various Cyber Crimes – National Cyber Security Policy (NCSP): Introduction – Analysis – Possible Impact and oppourtunities – Indian Cyber Space – Cyber Security Initiatives – Recommendations – Trends and Developments – IT Act: Introduction – IT Act Amendment 2008.

Text : Unit I-IV: “Cryptography and Network Security” Principles and Practices - William Stallings - Pearson Education – Fourth Edition- First Impression, 2006.Chapters : 1, 2.1, 2.5, 3.2, 4.3, 8.1 - 8.2, 9, 10.1 - 10.2, 11.1-11.4 , 13.1 , 16.1 - 16.3, 18, 19.1. (Algorithms only. Problems should not be given from these topics) Unit V: “Cyber Security” – Course Material Compiled by Dr. P.Cynthia Selvi, Head & Associate Professor, Department of Computer Science, Kunthavai Naacchiyar Government Arts College for Women (Autonomous), Thanjavur.

Reference :

- 1. “Introduction to Cryptography and Network Security “ – Behrouz A.Forouzan – McGraw Hill Higher Education – Special Indian Edition – 2008.**
- 2.“Cryptography and Network Security” – Atul Kahate - Tata McGraw Hill – 2008.**
- 3.“Cryptography: Origin to Recent Advancement” – Lambert Academic Publishing – 2011.**

Semester – I
MBE – I

Hours - 6
Credit - 4

Distributed Computing (18KP1CSELCS1:B)

Objective: To provide application level knowledge in security concepts.

Unit I:

Introduction: Definition – Goals – Types of Distributed Systems. Architecture: Architectural Styles – System Architectures.

Unit II:

Processes: Threads – Virtualization – Clients – Servers – Code Migration. Communication: Fundamentals – Remote Procedure Calls – Multicast Communication.

Unit III:

Naming: Names, Identifies and Addresses – Flat Naming. Synchronization: Clock Synchronization – Logical clocks – Mutual Exclusion – Global Positioning of nodes.

Unit IV:

Consistency and Replication: Introduction – Data Centric Consistency Models – Client-Centric Consistency Model – Replica Management.

Unit V:

Fault Tolerance: Introduction – Process Resilience – Reliable Client-Server Communication. Distributed Web-based Systems: Architecture – Processes – Communication.

Text:

“Distributed Systems – Principles and Paradigms” – Andrew S. Tanenbaum & Maarten Van Steen – PHI – Second Edition – Third Impression, 2009.

Chapters: 1, 2.1, 2.2, 3, 4.1, 4.2, 4.5, 5.1, 5.2, 6.1 – 6.4, 7.1 – 7.4, 8.1 – 8.3, 12.1 – 12.3.

Reference:

1. “Distributed System Concepts and Design” – Pradeep K. Sinha – PHI Pvt. Ltd., 1998.
2. “Distributed System Concepts and Design” – Coulouris G. Dollimore. J – Pearson Education Asia – Third Edition – 2002.

Semester – II
MBE-II

Hours - 6
Credit - 4

Grid Computing (18KP2CSELCS2:A)

Objective: To acquire knowledge about Grid Computing

Unit –I:

Introduction : Grid Activities:Data – Computation,Computational,and Data Grids – Current Grid Activities – Overview of Grid Business Areas: Life Sciences,Financial Analysis and Services – Research Collaboration – Engineering and Design – Collaborative Games – Government –Grid Applications: Schedulers –Resource Brokers – Load Balancing –Grid Portals –Integrated Solutions –Grid infrastructure.

Unit –II:

Grid Computing Organizations and their Roles : Organizations Developing Grid Standards and Best Practice Guidelines: Global Grid Forum – Organizations Developing Grid Computing Toolkits and the Framework – Organizations Building and using Grid Based Solutions to Solve Computing, Data and Network Requirements – Commercial organizations Building and using Grid-Based Solutions.

Unit –III:

Grid Computing Anatomy: Grid Problem : Concept – Architecture – Relationship to other Distributed Technologies. Grid Computing Road Map: Autonomic Computing – Business on Demand and Infrastructure Virtualization Service–Oriented Architecture and Grid – Semantic Grids.

Unit –IV:

Grid Computing Applications: Merging the Grid Services Architecture with the Web Services Architecture: Service–Oriented Architecture –Web Service Architecture – XML,Related Technologies,and Their Relevance to Web Services –XML Messages and Enveloping – Service Message Description Mechanisms – Relationship between Web Service and Grid Service –Web Service Interoperability and the Role of WS-I Organization.

Unit V:

The Grid Computing Technological ViewPoints: Open Grid Services Architecture(OGSA):Architecture and Goal.Some Sample Use Cases that Drive the OGSA:Commercial Data Center(CDC)- National Fusion Collaboratory(NFS) –Online media Entertainment. OGSA Platform Components: Native Platform Services and Transport Mechanisms – OGSA Hosting Environment – Core Networking Services Transport and Security – OGSA Infrastructure – OGSA Basic Services.

Text : “Grid Computing” – Joshy Joseph & Craig Fellenstein – Pearson Education – Fourth Impression – 2008. Chapters: 1 – 8

Reference:

- 1.”A Network Approach to Grid Computing” – Daniel Minoli,Wiled Publication,2004**
- 2.”Grid Computing” –D.Janakiram,McGraw Hill Publication,2005**
- 3.Grid Computing – Techniques and Applications”-Barry Wilkinson,CRC Press.2010**

Semester – II
MBE-II

Hours - 6
Credit - 4

Computational Intelligence (18KP2CSELCS2:B)

Objective: To acquire knowledge about

Unit I :

Computational Intelligence and Knowledge: Computational Intelligence – Agents in the world – Representation and Reasoning – Applications. A Representation and Reasoning System : Introduction – Representation and Reasoning Systems – Simplifying Assumptions of the Initial RRS – Datalog – Semantics – Questions and Answers – Proofs.

Unit II :

Using Definite Knowledge: Introduction – Database and Recursion – Verification and Limitations–Case Study: Representing Abstract Concepts & Representing Regulatory Knowledge – Applications in Natural Language Processing.

Unit III :

Searching:Need of Search – Graph Searching – A Generic Searching Algorithm – Blind Search Strategies – Heuristic Search – Refinements to Search Strategies – Constraint Satisfaction Problems.

Unit IV:

Representing Knowledge : Introduction – Defining a Solution – Choosing a Representation Language – Mapping from Problem to Representation – Choosing an Inference Procedure.

Unit V:

Knowledge Engineering: Introduction – Knowledge-Based System Architecture – Meta-Interpreters – Querying the User – Explanation – Debugging Knowledge Bases – A Meta-Interpreters with Search – Unification.

Text Book : “Computational Intelligence – A logical approach” David Poole,Alan Mackworth , Randy Goebel - Oxford University Press, Second Impression 2008

Chapters: 1,2.1-2.7,3,4,5,6.

Reference:

1. “Artificial Intelligence and Intelligent Systems” – N.P. Padhy, Oxford University Press, Indian Edition – 2008.
2. “ Artificial Intelligence” – Elain Riach and Kevin Knight, Tata McGraw Hill, 2nd Edition, 1991.

Image Processing (18KP3CSELCS3:A)

Objective: To apply knowledge in Image processing applications.

UNIT I:

Introduction : What is Image Processing – The Origins of Digital Image processing - Examples of Fields that Use DIP - Fundamental step in DIP – Components of an image processing System.
Digital Image Fundamentals : Elements of Visual Perception – Image Sensing and Acquisition - Image Sampling and Quantization – Some Basic Relationships between Pixels.

UNIT II:

Intensity Transformations and Spatial Filtering : Background - Some Basic Intensity Transformation Functions – Histogram Processing - Fundamentals of Spatial Filtering - Smoothing Spatial Filters – Sharpening Spatial Filters - Combining Spatial Enhancement Methods – Using Fuzzy Techniques for Intensity Transformations Spatial Filtering.

UNIT III:

Image Restoration and Reconstruction: A Model of Image Degradation/Restoration Process – Noise Models – Restoration in the Presence of Noise only-Spatial Filtering – Periodic Noise Reduction by Frequency Domain Filtering – Periodic Noise Reduction by Frequency Domain Filtering- Linear, Position- Invariant Degradations – Estimating the Degradation Function.

UNIT IV:

Image Compression: Fundamentals – Some Basic Compression Methods: Huffman coding- Golomb Coding-Arithmetic Coding - LZW Coding – Run Length Coding– Symbol –Based Coding – Bit- Plane Coding – Block Transform Coding - Predictive Coding - Wavelet Coding.

UNIT V:

Morphological Image Processing : Preliminaries –Erosion and Dilation –Opening and Closing - The Hit-or-Miss Transformation – Some Basic Morphological Algorithms – Gray- Scal Morphology- Image Segmentation : Fundamentals- Point, Line and Edge Detection- Thresholding– Object Recognition: Patterns and Pattern Classes – Recognition Based On Decision – Theoretic Methods.

Text : "Digital Image Processing", Third Edition, First Impression Rafael C.Gonzalez and Richard E. Woods, Pearson Education. Chapters: 1, 2.1, 2.3 - 2.5, 3.1 – 3.8, 5.1 - 5.6, 8.1 – 8.2, 9, 10.1 - 10.3, 12.1, 12.2

Reference:

1. "Fundamentals of Digital Image Processing" - Anil K. Jain, PHI, Pvt, Ltd, Sixth printing 2001
2. "Digital Image Processing and Analysis", B. Chandra and D. Dutta Majumder, PHI, New Delhi, 2006
3. "Fundamentals of Digital Image Processing" – S.Annadurai – Pearson Education India – 2007

Parallel Computing (18KP3CSELCS3:B)

Objective: To provide knowledge in parallel processing.

Unit -I:

Introduction: Computational Demands of Modern Science – Advent of Practical Parallel Processing – Parallel Processing Terminology – The Sieve of Eratosthenes. PRAM Algorithms: A Model for Serial Computation – The PRAM Model of Parallel Computation – PRAM Algorithms – Reducing the Number of Processors – Problems Defying Fast Solutions on PRAMS.

Unit - II:

Processor Arrays, Multiprocessors, and Multicomputers: Processor Organizations – Processor Arrays – Multiprocessors – Multicomputers – Flynn’s Taxonomy – Speedup, Scaled Speedup, and Parallelizability. Parallel Programming Languages: Programming Parallel Processes.

Unit - III:

Mapping and Scheduling: Mapping Data to Processors on Processor Arrays and Multicomputers – Dynamic Load Balancing on Multicomputers – Static Scheduling on UMA Multiprocessors – Deadlock. Elementary Parallel Algorithms: Classifying MIMD Algorithms – Reduction – Broadcast – Prefix sums.

Unit - IV:

Matrix Multiplication: Sequential Matrix Multiplication – Algorithms for Processor Arrays – Algorithms for Multiprocessors – Algorithms for Multicomputers – Row-Column-Oriented Algorithm – Block-Oriented Algorithm. The Fast Fourier Transform: Introduction – The Discrete Fourier Transform – The Fourier Transform .

Unit - V:

Solving Linear Systems: Terminology – Back Substitution – Odd-Even Reduction – Gaussian Elimination – The Jacobi Algorithm – The Gauss-Seidel Algorithm – Jacobi Overrelaxation and Successive Overrelaxation – Multigrid Methods – Conjugate Gradient. Sorting : Enumeration Sort – Lower Bounds on Parallel Sorting – Bitonic Merge – Quicksort-Based Algorithms - Random Read and Random Write.

Text:

“Parallel Computing - Theory and Practice” – Michael J.Quinn – McGraw-Hill, Second Edition, International Editions, 1994. Chapters – 1-3, 4.1, 5-10

Reference:

- 1. Introduction to Parallel Processing Algorithm and Architecture” – Brhrooz Parhami – Springer – 1999.**
- 2. ” A Practical Approach to Parallel Computing” – S.K.Ghosal – Orient Blackswamn – 2000.**
- 3. ”Introduction to Parallel Computing” – Ananth Gupta, Anushul Gupta, George Harypis, Vipin Kumar – Addison Wesley – 2nd Edition – 2007.**

Semester-III
MBE-IV

Hours - 6
Credit - 4

Mobile Communications (18KP4CSELCS4:A)

Objective: To improve skills in mobile communication technology.

Unit - I :

Introduction : Applications - A Short History Of Wireless Communication-A Market For Mobile Communications -Some Open Research Topics - A Simplified Reference Model. Medium Access Control (MAC): Motivation For Specialized MAC -SDMA - FDMA - TDMA - CDMA – Comparison of S/T/F/CDMA.

Unit - II :

Telecommunications Systems : GSM Mobile Services - System Architecture - Radio Interface - Protocols - Localization And Calling - Handover - Security - New Data Services. Satellite Systems : History - Applications – Basics: GEO,LEO,MEO -Routing - Localization - Handover. Broadcast Systems: Cyclical Repetition of Data - Digital Audio / Video Broadcasting - Convergence.

Unit - III :

Wireless LAN : IEEE 802.11: System And Protocol Architecture – Physical Layer – MAC Layer- MAC Management-802.11a - 802.11b - Newer Developments - Bluetooth: User Scenarios - Architecture.

Unit - IV :

Mobile Network Layer : Mobile IP: Goals Assumptions And Requirements – Entities And Terminology – IP Packet Delivery – Agent Discovery – Registration – Tunneling and Encapsulation – Optimizations – Reverse Tunneling – IPV6 – IP Micro Mobility Support - Dynamic Host Configuration Protocol Mobile Ad-Hoc Networks: Routing – Destination Sequence Distance Vector – Dynamic Source Routing – Alternative Metrics – Overview. Mobile Transport Layer: Traditional TCP: Congestion Control – Slow Start – Fast Retransmit/Recovery – Implications of Mobility - Classical TCP Improvements - TCP Over 2.5 / 3G Wireless Networks

Unit - V :

3G: LTE Introduction - OFDM, OFDMA, SC-FDMA - LTE MIMO - TDD & FDD - Frame & subframe - Physical logical & transport channels - Bands and spectrum - UE categories - SAE architecture - LTE SON - VoLTE - SRVCC - Security.

Text : Unit: I – IV: “Mobile Communications” - Jochen H.Schiller - Pearson Education – Second Edition, First Impression . Chapters : 1.1 - 1.5, 3 , 4.1, 5, 6, 7.3, 7.5.1 - 7.5.2, 8.1 - 8.3, 9.1 - 9.3 Unit: V: “LTE” – Course Material Compiled by M.Ida Rose, Assistant Professor, Department of Computer Science, Kunthavai Naacchiyar Government Arts College for Women (Autonomous), Thanjavur.

Reference :

1. “Mobile Computing 2ED” - Asoke K. Talukder - TMH - 2010.
2. “Fundamentals of Mobile Computing” - Pattnaik, Prasant Kumar, Mall, Rajib –PHI - 2012.
3. <http://www.radio-electronics.com/info/cellulartelecomms/lte-long-term-evolution/3g-lte-basics.php>.

Semester-III
MBE-IV

Hours - 6
Credit - 4

Bioinformatics (18KP4CSELCS4:B)

Objective: To study how information is represented and transmitted in biological systems.

Unit I:

Database :Definitions : DataManagement :Pharmacogenomics and Aggression-Complexity-DataLifeCycle : Data Creation and Acquisition -Use - Data Modification –Archiving - Repurposing – Disposal- Managing the Life Cycle-Database Technology :Database Architecture - Database Management Systems – Interfaces - Implementation .

Unit II:

Networks : Geographical Scope–Communications Models–Transmissions Technology–Protocols–Bandwidth–Topology–Hardware: Media – Network Electronics. Contents – Security:AntiviralUtilities–Authentication–Firewalls–Encryption-Process.Ownership–Implementation – Management.

Unit III :

Search Engines :The search process:The Search-Results.Search Engine Technology: Intelligent Agents–Portals–User Interface Tools–Utilities.Searching and Information Theory–Computational Methods-Search Engines And Knowledge Management. Data Visualization : Sequence visualization .Stuucture Visualization- User Interface .

Unit IV :

Statistics : Statistical Concepts: Progress - Microarrays – Imperfect Data – Basics : Randomness – Variability Is Cumulative – Approximation – Interface Noise – Assumptions – Sampling and Distributions – Hypothesis Testing - Quantifying Randomness – Data Analysis - Tool Selection – Statistics of Alignment – Clustering and Classification.

Unit V :

Data Mining : Methods :Selection and Sampling – Preprocessing and Cleaning – Transformation and Reduction – Data-Mining Methods – Evaluation – Visualization – Designing New Queries.Technology Overview – Infrastructure – Pattern Recognition And Discovery – Machine Learning – Text Mining –Tools .

Text : “Bioinformatics Computing “,Bryan Bergeron , PHI Learning Private Limited , Indian Reprint. Chapters : 2,3,4,5,6,7.

Reference:

- 1.“Introduction to BioInformatics”- Arthur M.Lesk, - Oxford University Press- 2014-4th Edition
- 2.“Fundamental Concepts of Bioinformatics” –Dan E.Krane, Michael L.Raymer, Pearson Educational India- Jan 2003
- 3.“Bioinformatics Methods and Applications”- S.C.Rastogi, N.Mendiratta, P.Rastogi – PHI Learning -2013

Semester- IV
CC - XIV

Hours - 6
Credit - 4

Human Computer Interaction (18KP4CSELCS5:A)

Objective: To improve research skills in ubiquitous computing.

Unit I:

Introduction :Cognitive Psychology and Computer Science – Capabilities of Human -Computer Interaction(HCI) – Goal of HCI – Roles of HCI – Basic User Interfaces – Advanced User Interfaces – HCI Design Principles – Interface levels in HCI – GUI Design – Popular HCI Tools – Architecture of HCI Systems – Advances in HCI. Usability Engineering : HCI and Usability Engineering – Usability Engineering Attributes – Process of Usability – Need for Prototyping.

Unit II:

Modelling of Understanding Process: Goals, Operators, Methods and Selection Rules(GOMS) – Cognitive Complexity Theory(CCT) – Adaptive Control of Thought-Rational(ACT-R) – State, Operator and Result(SOAR) – Belief-Desire-Intention(BDI) – ICARUS – Connectionist Learning with Adaptive Rule Induction On-line(CLARION) – Subsumption Architecture - Spoken Dialogue System: Factors Defining Dialogue System – General Architecture of a Spoken Dialogue System – Dialogue Management Strategies – Computational Models for Dialogue Management.

Unit III:

Recommender Systems: HCI Study Based on Personalisation – Personalisation in Recommender Systems – Relation between Information Filtering and Recommender Systems – Application Areas – Recommender System Field as an Interdisciplinary Area of Research – Phases – User Profiling Approaches – Classification of Recommendation Techniques – Advantages and Disadvantages – Need of Software Agent-based Approach – Evaluating – Integrated Framework – Case Study.

Unit IV:

Advanced Visualization Methods: Ontology Definition – Ontology Visualisation Methods – Space Dimensions of Ontology Visualization – Ontology Languages – Ontology Visualization Tool – Ontology Reasoning – Reasoner - Case Study.

Unit V:

Ambient Intelligence(AmI): Ambient Intelligence Definition – Context-aware Systems and HCI – Middleware – Modelling Data for AmI Environment –Case Studies: Development of Context-awareness Feature in Smart Class Room- Context-aware Agentes for Developing AmI Application.

Text : “Human-Computer Interaction” – K.Meena, R.Sivakumar – PHI Learning Private Limited, 2015 Chapters: 1 - 7

Reference:

1. “Human-Computer Interaction” – Alan Dix, Janet Finlay , Gregory D.Abowd, Russell Beale, Third Edition, Pearson Publications , 2008.
2. “Human-Computer interaction” – John M. Carrol – Pearson Education – First impression,2007.
3. “Human- Computer interaction” – Jenny preece – Addison Wesley Publishing Company -1994.

Fundamentals of Automata Theory (18KP4CSELCS5:B)

Objective: To impart knowledge in software tools design.

Unit – I :

Automata: Introduction to Finite Automata – Structural Representations – Automata and Complexity – Deductive Proofs – Reduction to Definitions – Other Theorem Forms – Additional Forms of Proof – The Contrapositive – Proof by Contradiction – Counterexamples – Central concepts of Automata Theory – Alphabets – Strings – Languages - Problems.

Unit – II :

Finite Automata: The Ground Rules – The Protocol – Deterministic Finite Automata(DFA)- Definition – Simpler Notations of DFAs – The Language of DFA – Nondeterministic Finite Automata(NFA) – Definition – Language of NFA – An Application: Text Search.

Unit – III :

Regular Expressions and Languages: Operators – Building Regular Expressions – From DFA’s to Regular Expressions – Converting Regular Expressions to Automata – Applications: Regular Expressions in Unix – Lexical Analysis – Finding Patterns in Text – Algebraic Laws of Regular Expressions.

Unit – IV :

Context-Free Grammars and Languages: Definition – Derivations – Language of a Grammar – Parse Trees – Construction – Inference, Derivations and Parse Trees – From Trees to Derivations – Applications – Parsers – YACC Parse-Generator – Markup Languages – XML and Document-Type Definitions.

Unit – V :

Pushdown Automata(PDA):Definition – Graphical Notation – Instantaneous Descriptions – Languages of a PDA – Equivalence of PDA’s and CFG’s – Deterministic PDA(DPDA)- Definition – DPDA’s and Context-Free Languages – DPDA’s and Ambiguous Grammars.

Text : “Introduction to Automata Theory, Languages and Computation” – John E. Hopcroft, Rajeev Motwani and Jeffrey D.Ullman – Pearson Education –Third Edition, 2008. Chapters : 1, 2.1 – 2.4, 3, 5.1 – 5.3, 6.

Reference :

1. “Automata and Computability” – Dexter C.Kozen – Springer – 2006.
2. “Introduction to Languages and Theory of Computation” – John Marsh – McGraw Hill – 2010, 4th Edition.
3. “Introduction to Theory of Computation” – Michael Sipser – Cengage Learning – 2012, 3rd Edition.

Cognitive Ability (18KP2SSCS1)

Objective: To improve skills in UGC NET/SET examinations.

Unit I:

Teaching and Research Aptitude : Teaching Nature – Objectives –Characteristics and Basic Requirements – Learners Characteristics – Factors affecting teaching – Method of Teaching and its Aids – Evaluation systems – Research Meaning – Characteristics and types – Steps of research – Methods of research – Research Ethics – Paper – article –Workshop – Seminar – Conference and Symposium – Thesis Writing : Its characteristics and format.

Unit II:

Reading Comprehension – Communication: Nature – Characteristics – Types – Barriers and Effective Class Room Communication:

Unit III:

Mathematical and Logical Reasoning : Number Series – Letter Series – Codes – Relationships – Classification – Understanding the structure of Arguments – Evaluating and Distinguishing Deductive and Inductive Reasoning. Verbal Analogies: Word Analogy – Applied Analogy. Verbal Classification – Reasoning Logical Diagrams: Simple and Multi – Diagrammatic Relationship. Venn diagram – Analytical Reasoning.

Unit IV:

Data Interpretation and ICT: Sources – Acquisition and Interpretation of Data – Quantitative and Qualitative Data – Graphical Representation and Mapping of data. Information and Communication Technology: Meaning – advantages – disadvantages and uses – General abbreviation and terminology – Basics of internet and e-mailing.

Unit V:

People and Environment: People and environment interaction – sources of pollution – pollutants and their impact on human life, exploitation of natural and energy resources – Natural hazards and mitigation. Higher Education System : Governance, Polity and Administration – Structure of the institution for higher learning and research in India – Formal and distance education – Professional/Technical and general education – Value Education.

Text:

“UGC NET/SLET Junior Research Fellowship and Eligibility for Lectureship Paper – I” Sakthi’s Superior Guide – Sakthi Publishing House.

Reference:

1. “UGC NET/SLET Paper-I Teaching &Research aptitude”- UGC Unique Publishers.
2. www.allquiz.com
3. www.newrecruitments.com
4. www.ugcnetonline.in

Semester–III
CCSS-II

Hours - 6
Credit - 5

Core Competence (18KP3SSCS2)

Objective: To improve skills in UGC NET/SET examinations.

Unit I :

Discrete Mathematics: Sets – Relations - Function – Inclusion – Exclusion principle. Graph: Definition – Walks-paths – trials – connected graph – regular and bipartite graphs – cycles and circuits – tree and rooted tree – spanning trees –Hamiltonian and Eulerian graphs – planar graphs. Groups: Finite field and Error correcting / detecting codes. Propositional logic - predicate logic – well formed formulae (WFF)-Satisfiability and Tautology. Representation of integers:.

Unit II:

System Software and compilers: Assembly language fundamental (8085 based ALP) - Assembler – 2-pass and Single pass – Macros and Macro processors. Loading–Linking - Relocation– Program relocatability – Linkage Editing. Compilation and interpretation – Bootstrap compilers – Phases of compilation process – Lexical analysis. CFG –parsing and parse tree- parse tree derivation - Bottom up parsers - Top down parses: Left recursion and its removal – predictive parser – intermediate Codes: Quadruples –triples-intermediate code generation –code generation and optimization.

Unit III:

Operating Systems (with case study of UNIX): UNIX File systems – process management – Bourne Shell – Shell variables – Command Line Programming. Filters and Commands.

Unit IV:

Definition :AI approach for solving problem – Automated reasoning with propositional logic and predicate logic - fundamental proof procedure –refutation – resolution – refinements to resolution – state space representation of problems – founding function – BF,DF ,A,A*, AO*,etc., Frames – Scripts – semantic nets- production systems –procedural representation – Prolog programming.

Unit V :

Currents trends and Technologies: Parallel computing - Mobile Computing – E – Technologies :Electronic payment systems – EDI –GIS – ERP package – Data Warehousing – Data Mining.

Text:“UGC NET/SLET Junior Research Fellowship and Eligibility for Lectureship Computer Science and Applications” – Sakthi’s Superior Guide – Sakthi Publishing House

Reference:

- 1.“UGC NET/SET computer science &application” - Sanjay singha I& Sameen mishra, Danika publishing company - New edition 2011.
- 2.www.allquiz.com
- 3.www.newrecruitments.com
- 4.www.ugcnetonline.in

SEMESTER : I
CORE COURSE : I

Inst Hour	: 5
Credit	: 5
Code	: 18K1M01

BASICS, DIFFERENTIAL CALCULUS AND TRIGONOMETRY

UNIT 1:

Sets – Mappings – Equivalence Relations – The Integers – Binary Operations – Partially Ordered Sets.

(Chapter I : Sections 1.1 to 1.6 of Text Book 1).

Methods of Successive Differentiation – Leibnitz’s Theorem for the n^{th} derivative -Increasing & Decreasing functions, Maxima and Minima for one variable.

(Chapter 3: Sections 1.1-1.6, 2.1, 2.2, Chapter IV Sections 2.1, 2.2 & Chapter 5: Sections 1.1-1.5 of Text Book 2)

UNIT 2:

Curvature – Radius of curvature in Cartesian & in Polar Coordinates – Centre of curvature – Evolutes & Involutives

(Chapter 10: Sections 2.1 –2.6 of Text Book 2)

UNIT 3:

Expansions of $\sin(nx)$, $\cos(nx)$, $\tan(nx)$ – Expansions of $\sin^n x$, $\cos^n x$ – Expansions of $\sin(x)$, $\cos(x)$, $\tan(x)$ in powers of x and related problems.

(Chapter 1: Sections 1.2 to 1.4 of Text Book 3)

UNIT 4:

Hyperbolic functions – Relation between hyperbolic & Circular functions- Inverse hyperbolic functions.

(Chapter 2: Sections 2.1 & 2.2 of Text Book 3)

UNIT 5:

Logarithm of a complex number -Summation of Trigonometric series-Difference method- Angles in arithmetic progression method –Gregory’s Series

(Chapter 3 & Chapter 4 : Sections 4.1,4.2 & 4.4 of Text Book 3)

Text Book(s)

[1] M. L. Santiago, Modern Algebra, Tata McGraw – Hill Publishing Company Limited, 2001.

[2] S.Narayanan,T.K.Manickavasagam Pillai, Calculus Volume I, S.V Publications - 2004

[3] S.Arumugam, Issac & Somasundaram, Trigonometry and Fourier Series New Gamma Publications– 1999 Edition

Books for Reference

[1] S.Arumugam & others, Calculus Volume I.

[2] S.Narayanan, Trigonometry

[3] Ajit Kumar, S.Kumaresan, Bhaba Kumar Sarma, A Foundation Course in Mathematics, Narosa Publishing House.

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
CORE COURSE : II

Inst Hour : 4
Credit : 4
Code : 18K1M02

ANALYTICAL GEOMETRY OF 3 - DIMENSIONS AND INTEGRAL CALCULUS

UNIT 1:

**Coplanar lines – Shortest distance between two skew lines- Equation of the line of shortest distance.
(Chapter III Sections 7& 8 of Text Book 1)**

UNIT 2:

**Sphere – Standard equations –Length of tangent from any point–Sphere passing through a given circle – finding the centre and radius of the circle of intersection of a sphere and a plane – Tangent plane.
(Chapter IV Sections 1-8 of Text Book 1)**

UNIT 3:

**Properties of Definite Integrals– Integration by parts– reduction formula
(Chapter I Sections 11, 12 &13 of Text Book 2)**

UNIT 4:

**Double integrals – changing the order of Integration – Triple Integrals.
(Chapter V Sections 2.1, 2.2, 4 of Text Book 2)**

UNIT 5:

**Beta & Gamma functions and the relation between them-Integration using Beta & Gamma functions.
(Chapter VII Sections 2.1, 2.2, 2.3,3, 4 of Text Book 2)**

Text Book(s)

- [1] T.K.Manickavasagam Pillai , Natarajan, A Text book of Analytical Geometry Part II (Three Dimensions) S.V Publications – 2010 - Revised Edition.
- [2] S.Narayanan ,T.K.Manickavasagam Pillai, Calculus Volume II S.V Publications 2015 Edition.

Books for Reference

- [1] P.Duraipandian & Laxmi Duraipandian. Analytical Geometry
- [2] Shanti Narayanan, Differential & Integral Calculus

Question Pattern (Both in English & Tamil Version)

**Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.
Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.
Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.**

SEMESTER : II
CORE COURSE : III

Inst Hour	: 5
Credit	: 4
Code	: 18K2M03

THEORY OF EQUATIONS AND LINEAR ALGEBRA

UNIT 1:

Relations between the roots and coefficients of equations - Symmetric function of the roots –Sum of the powers of the roots – Newton’s Theorem on the sum of the powers of the roots.
(Chapter 6: Sections 11-14 of Text Book 1)

UNIT 2:

Transformations of Equations – Reciprocal equations of all types - Diminishing, Increasing and multiplying the roots by a constant – Forming equations with the given roots – Removal of terms – Descarte’s rule of Signs (Statement only) – simple problems.
(Chapter 6: Sections 15 to 20 & 24 of Text Book 1)

UNIT 3:

Definition and simple properties of a vector space – subspaces and quotient spaces- sums and direct sums- linear independence – basis and dimension.
(Chapter 6: sec 6.1- 6.5 of Text Book 2).

UNIT 4:

Homomorphism – dual spaces- algebra of linear transformations- Eigen value and Eigen vectors- algebra of matrices – triangular form- trace and transpose- rank of a matrix.
(Chapter 6: sec 6.6, 6.7, Chapter 7: Sections 7.1 - 7.6 of Text Book 2)

UNIT 5:

Matrices – Rank of a Matrix – Eigen Values, Eigen Vectors – Cayley’s Hamilton Theorem - verification of Cayley’s Hamilton theorem.
(Chapter 2 :Sections 1-14,16-16.5 of Text Book 3)

Text Book(s)

- [1] T.K.Manickavasagom Pillai ,T.Natarajan, K.S.Ganapathy ,Algebra Volume I, S.V Publications - 2016
- [2] M.L. Santiago, Modern Algebra, Tata McGraw Hill Publishing Company, New Delhi, 2002
- [3] T.K.Manickavasagom Pillai & others, Algebra Volume II S.V. Publications -2015

Books for Reference

- [1] Classical Algebra, A.Singaravelu, R.Ramaa.
- [2] V.Krishnamoorthy, V.P.Mainra, J.L.Arora, An Introduction to Linear Algebra, Affiliated East – West Press.
- [3] Frank Ayres ,Matrices - Schaum’s Outline Series.

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
CORE COURSE : IV

Inst Hour	: 4
Credit	: 4
Code	: 18K2M04

VECTOR ANALYSIS AND FOURIER SERIES

UNIT 1:

Vector differentiation – velocity & acceleration – Vector & scalar fields – Gradient of a vector – Directional derivative – Divergence & curl of vector solenoidal & irrotational vectors – Laplacian double operator – simple problems
(Chapter I and Chapter II of Text book 1)

UNIT 2:

Vector Integration – Line Integral – Conservative field – scalar potential – Work done by a force – Surface integral – Volume integral – simple problems.
(Chapter III of Text book 1)

UNIT 3:

Gauss Divergence Theorem – Simple problems & Verification of the theorem
(Chapter IV- 4.1- 4.2.3 of Text book 1)

UNIT 4:

Stoke's Theorem – Green's Theorem – Simple problems & Verification of the theorems
(Chapter IV- 4.3- 4.5 of Text book 1)

UNIT 5:

Fourier series – definition – Finding Fourier Series expansion of periodic functions with Period 2π and with period $2a$ – Use of odd & even functions in Fourier Series. Half range Fourier series – definition – Development in Cosine series & in Sine series
(Chapter 6 Sections 1- 5 of Text book 2)

Text Book(s)

- [1] K.Viswanatham & S.Selvaraj, Vector Analysis, Emerald Publishers Reprint 1999
- [2] T.K.M Pillai & others, Calculus Volume III, S.V Publications 2014

Books for Reference

- [1] M.L.Khanna, Vector Calculus
- [2] M.D.Raisinghania, Vector Calculus

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
CORE COURSE : V

Inst Hour	: 5
Credit	: 5
Code	: 18K3M05

OPERATIONS RESEARCH

UNIT 1:

Linear programming problem - Mathematical formulation – Illustrations on Mathematical formulation on Linear Programming Problems – Graphical solution method - some exceptional cases - Canonical and standard forms of Linear Programming Problem - Simplex method. (Chapter 2: Sec 2.1 to 2.4, Chapter 3: Sec 3.1 to 3.5, Chapter 4: Sec 4.1 , 4.3)

UNIT 2:

Use of Artificial Variables (Big M method - Two phase method) – Duality in Linear Programming - General primal-dual pair - Formulating a Dual problem - Primal-dual pair in matrix form -Dual simplex method. (Chapter 4: Sec 4.4, Chapter 5: Sec 5.1 to 5.4, 5.9)

UNIT 3:

Transportation problem - LP formulation of the TP - Solution of a TP - Finding an initial basic feasible solution (NWCM - LCM -VAM) – Degeneracy in TP – Transportation Algorithm (MODI Method) - Assignment problem - Solution methods of assignment problem – special cases in assignment problem. (Chapter 10: Sec 10.1, 10.2, 10.8, 10.9, 10.12, 10.13, Chapter 11: Sec 11.1 to 11.4)

UNIT 4:

Queuing theory - Queuing system - Classification of Queuing models – Poisson Queuing systems Model I (M/M/1)(∞ /FIFO) only - Games and Strategies – Two person zero sum - Some basic terms - the maximin-minimax principle -Games without saddle points-Mixed strategies - graphic solution $2 \times n$ and $m \times 2$ games. (Chapter 21: Sec 21.1, 21.2, 21.7 to 21.9, Chapter 17: Sec 17.1 to 17.6)

UNIT 5:

PERT and CPM – Basic components – logical sequencing - Rules of network construction- Critical path analysis - Probability considerations in PERT. (Chapter 25: Sec 25.1 to 25.4, 25.6, 25.7)

Text Book

Kanti Swarup, P.K. Gupta and ManMohan, Operations Research, 13th Edition, Sultan Chand and Sons, 2007.

Books for Reference

1. Sundaresan.V, Ganapathy Subramanian. K.S. and Ganesan.K, Resource Management Techniques, A.R. Publications, 2002.
2. Taha H.A., Operations Research: An introduction, 7th edition, Pearson Prentice Hall, 2002.
Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III & IV
CORE COURSE : VI

Inst Hour	: 4 + (2)
Credit	: 5
Code	: 18K4M06

DIFFERENTIAL EQUATIONS AND TRANSFORMS

UNIT I

First order, higher degree differential equations solvable for x, solvable for y, solvable for dy/dx, Clairaut's form – Conditions of integrability of $M dx + N dy = 0$ – simple problems.
(Chapter IV – Sections 1,2 & 3, Chapter II – Section 6 of Text Book 1)

UNIT II

Particular integrals of second order differential equations with constant coefficients -Linear equations with variable coefficients – Method of Variation of Parameters (Omit third & higher order equations).
(Chapter V – Sections 1,2,3,4 & 5, Chapter VIII – Section 4 of Text Book 1)

UNIT III

Formation of Partial Differential Equation – General, Particular & Complete integrals – Solution of PDE of the standard forms - Lagrange's method - Few standard forms - Solving of Charpit's method.
(Chapter XII – Sections 1 – 6 of Text Book 1)

UNIT IV

PDE of second order homogeneous equation with Constant coefficients – Particular Integrals of the forms e^{ax+by} , $\sin(ax+by)$, $\cos(ax+by)$, $x^r y^s$ and $e^{ax+by} f(x,y)$.
(Chapter V of Text Book 2)

UNIT V

Laplace Transforms – Standard formulae – Basic theorems & simple applications – Inverse Laplace Transforms – Use of Laplace Transforms in solving ODE with constant coefficients.
(Chapter IX – Sections 1 – 8 of Text Book 1)

Text Book(s)

- [1]. T.K.Manicavachagom Pillay & S.Narayanan, Differential Equations, S.Viswanathan Publishers Pvt. Ltd., 2011.
- [2]. Arumugam & Isaac, Differential Equations, New Gamma Publishing House, Palayamkottai, 2014.

Book for Reference

- [1]. M.D.Raisinghania, Ordinary and Partial Differential Equations, S.Chand & Co
- [2]. M.K. Venkatraman, Engineering Mathematics, S.V. Publications, 1985 Revised Edition

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
SELF STUDY COURSE : I

Inst Hour :
Credit : 5
Code : 18K3SSM1

QUANTITATIVE APTITUDE - I

UNIT I

Numbers – HCF and LCM of numbers – Decimal Fractions
Sections 1 -3

UNIT II

Simplification – Square roots and cube roots – Average
Sections 4 - 6

UNIT III

Problems on Numbers - Problems on ages – Surds and Indices
Sections 7 - 9

UNIT IV

Percentage - Profit and Loss – Ratio and Proportion
Sections 10 – 12

UNIT V

Partnership – Chain rule – Time and Work
Sections 13 – 15

Text Book:

Quantitative Aptitude for Competitive Examinations, by R.S.Aggarwal, S.Chand and Company Ltd. RamNagar, New Delhi - 110 055.

Reference Book:

Quantitative Aptitude for Competitive Examinations, by Abhijit Guha.

Question Pattern

ANSWER ALL QUESTIONS (Each Carries 2 marks; 50 x 2 = 100)

SEMESTER : IV
CORE COURSE : VII

Inst Hour	: 6
Credit	: 6
Code	: 18K4M07

SEQUENCES AND SERIES

UNIT 1:

Sets, Sequences (definition), Limit, Convergence – Cauchy’s general principle of convergence – Cauchy’s first theorem on Limits–Bounded sequences –monotonic sequence always tends to a limit ,finite or infinite– Limit superior and Limit inferior .
(Chapter 2 Section 4 –7.1)

UNIT 2:

Infinite series– Definition of Convergence, Divergence & Oscillation – Necessary condition for convergence – Convergence of $\sum \frac{1}{n^p}$ and Geometric series. Comparison test, D’Alembert’s ratio test, and Raabe’s test (Simple problems connected to these.)
(Chapter 2 Sections 8 -14, 16, 18, 19)

UNIT 3:

Cauchy’s Condensation Test, Cauchy’s Root test and their simple problems – Alternative series with simple problems
(Chapter 2 Section 15, 17, 21-24 (Omitting uniform Convergence))

UNIT 4:

Binomial Theorem for a rational index – Particular case of Binomial – Application of Binomial – Sum of Coefficients - Exponential & Logarithmic series – Summation
(Chapter 3 Sections 5, 6, 10, 11& Chapter 4 sections 1-3, 5- 9)

UNIT 5:

General summation of series including successive difference and recurring Series.
(Chapter 5)

Text Book

[1]. T.K.Manickavasagam Pillai, T.Natarajan, K.S.Ganapathy , Algebra Volume I, S.V Publications- 2015

Books for Reference

[1]. M.K.Singal & Asha Rani Singal, A first course in Real Analysis.
[2].S.Arumugam , Sequences & series.

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : IV
SELF STUDY COURSE : II

Inst Hour :
Credit : 5
Code : 18K4SSM2

QUANTITATIVE APTITUDE - II

UNIT I

Pipes and Cisterns – Time and Distance – Problems on Trains
Sections 16 - 18

UNIT II

Boats and Streams – Alligation or Mixture – Simple Interest –Compound Interest
Sections 19 - 22

UNIT III

Logarithms - Area – Volume and Surface Areas
Sections 23 - 25

UNIT IV

Races and Games of Skills - Calendar – Clocks
Sections 26 - 28

UNIT V

Stocks and Shares – Permutation and Combinations – Probability
Sections 29 – 31

Text Book:

Quantitative Aptitude for Competitive Examinations, by R.S.Aggarwal, S.Chand and Company Ltd. RamNagar, New Delhi - 110 055.

Reference Book:

Quantitative Aptitude for Competitive Examinations, by Abhi jit Guha.

Question Pattern

Answer ALL QUESTIONS (Each Carries 2 marks; 50 x 2 = 100)

SEMESTER : V
CORE COURSE : VIII

Inst Hour	: 6
Credit	: 5
Code	: 18K5M08

ABSTRACT ALGEBRA

UNIT 1:

Groups: Definitions and Examples of Groups – Elementary Properties of Groups.
Finite Groups, Subgroups: Terminology and Notation – Subgroup Tests – Examples of Subgroups.
Cyclic Groups: Properties of Cyclic Groups – Classification of Subgroups of Cyclic Groups.
Part 2: Sections 2, 3, 4.

UNIT 2:

Permutation Groups: Definition and Notation – Cycle Notation.
Isomorphisms: Definition and Examples – Cayley’s Theorem – Properties of Isomorphisms – Automorphisms.
Cosets and Lagrange’s Theorem: Properties of Cosets – Lagrange’s Theorem and Consequences (upto Theorem 7.3).
Part 2: Section 5 (Page 99 – 104) , Section 6 (Page 127 – 138) , Section 7 (Page 144 – 151).

UNIT 3:

Normal Subgroups and Factor Groups: Normal Subgroups – Factor Groups – Applications of Factor Groups – Internal Direct Products.
Group Homomorphisms: Definition and Examples – Properties of Homomorphisms – The First Isomorphism Theorem.
Part 2: Sections 9, 10.

UNIT 4:

Introduction to Rings: Definition – Examples of Rings – Properties of Rings – Subrings. Integral Domains: Definition and Examples – Fields – Characteristic of a Ring.
Ideals and Factor Rings: Ideals – Factor Rings.
Part 3: Sections 12, 13, 14(Page 267 – 271).

UNIT 5:

Ring Homomorphism: Definition and Examples – Properties of Ring – Homomorphism – The Field of Quotients.
Part 3: Section 15.

Text Book

Joseph A.Gallian, Contemporary Abstract Algebra, Cengage Learning, 8th Edition, 2013.

Books for Reference

[1] I.N.Herstein. Topics in Algebra.

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : V
CORE COURSE : IX

Inst Hour	: 6
Credit	: 5
Code	: 18K5M09

REAL ANALYSIS

UNIT 1:

Real Number system – Field axioms –Order relation in \mathbb{R} . Absolute value of a real number & its properties –Supremum & Infimum of a set– order completeness property – countable & uncountable sets

(Chapter 1: Sections 2-7&10 of Text Book 1)

UNIT 2:

Continuous functions –Limit of a Function – Algebra of Limits – Infinite Limits– Continuity of a function – Types of discontinuities – Elementary properties of continuous functions –Uniform continuity of a function.

(Chapter 5: of Text Book 1)

UNIT 3:

Differentiability of a function– Derivability & continuity –Algebra of derivatives –Inverse Function Theorem– Daurboux’s Theorem on derivatives.

(Chapter 6: Sections1-5 of Text Book 1)

UNIT 4:

Rolle’s Theorem –Mean Value Theorems on derivatives– Taylor’s Theorem with remainder- Power series expansion .

(Chapter 8: Sections 1-6 of Text Book 1)

UNIT 5:

Riemann integrability and integral of a bounded function over finite domain – Darboux’s theorem – Another equivalent definition of Integrability and Integral – conditions for integrability – Particular classes of bounded Integrable functions - Properties of Integrable functions – Functions defined by Definite Integrals– First Mean Value Theorem of Integral Calculus – Change of variable in an Integral- Integration by parts.

(Chapter 6 of Text Book 2)

Text Book(s)

[1] M.K,Singhal & Asha Rani Singhal, A First Course in Real Analysis , R. Chand & Co June 2013

[2] Shanthi Narayan, A Course of Mathematical Analysis. 1964

Books for Reference

[1] Tom.M.Apostol, Mathematical Analysis ,II Edition.

[2] S.C.Malik , Elements of Real Analysis.

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : V
CORE COURSE : X

Inst Hour	: 7
Credit	: 6
Code	: 18K5M10

STATICS

UNIT1:

Forces Acting at a Point – Parallel forces.
(Chapter2: & Chapter 3: Sections 1 to 6)

UNIT 2:

Moment of a Force about a point on a line – Theorem on Moments & Couples
(Chapter 3: sections 7 to 14 & Chapter 4)

UNIT 3:

Equilibrium of three forces acting on a Rigid body –Coplanar forces (Simple Problems only).
(Chapter 5: section 1to7, Chapter 6: Section 1to 13)

UNIT 4:

Equilibrium of Strings under gravity – Common Catenary –Parabolic Catenary –Suspension Bridge.
(Chapter 11)

UNIT 5:

Friction – Laws of Friction –Coefficient of Friction, Angle & Cone of Friction – Equilibrium of a particle on a rough inclined plane under a force parallel to the plane and under any force – Problems on Friction. (Simple Problems only)
(Chapter 7: Sections 1to13)

Text Book

[1] M.K. Venkataraman, Statics, Agasthiar Publication, 18th Edition, 2016

Books for Reference

[1] S.Narayanan., Statics.

[2] A.V.Dharmapadham, Statics.

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : V
MAJOR BASED ELECTIVE : I

Inst Hour	: 5
Credit	: 5
Code	: 18K5MELM1

PROGRAMMING IN C

UNIT 1:

Constants, Variables and Data Types – Operators & Expressions – Managing Input and Output Operators.
(Chapters 2, 3 & 4)

UNIT 2 :

Decision making and branching – Use of IF, IF- ELSE & nesting of IF-ELSE statements – ELSE-IF ladder – Switch statement –Conditional Operator –GOTO statement .
(Chapter 5)

UNIT 3:

Decision making & looping – WHILE, DO, and FOR statements
(Chapter 6 omitting section 6.5)

UNIT 4:

Arrays – One dimensional, two dimensional & multi dimensional groups – Structures – definition giving values to members – Initialization - comparison –Arrays of structures – Arrays within structures – structures within structures and functions.
(Chapters 7 & 10 Section 10.1-10.8)

UNIT 5:

User defined functions –The form of C functions, return values & their types – Calling a function – category of functions –no arguments & no return values –arguments but no return values argument with return values – Nesting of functions – Recursion.
(Chapter 9 –Section 9.1 to 9.13)

Text Book

[1] Programming in ANSI C - E. Balagurusamy, II Edition 2001

Books for Reference

[1] Programming in C - By Rajaraman
[2] Let us C – Yeshwant Kanetkar

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : V
MAJOR BASED ELECTIVE : I

Inst Hour	: 5
Credit	: 5
Code	: 18K5MELM1S

PROBABILITY AND STATISTICS

UNIT 1:

Theory of Probability: Different definitions of probability - sample space – Probability of an event - Independence of events – Theorems on Probability – Conditional Probability – Baye’s Theorem. (Chapter 4: Sections 4.5-4.9)

UNIT 2:

Random variables – Distribution functions – Discrete & continuous random variables – Probability mass & density functions –Joint probability distribution functions. (Chapter 5: Sections 5.1-5.5.5)

UNIT 3 :

Expectation – Variance – Covariance-Moment generating functions – Theorems on Moment generating functions – moments – various measures. (Chapter 6: Sections 6.1 to 6.10.3 & Chapter 3: Section 3.9)

UNIT 4:

Correlation & Regression: Properties of Correlation & regression coefficients – Numerical Problems for finding the correlation & regression coefficients. . (Chapter 10: Sections 10.1 to 10.7.4)

UNIT 5 :

Binomial, Poisson , Normal distributions - Moment generating functions of these distributions – additive properties of these distributions- Recurrence relations for the moments about origin , and mean for the Binomial, Poisson and Normal distributions –properties of normal distributions. (Chapter 7 :Sections 7.2 to 7.2.7, 7.2.10,7.3 to 7.3.5, 7.3.8 and Chapter 8: Sections 8.2, 8.2.2)

Text Book :

[1].Fundamentals of Mathematical Statistics by Gupta.S.C & Kapoor, V.K Published by Sultan Chand & sons ,New Delhi -2000 Edition

Book for Reference:-

- [1]. Practical Statistics – Thambidurai .P – Rainbow Publishers – CBE (1991)
- [2]. Probability and Statistics – A.Singaravelu – A.R.Publications – 2002

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : VI
CORE COURSE : XI

Inst Hour	: 5
Credit	: 5
Code	: 18K6M11

GRAPH THEORY

UNIT 1:

Graphs: Introduction – Graphs, Finite and Null Graphs – Degree of a Vertex – Isomorphism – Complete Graphs – Subgraphs, Spanning and Induced Subgraphs – Degree Sequences and Partitions – Line Graphs and Total Graphs. Paths and Cycles: Introduction – Walks and Paths and Cycles – Connected Graphs, Disconnected Graphs and Components – Bipartite Graphs – Operations on Graphs.

(Chapter 1: Sections 1.1 – 1.8 & Chapter 2: Sections 2.1 – 2.5)

UNIT 2:

Eulerian and Hamiltonian Graphs: Introduction – The Konigsberg Bridge Problem – Eulerian Graphs – Characterization of Eulerian Graphs – Hamiltonian Graphs – Properties of Hamiltonian Graphs – The Travelling Salesman Problem – Applications. Trees: Introduction – Cutvertices, Bridges and Blocks – Trees – Properties of Trees – Distances, Centres and Centroids – Forests - Vertex Arboricity and Arboricity – Rooted and Binary Trees – Spanning Trees – Fundamental Cycles.

Chapter 3: Sections 3.1 – 3.8 & Chapter 4: Sections 4.1 – 4.11

UNIT 3:

Cutsets and Connectivity: Introduction – Cutsets – Properties of Cutsets – Fundamental Cutsets – Connectivity – Separability – Whitney’s Inequality – Menger’s Theorem.

Chapter 5: Sections 5.1 – 5.8

UNIT 4:

Planar Graphs: Introduction – Planar Graphs – Kuratowski’s Two Nonplanar Graphs – Different Representations of a Planar Graph – Detection of Planarity – Geometric Dual of a Planar Graph.

Chapter 6: Sections 6.1 – 6.6

UNIT 5:

Matrix Representation: Introduction – Incidence Matrix – Adjacency Matrix – Cycle Matrix – Rank of a Matrix – Cutset Matrix. Graph Coloring: Introduction – Chromatic Number – Chromatic Polynomial.

Chapter 7: Sections 7.1 – 7.6 & Chapter 8: Sections 8.1 – 8.3

Text Book

[1] V.R.Kulli, College Graph Theory, Vishwa International Publications, 2012.

Books for Reference

[1] F.Harary, Graph Theory, Narosa Publishing House, New Delhi.

[2] S.A.Choudum, Graph Theory, MacMillan India Ltd- NewDelhi-Madras.

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : VI
CORE COURSE : XII

Inst Hour	: 6
Credit	: 5
Code	: 18K6M12

COMPLEX ANALYSIS

UNIT 1:

Functions of a Complex variable – Limit – Theorems on Limits – Continuous functions – Differentiability – Cauchy-Riemann equations – Analytic functions – Harmonic functions.
(Chapter 2: Section 2.1 to 2.8)

UNIT 2:

Elementary Transformations – Bilinear Transformations – Cross Ratio – Fixed points of Bilinear Transformation – Some Special bilinear Transformations.
(Chapter 3: Sections 3.1 to 3.5)

UNIT 3:

Complex Integration – Definite Integral – Cauchy's Theorem – Cauchy's Integral Formula – Higher Derivatives.
(Chapter 6: Sections 6.1 to 6.4)

UNIT 4:

Series Expansions– Taylor's Series – Laurent's Series – Zeros of an Analytic Function – Singularities.
(Chapter 7: Sections 7.1 to 7.4)

UNIT 5:

Residues – Cauchy's Residue Theorem – Evaluation of Definite Integrals.
(Chapter 8: Sections 8.1 to 8.3)

Text Book

- [1] S.Arumugam, A.Thangapandi Issac, A.Somasundaram, Complex Analysis, Scitech Publications, Copy Right 2014

Books for Reference

- [1] P.P Gupta, Complex Variables, Kedarnath & Ramnath –Meerut -Delhi
[2] Sharma, Functions of a Complex variable, Krishna Prakasan Mandir
[3] T.K.M Pillai & others, Complex Analysis, Anantha Book Depot, Madras

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : VI
CORE COURSE : XIII

Inst Hour	: 7
Credit	: 5
Code	: 18K6M13

DYNAMICS

UNIT1:

Kinematics – Angular Velocity, Relative Velocity, Change of velocity and Acceleration – Differentiation of a vector – Components of Tangential and Normal Accelerations - Velocity and Acceleration in polar Co-ordinates.

(Chapter 3:Section -3.11 to 3.32, chapter 9 :Section 9.1 to 9.2 &Chapter11:Section11.1-11.2)

UNIT 2:

Equations of motion in polar coordinates – Equiangular Spiral – Motion under a central force – central orbit – Differential equation of central orbits in Polar and Pedal Coordinates - Velocities in a central orbit – Given the central orbit to find the law of force.

(Chapter 11- Section 11.3 to 11.11)

UNIT 3:

Simple Harmonic Motion : Introduction – Simple Harmonic Motion in a straight line Composition of two Simple Harmonic Motions - Simple Pendulum – Equivalent Simple pendulum – The Seconds Pendulum – Loss or Gain in the number of Oscillations made by a Pendulum.

(Chapter 10: section 10.1-10.7, 10.12-10.16)

UNIT 4:

Projectiles: Introduction – Definitions – Path of a Projectile - Characteristics of the Motion of a Projectile - Maximum Height reached, Range, Time of Flight – Projectile up / down an inclined plane.

(Chapter 6: Section 6.1 to 6.15)

UNIT 5:

Impulsive Forces: Impulse – Impulsive Force – Impact of two bodies – Loss of Kinetic Energy in impact – Examples of Impact - Collision of Elastic Bodies: Introduction – Principle of Conservation of Momentum- Direct & Oblique Impact of two smooth spheres –Loss of Kinetic Energy due to Direct Impact and Oblique Impact – Compression and Restitution – Impact of a particle on a rough plane.

(Chapter 7 & 8)

Text Book

[1] A Text Book of Dynamics by M.K. Venkataraman Published by Agasthiar Publications
17th Edition, July 2015

Books for Reference

[1] S.Narayanan, Dynamics.

[2] A.V.Dharmapadam, Dynamics .

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : VI
MAJOR BASED ELECTIVE : II

Inst Hour	: 6
Credit	: 6
Code	: 18K6MELM2

NUMBER THEORY

Unit I

**Euclid's Division Lemma – Divisibility – The Linear Diophantine Equation – The Fundamental Theorem of Arithmetic
(Chapter 2: Sections 2.1 – 2.4)**

Unit II

**Permutations and Combinations – Fermat's Little Theorem – Wilson's Theorem – Generating Functions.
(Chapter 3: Sections 3.1, 3.4)**

Unit III

**Basic Properties of Congruences Residue Systems. Linear Congruences – The Theorems of Fermat and Wilson Revisited.
(Chapter 4: Sections 4.1 – 4.2 , Sections 5.1- 5.2)**

Unit IV

**The Chinese Remainder Theorem – Polynomial Congruences – Combinational Study of $F(n)$.
(Chapter 4: Sections 5.3 – 5.4, Section 6.1)**

Unit V

**Formulae for $d(n)$ and $s(n)$ – Multiplicative Arithmetic Function – The Mobius Inversion Formula.
(Chapter 5: Sec. 6.2 – 6.3)**

Text Book

[1]. Number Theory by George E.Andrews, Hindustan Publishing Corporation – 1984, Edition.

Books for Reference

- [1]. Basic Number Theory by S.B.Malik, Vikas Publishing House Pvt. Ltd.,
[2]. A First Course Theory of Numbers by K.C.Chowdhury. Asian Books Pvt. Ltd., I Edition
(2004)

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : VI
MAJOR BASED ELECTIVE : III

Inst Hour	: 5
Credit	: 5
Code	: 18K6MELM3

METHODS IN NUMERICAL ANALYSIS

[In all units the values of a root may be calculated upto 3 decimal accuracy only]

UNIT 1:

Algebraic & Transcendental equations: Introduction - Bisection Method, Method of False Position, Iteration method . Newton Raphson Method.
(Chapter 2: sections 2.1 to 2.5)

UNIT 2:

Interpolation: Introduction - Finite differences –Forward, Backward & Central differences – symbolic relations and Separations of symbols - Newton’s forward & backward difference interpolation formulae - Interpolation with unevenly spaced points – Lagrange’s interpolation formula, Divided differences and their Properties – Newton’s General interpolating formula.
(Chapter 3: Sections 3.1, 3.3, 3.3.1-3.3.4, 3.6, 3.9, 3.9.1, 3.10, 3.10.1)

UNIT 3:

Numerical differentiation and Integration: Introduction- Numerical Differentiation-Maximum and Minimum values of a Tabulated Function-Numerical Integration - Trapezoidal rule & Simpson’s 1/3 Rule and 3/8 Rule - Theory & problems
(Chapter 5: Sections 5.1,5.2,5.3,5.4,5.4.1, 5.4.2 &5.4.3)

UNIT 4:

Matrices and Linear System of Equations: Solutions to Linear Systems –Matrix Inversion Method-Gaussian Elimination Method –Solution of Linear systems- Jacobi & Gauss Siedal iterative methods – Theory & problems .
(Chapter 6: Section 6.3-6.3.2, 6.4)

UNIT 5:

Numerical solution of Ordinary Differential Equations: Introduction- Solution by Taylor’s Series – Picard’s Method of Successive Approximations Euler’s Method Error estimate s for the Euler’s Method, Modified Euler’s Method Runge Kutta 2nd & 4th order methods- Predictor –Corrector Methods- Adam’s Moulton Method(Theory and Problems)
(Chapter 7: Sections 7.2, 7.3, 7.4-7.4.2, 7.5&7.6 (omitting 7.6.2))

Text Book

[1] S.S.Sastry, Introductory Methods of Numerical Analysis, Prentice Hall of India Pvt.Limited fourth Edition 2005.

Books for Reference:-

- [1] M.K.Jain, S.R.K.Iyengar & R.K.Jain Numerical Methods for Scientific & Engineering Computation
- [2] H.C.Saxena, Finite Differences & Numerical Analysis.

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : VI
MAJOR BASED ELECTIVE : III

Inst Hour	: 5
Credit	: 5
Code	: 18K6MELM3S

MATHEMATICAL LOGIC AND BOOLEAN ALGEBRA

UNIT I:

Mathematical Logic: Introduction – Statements and Notations – Connectives – Logical capabilities of programming languages – Conditional and Biconditional – well-formed formulae – Tautology and Equivalence formulae.

(Chapter 1:Sections 1-1and 1-2 to 1-2.9 of text book 1)

UNIT II:

Tautology and Normal Forms: Duality Law – tautological Implications – Formulae with distinct truth tables – Functionally complete sets of connectives – Other connectives –Two state Devices and Statement Logic- Normal forms – Disjunctive and Conjunctive Normal forms.

(Chapter 1:Sections 1-2.11 to 1-3.5 of text book 1)

UNIT III:

Theory of Inference for Statement Calculus: Introduction – Validity using truth tables – Rules of Inference – Consistency of premises – Indirect method of proof – Automatic theorem proving – Predicates – The statement Function - Variables and quantifiers .

(Chapter 1:Sections 1-4 to 1-5.2 of text book 1)

UNIT IV:

Predicate Formulae: Predicate formulae – Free and Bound variables – Universe of Discourse – Inference Theory of the predicate calculus – Valid formulas and Equivalences – Some valid formulas over finite Universes – Special valid formulas Involving quantifiers – Theory of inference for the predicate calculus – Formulas Involving more than one quantifier .

(Chapter 1:Sections 1-5.3 to 1-6.5 of text book 1)

UNIT V:

Boolean Algebra –Boolean Functions – Boolean Forms and Free Boolean Algebra- values of Boolean expression and Boolean Functions- Representation and minimization of Boolean Functions – Equivalence of Finite state Machines.

(Chapter 5:Sections 5.48 to 5.95 of text book 2)

Text Book(s)

[1]. Discrete Mathematical Structures with Applications to Computer Science, J.P.Tremblay
R.Manohar, 2004

[2]. Discrete Mathematics,G.Ramesh and C.Ganesamoorthy First Edition 2003.

Book for Reference

[1]. Elements of Discrete Mathematics, C.L.Liu, Tata McGraw-Hill Publishing company
Limited, New Delhi, Second Edition.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
ALLIED COURSE : I - Mathematics

Inst Hour : 5
Credit : 3
Code : 18K1CH/PAM1

CALCULUS AND VECTOR CALCULUS

(For B.Sc., Physics & Chemistry Major)

UNIT 1:

Successive Differentiation – n^{th} derivative of standard functions – Fractional Expressions of the form $\frac{f(x)}{\varphi(x)}$ – Trigonometrical Transformation - Leibnitz's Theorem (proof not needed) for the n^{th} derivative of a product of functions – applicable to suitable problems
(Chapter 3-Sec 1.1-1.6, 2.1, 2.2 of Text Book 1)

UNIT 2:

Curvature – Circle and Centre of Curvature - Radius of Curvature in Cartesian only.
(Chapter 10- Sec 2.1-2.3 of Text Book 1)

UNIT 3:

General properties of definite integrals -Reduction formula for (when n is a positive integer)

$$1] \int e^{ax} x^n dx \quad 2] \int \sin^n x dx \quad 3] \int \cos^n x dx \quad 4] \int_0^x e^{ax} x^n dx \quad 5] \int_0^{\frac{\pi}{2}} \sin^n x dx \quad 6] \int_0^{\frac{\pi}{2}} \cos^n x dx$$

$$7] \text{ Without proof } \int_0^{\frac{\pi}{2}} \sin^n x \cos^m x dx - \text{ and illustrations (problems only)}$$

Evaluation of double & triple integrals (omitting -changing the order of integration)
(Chapter 1- Sec11, Sec13-13.1, 13.3, 13.4, 13.5 and Chapter 5 Sec 2.2 & 4 of Text Book 2)

UNIT 4:

Vector Differentiation – Gradient of a vector - Directional Derivative – Unit Normal Vector - Divergence & Curl of a vector, Solenoidal & Irrotational vectors – Vector Identities.
(Chapter 2 – Sec 2.1, 2.2, 2.2.1-2.2.4, 2.3, 2.3.1, 2.3.2, 2.4, 2.4.1-2.4.3, 2.5, 2.5.1 of Text Book 3)

UNIT 5:

Vector integration –Line Integral- surface integral - Volume integral – simple problems. Gauss Divergence Theorem – Stoke's Theorem – problems only (Verification of the theorems).
(Chapter 3- Sec: 3.2-3.7 Chapter 4 Sec: 4.2, 4.2.3, 4.4, 4.4.3 of Text book 3)

Text Books :

- [1] S.Narayanan, T.K.Manickavasagam Pillai, Calculus Volume I, S.V Publishers 2004
- [2] S.Narayanan, T.K.Manickavasagam Pillai, Calculus Volume II, S.V Publishers 2003
- [3] K.Viswanatham ,S.Selvaraj ,Vector Analysis , Emerald Publishers 1984

Reference Books:

- [1] A.Singaravelu,Calculus .
- [2] M.L.Khanna, Vector Calculus

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I & II
ALLIED COURSE : II - Mathematics

Inst Hour : 2 +(3)
Credit : 3
Code : 18K2CH/PAM2

ALGEBRA, ANALYTICAL GEOMETRY (3D) AND TRIGONOMETRY

(For B.Sc., Physics & Chemistry Major)

UNIT 1:

Binomial – Application of Binomial Theorem – Approximation and Limits, Exponential and Logarithmic series (Formulae Only) – Summation & Approximation related problems only. (Chapter2 Sec: 1, 2, 3, Chapter3 Sec1-5of Text Book 1)

UNIT 2:

Eigen Values, Eigen Vectors – Cayley Hamilton Theorem – An Important Application of Cayley Hamilton Theorem.

(Chapter2 Sec: 16, 16.3, 16.4 of Text Book 2)

UNIT 3:

Finding the Shortest distance between two skew lines and the equation of the plane containing them– Tangent plane – Plane section of a sphere – The Intersection of Plane and Sphere is a Circle.

(Chapter3 Sec: 7, Chapter4 Sec 4-6Text Book 4)

UNIT 4 :

Expansion of $\sin n\theta$, $\cos n\theta$ (n being a positive integer) - Expansion of $\sin^n \theta$, $\cos^n \theta$ in a series of sines & cosines of multiples of θ (θ - given in radians) – Expansion of $\sin\theta$, $\cos\theta$ in ascending powers of θ - simple problems.

(Chapter 3 Sec: 1, 4, 4.1,5 of Text Book 3)

UNIT 5 :

Euler’s formula for $e^{i\theta}$ - Definition of Hyperbolic functions –Formulae involving Hyperbolic functions -Relation between Hyperbolic & circular functions – Expansion of $\sinh x$, $\cosh x$, $\tanh x$ in powers of x - Expansion of Inverse hyperbolic functions $\sinh^{-1} x$, $\cosh^{-1} x$ and $\tanh^{-1} x$.

(Chapter 4 Sec: 1, 2, 2.1-2.3 of Text Book 3)

Text Books :

- [1] S .Narayanan, T.K.Manicavachagom Pillai and others, Ancillary Mathematics BookI
- [2] T.K.Manicavachagom Pillai & others, Algebra Volume II
- [3] S.Narayanan &T.K. Manicavachagom Pillai, Trigonometry
- [4] Narayanan and Hanumantharao, Ancillary Mathematics Book4

Reference Books:

- [1] A.Singaravelu,Allied Mathematics Paper II, 1998
- [2] P.Duraipandian, Laxmi Duraipandian & Muhilan, Analytical Geometry of 3D –Emerald Publication

Question Pattern (Both in English & Tamil Version)

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
ALLIED COURSE : III - Mathematics

Inst Hour : 4
Credit : 3
Code : 18K2CH/PAM3

DIFFERENTIAL EQUATIONS AND TRANSFORMS

(For B. Sc., Physics & Chemistry Major)

UNIT 1 :

Equations of first order but of higher degree – Equations solvable for $\frac{dy}{dx}$, Equations solvable for x, Equations Solvable for y, Clairaut's form (simple cases only) – Linear equations with constant coefficients – Definitions – The Operator D, Complementary Function of a Linear Equation with constant Coefficients, General Method of finding Particular Integral, Special Methods for finding Particular Integral.

(Chapter 4 Sec: 1, 2, 2.1, 2.2, 3.1, of Text Book1 & Chapter 5 Sec 1-4, 4.1, 4.2 of Text Book1)

UNIT 2 :

Partial Differential Equations- Definition – Derivation of Partial Differential Equations: By eliminating arbitrary constants, By the elimination of arbitrary functions – Different Integrals of Partial Differential Equations – Solutions of Partial Differential equations in some simple cases – Standard type of First Order Equations – Standard 1, Standard 2, Standard 3, Standard 4 – Clairaut's Form.

(Heading : Differential equations - Chapter 6 Sec: 1, 2, 2.1, 2.2, 3, 4, 5, 5.1-5.4 of Text Book 2)

UNIT 3 :

Laplace Transform –Definition – $L(e^{at})$, $L(\cos(at))$, $L(\sin(at))$, $L(t^n)$, where n is a positive integer. Some general theorems in Laplace Transforms (formula only) – $L[e^{-at} \cos bt]$, $L[e^{-at} \sin bt]$, $L[e^{-at} f(t)]$, $L[f'(t)]$, $L[f''(t)]$, $L[f^n(t)]$ and related Problems

(Heading : Differential equations - Chapter 4: Sec1, 2, 3 Text Book2)

UNIT 4:

Inverse Laplace Transforms relating to the above standard forms – Modified results to get the Inverse Transforms of Functions - Solving Ordinary Differential Equations with constant coefficients using Laplace Transforms.

(Heading : Differential equations - Chapter 4 Sec4, 5, 6 Text Book2)

UNIT 5:

Fourier series- definition-Finding Fourier series expansion of periodic functions with Period 2π – Odd & Even functions in Fourier series – Half Range Fourier Series – Development in Sine series – Development in cosine series.

(Heading : Integral calculus - Chapter 4 Sec1, 2, 3, 3.1, 3.2, 4, 5.1, 5.2 Text Book2)

Text Books :

- [1] S.Narayanan, T.K.Manickavasagom Pillai, Differential Equations, Viswanatham Publishers, 2001
- [2] S.Narayanan, T.K.Manickavasagom Pillai, Ancillary Mathematics Book2.

Reference Books:

- [1] S.Arumugam, Issac, Trigonometry & Fourier Series
- [2] B.R.Subramanian, Laplace Transform

Question Pattern (Both in English & Tamil Version)

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
ALLIED COURSE : I - Mathematics

Inst Hour	: 5
Credit	: 3
Code	: 18K1CSAM1

PROBABILITY AND STATISTICS

(For B.Sc., Computer Science Major)

UNIT 1:

Theory of Probability –Different definitions of probability sample space – Probability of an event - Independence of events

(Chapter 4: sec4.3, 4.3.1, 4.3.2, 4.5.1, 4.5.2, 4.7.3)

UNIT 2:

Random variables – Distribution functions – Discrete & continuous random variables – Probability mass & density functions

(Chapter 5: Sec 5.1-5.4)

UNIT 3:

Expectation –Variance –Covariance (Chapter 6: Sec 6.1- 6.7)

UNIT 4:

Correlation & Regression –Properties of Correlation & regression coefficients – Angle between two lines of regression - Numerical Problems for finding the correlation & regression coefficients.

(Chapter 10:Sec10.1-10.4, 10.7.2-10.7.5)

UNIT 5 :

Theoretical Discrete & Continuous distributions – Binomial, Poisson , Normal distributions- Moment generating functions of these distributions –additive properties of these distributions - and mean for the Binomial, Poisson and Normal distributions (simple problems)

(Chapter 7: Sec7.1,7.2,7.2.1,7.2.4,7.2.6,7.2.7,7.3.0,7.3.2,7.3.4,7.3.5,7.3.8 & Chapter 8- Topics Relevant to normal Distribution)

Text Book :

[1] Gupta.S.C &Kapoor,V.K, Fundamentals of Mathematical Statistics, Sultan Chand & Sons, NewDelhi - 2000 Edition

Reference Book

[1] Thambidurai .P., Practical Statistics , Rainbow publishers – CBE (1991)

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I & II
ALLIED COURSE : II - Mathematics

Inst Hour	: 2 + (3)
Credit	: 3
Code	: 18K2CSAM2

INTEGRAL CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS

(For B. Sc., Computer Science Major)

UNIT 1:

Properties of Definite Integrals – Integration by parts - Multiple integrals. (Simple problems only)
(Chapter 1 section 11,12, Chap5: 2.1,2.2,3,3.1,3.2,4 of Text Book1)

UNIT 2:

Fourier series for functions of period 2π – odd and even functions – Half range sine and cosine series and problems to the relevant concepts only.
(Chapter6:sec 1,2,3,3.1,3.2,4,5.1,5.2, of Text Book2)

UNIT 3:

First order first degree ordinary differential equations – Linear equations – Bernoulli’s equations.
(Chapter 1: Sec 1.1-2.5 of Text Book2)

UNIT 4:

Equations of first order but of higher degree – simultaneous linear differential equations – second order differential equations with constant coefficients.
(Chapter 1: Sec 5, 5.1-7.3, Chapter 2: Sec 1-4 of Text Book2)

UNIT 5:

Laplace Transforms – Conditions for the existence of the Laplace Transforms – General theorems – Inverse transforms – Solving the second order ordinary differential equations with constant coefficients using the Laplace transforms (simple problems only).
(Chapter5: Sec 1, 1.1, 1.2, 2-12 of Text Book2)

Text Books:

- [1] S.Narayanan , T.K.M.Pillai, Calculus Volume II , S.Viswanathan Publication 2015
- [2] S.Narayanan , T.K.M.Pillai, Calculus Volume III, S.Viswanathan Publication 2015

Reference Books:

- [1] A.Singaravelu, Calculus
- [2] M.D.Raisinghania, Ordinary & Partial Differential Equations
- [3] M.L.Khanna, Differential Equations

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
ALLIED COURSE : III - Mathematics

Inst Hour	: 4
Credit	: 3
Code	: 18K2CSAM3

NUMERICAL METHODS AND GRAPH THEORY

(For B. Sc., Computer Science Major)

UNIT1:

Algebraic Equations - Method of false position – Bisection method – Iteration method – Solving by Newton Raphson method. (In all problems Approximation upto 2 decimals only)
(Chapter2:Sec2.1-2.5 of Text Book 1)

UNIT 2:

Numerical integration by Trapezoidal and Simpson's rule -Euler's method of solving an ordinary differential equation numerically; Runge- Kutta's second order method of solving ordinary differential equations.(In all problems Approximation upto 2 decimals only)
(Chapter5:5.4.1-5.4.3 & Chapter7: Sec 7.4, 7.4.1, 7.4.2, 7.5 of Text Book 1)

UNIT 3:

Graphs: Definition and examples – Graph models – Precedence Graphs and concurrent processing - Graph terminology – The hand shaking theorem – Underlying undirected graph - bipartite graphs – Union of two graphs
(Chapter 6: Sec6.1- 6.62 of Text Book2)

UNIT 4:

Representation of : graphs (By using adjacency list) - undirected simple graphs (By using Adjacency matrices) – Any undirected graph (By using adjacency matrix) - directed graphs (By adjacency matrix) – undirected graph (by using incidence matrix) – graph isomorphisms.
(Chapter6: Sec 6.63-6.85 of Text Book2)

UNIT 5:

Connectivity – Path circuits and isomorphisms – Euler & Hamiltonian path – Algorithm for constructing Euler circuits – Hamiltonian paths and circuits.
(Chapter6: Sec 6.86 -6.90, 6.115-6.137 of Text Book2)

Text Books:

- [1] S.S. Sastry, An introductory Methods of Numerical Analysis, Prentice Hall of India II edition
- [2] G. Ramesh ,C.Ganesamoorthy, Discrete Mathematics ,2003

Reference Books:

- [1] S.Arumugam, Graph Theory.
- [2] Narsingh Deo,Graph Theory with Applications to Engineering and Computer Science

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
ALLIED COURSE : I - Mathematics

Inst Hour	: 5
Credit	: 3
Code	: 18K1MAM1

NUMERICAL METHODS - I
(For B.Sc., Mathematics Major)

UNIT I:

The Solutions of Numerical Algebraic and Transcendental Equations – Bisection Method – The Iteration Method – The Method of False Position - Newton Raphson Method .
(Chapter 3-3.1-3.4)

UNIT II:

Solution of Simultaneous Linear Algebraic Equations: Introduction – Gauss Elimination Method – Gauss Jordan Method - Iterative Methods- Jacobi Method - Gauss Seidal Method of Iteration.
(Chapter 4- 4.1, 4.2, 4.2.1, 4.7- 4.9)

UNIT III:

Difference Equations: Definition, Order and Degree of Difference Equations – To find Complementary Functions and Particular Integrals of the type (i) a^x (ii) x^m (iii) $x^m a^x$ (Simple Problems)
(Chapter 10-10.1-10.6)

UNIT IV:

Numerical Solution of Ordinary Differential Equations – Solution by Taylor’s Series – Picard’s Method of Successive Approximations – Euler’s Method and Modified Euler’s Method – Second and Fourth order Runge - Kutta Method for First Order Ordinary Differential Equations.
(Chapter 11: Sections 11.5, 11.8, 11.9, 11.11, 11.12, 11.13)

UNIT V:

Numerical Solution of Partial Differential Equations – Elliptic Equations - Laplace’s Equations – Jacobi’s Method – Gauss Seidal Method – Parabolic Equations – Crank Nicholson Difference Method.

(Chapter 12: Sections -12.5, 12.6, 12.8, 12.9)

(In all the Units SIMPLE PROBLEMS ONLY)

Text Books:

1. Kandasamy.P, Thilagavathy, K, Gunavathi.K., Numerical Methods ,S.Chand & Company Ltd 2015.

Reference Books

- [1] S.S.Sastry, Introductory Methods of Numerical Analysis, Prentice Hall of India Private Limited, Fourth Edition.
- [2] M.K.Venkataraman, Numerical Analysis, The National Publishing Company, Madras, Fifth Edition.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I & II
ALLIED COURSE : II - Mathematics

Inst Hour : 2 + (3)
Credit : 3
Code : 18K2MAM2P

NUMERICAL METHODS II- PRACTICALS **

(For B.Sc., Mathematics Major)

- 1. Bisection Method.**
- 2. False position method.**
- 3. Fixed point iteration.**
- 4. Newton – Raphson method.**
- 5. Lagrange Interpolation.**
- 6. Newton’s Forward Method.**
- 7. Newton’s Backward Method.**
- 8. Gauss Elimination Method.**
- 9. Gauss Jordan method.**
- 10. Gauss Seidal method for solving Simultaneous Linear equation.**
- 11. Jacobi’s method for solving Simultaneous Linear equation.**
- 12. Trapezoidal rule.**
- 13. Simpson’s 1/3 rule.**
- 14. Euler’s Method.**
- 15. Modified Euler’s Method.**
- 16. Runge-Kutta Method of order second and four.**
- 17. Adams-Moulton Method for Predictor – Corrector Method.**
- 18. Standard deviation.**
- 19. Correlation coefficient.**
- 20. Method of least squares (straight line).**
- 21. Jacobi’s method for Laplace’s equation.**
- 22. Gauss-Seidel Method for Laplace’s equation.**

****The Algorithm may be given to the problems.**

The Problems are framed in such a manner that “C” Programming may be developed for solving the problems. For Practicing “C” Language the problems may be helpful.

SEMESTER : II
ALLIED COURSE : III - Mathematics

Inst Hour	: 4
Credit	: 3
Code	: 18K2MAM3

NUMERICAL METHODS – III
(For B.Sc., Mathematics Major)

UNIT 1:

**Finite Differences: First Differences – Operators and their relations - Interpolation – Gregory Newton’s Backward and Forward Formula for Interpolation.
(Chapter 5- 5.1, 5.2 and Chapter6 - 6.1,6.2 ,6.3)**

UNIT 2:

**Interpolation with unequal intervals – Divided differences and their properties – Newton’s divided difference formula.
(Chapter 8 -8.1-8.3, 8.5)**

UNIT 3:

**Finite Differences: Factorial Polynomial - Inverse Operator- Summation of Series – Montmort’s Theorem
(Chapter 5 -5.4, 5.6, 5.7, 5.8)**

UNIT 4:

**Numerical Differentiation – Newton’s Forward and Backward Difference Formula – Derivatives using Stirling Formula - Maxima and Minima of the function given the Tabular values.
(Chapter 9- 9.1-9.4, 9.6)**

UNIT 5:

**Numerical Integration – Newton – Cote’s Formula - Trapezoidal Rule –Simpson’s 1/3 Rule – Simpson’s 3/8 Rule - Weddle’s Rule
(Chapter 9- 9.7 - 9.11, 9.13 - 9.15)**

***** (In all the Units SIMPLE PROBLEMS ONLY)**

Text Book:

1.Kandasamy.P, Thilagavathy. K., Gunavathi.K., Numerical Methods , S.Chand& Company Ltd 2015.

Reference Books:

- [1] S.S.Sastry, Introductory Methods of Numerical Analysis, Prentice Hall of India, Private Limited, New Delhi – 11, Fourth Edition.
[2] H.C.Saxena, Finite Differences and Numerical Analysis, S.Chand & Company Limited, New Delhi-110055, Ninth Edition

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
NON MAJOR ELECTIVE COURSE: I – Mathematics

Inst Hour : 2
Credit : 2
Code : 18K3MELO1

OPERATIONS RESEARCH – I

UNIT – 1:
Introduction to OR .
(Section : 1.1 – 1.8)

UNIT – 2:
Formulation of LPP.
(Section : 2.1 – 2.3)

UNIT – 3:
Graphical solution
(Section : 2.5)

UNIT – 4:
Transportations Model – Mathematical formulation of a TP – methods for finding initial basic feasible solution – North West corner rule and Least cost method.
(Section : 7.1)

UNIT – 5:
Assignment problem (Balanced).
(Section : 8.1 – 8.5)
(In all the units applications of concepts only. No book work)

Text Book:

[1] Prof. V. Sundaresan, Prof. K.S. Ganapathy Subramanian, Prof. K. Ganesan, Resource Management and Techniques, A.R. Publications, Fourth Edition, 2007.

Books for Reference:

- [1] Operations Research by Kanti Swarup, Gupta.P.K & Manmohan. (8th edition)**
- [2] Problems in Operational Research by Gupta.P.K. & Manmohan.**
- [3] Operational Research by Hamdy A. Taha (Third Edition).**

Question Pattern (Both in English & Tamil Version)

Section A : 5 x 5 = 25 Marks, (Any 5 out of 8, No Unit should be omitted)

Section B : 5 x 10 = 50 Marks, (Any 5 out of 8, No Unit should be omitted)

SEMESTER : IV
NON MAJOR ELECTIVE COURSE: II – Mathematics

Inst Hour : 2
Credit : 2
Code : 18K4MELO2

OPERATIONS RESEARCH – II

UNIT – 1:

Introduction – Basic Terminologies - Construction of Network.
(Section : 15.1, 15.2, 15.3)

UNIT – 2:

Network Computations and Critical Path - Floats.
(Section : 15.4 – 15.5)

UNIT – 3:

PERT method
(Section : 15.6)

UNIT – 4:

Inventory Models – Introduction – Types of Inventory – Reasons for Maintaining Inventory – Cost Inventory – Variable Inventory – Lead Time – Re Order Level (ROL).
(Section : 12.1 – 12.6)

UNIT – 5:

Deterministic Inventory models.
(Section : 12.7) (Model I only)

Text Book:

[1] Prof. V. Sundaresan, Prof. K.S. Ganapathy Subramanian, Prof. K. Ganesan, Resource Management and Techniques, A.R. Publications, Fourth Edition, 2007.

Books for Reference:

- [1] Operations Research by Kanti Swarup, Gupta.P.K & Manmohan. (8th edition)
- [2] Problems in Operational Research by Gupta.P.K. & Manmohan.
- [3] Operational Research by Hamdy A.Taha (3rd Edition).

Question Pattern (Both in English & Tamil Version)

Section A : 5 x 5 = 25 Marks, (Any 5 out of 8, No Unit should be omitted)

Section B : 5 x 10 = 50 Marks, (Any 5 out of 8, No Unit should be omitted)

SEMESTER : I
CORE COURSE : I

Inst Hour	: 6
Credit	: 5
Code	: 18KP1M01

ALGEBRA

UNIT – I

Group Theory: A counting principle – Normal Subgroups and Quotient groups – Homomorphisms – Automorphisms.

Chapter 2: Sec 2.5, 2.6, 2.7, 2.8

UNIT – II

Group Theory: Cayley's theorem – Permutation groups – Another counting principle – Sylow's theorem.

Chapter 2: 2.9, 2.10, 2.11, 2.12

UNIT – III

Ring Theory: Homomorphisms - Ideals and quotient rings – More ideals and quotient rings – Euclidean Rings – A particular Euclidean Ring.

Chapter 3: Sec 3.3, 3.4, 3.5, 3.7, 3.8

UNIT – IV

Polynomial rings – Polynomials over the rational field – Polynomials over commutative rings – Inner Product spaces.

Chapter 3: Sec 3.9, 3.10, 3.11,

Chapter 4: Sec 4.4

UNIT – V

Fields: Extension fields – Roots of Polynomials – More about roots.

Chapter 5 : Sec 5.1, 5.3, 5.5

TEXT BOOK

1. I.N.Herstein, Topics in Algebra, Second Edition, Wiley Eastern Limited.

REFERENCES

1. David S.Dummit and Richard M. Foote, Abstract Algebra, Third Edition, Wiley Student Edition, 2015.
2. John, B. Fraleigh, A First Course in Abstract Algebra, Addison – Wesley Publishing company.
3. Vijay, K. Khanna, and S.K. Bhambri, A Course in Abstract Algebra, Vikas Publishing House Pvt Limited, 1993.
4. Joseph A.Gallian, Contemporary Abstract Algebra, Fourth Edition, Narosa Publishing House, 1999.

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
CORE COURSE : II

Inst Hour : 6
Credit : 5
Code : 18KP1M02

REAL ANALYSIS

UNIT-I

Basic Topology: Finite, Countable and Uncountable sets – Metric spaces, Compact sets, Perfect sets, Connected sets.

Chapter 2 of Text Book 1

UNIT-II

Numerical Sequences and Series: Convergent Sequences – Subsequences – Cauchy Sequences – Upper and Lower Limits – Some Special sequences – Series: Series of Non-negative Terms – The Number e – The Root and Ratio Tests – Power Series – Summation by Parts – Absolute convergence – Addition and Multiplication of Series – Rearrangements.

Chapter 3 of Text Book 1

UNIT-III

Differentiation : The Derivative of a Real function – Mean Value Theorems – The Continuity of Derivatives – L'Hospital's Rule – Derivatives of Higher Order – Taylor's Theorem – Differentiation of Vector valued functions.

Chapter 5 of Text Book 1

UNIT-IV

Riemann Stieltje's Integral: Notation and Definition – Linear properties – Integration by Parts – Change of Variable – Reduction – Step functions as Integrators – Reduction to a finite sum – Euler's Summation Formula – Monotonically Increasing Integrators – Additive and Linearity properties of Upper and Lower Integrals – Riemann's condition – Comparison Theorem – Integrators of Bounded Variation – Sufficient and Necessary conditions for existence – Mean Value Theorem – Integral as a function of the interval – Second fundamental theorem of Integral Calculus – Change of variable – Second Mean Value Theorem – Riemann – Stieltje's Integrals depending on a parameter – Differentiation under the Integral sign – Interchanging the order of Integration – Lebesgue's criterion for existence – Complex-valued Riemann Stieltje's Integrals.

Chapter 7 of Text Book 2

UNIT-V

Functions of Several Variables: Linear Transformations – Differentiation – The Contraction Principle – The Inverse Function Theorem – The Implicit Function Theorem – The Rank Theorem – Determinants – Derivatives of Higher Order – Differentiation of Integrals.

Chapter 9 of Text Book 1

TEXT BOOK

1. W.Rudin, Principles of mathematical Analysis, IIIEd.,1976, McGrawHillBookCo.
2. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 2nd Edition.

REFERENCES

- 1.A.J. White, Real Analysis: An Introduction, Addison Wesley Publishing Co., Inc 1968.
- 2.Tom.M.Apostol Mathematical Analysis – II, Edition Narosa Publishing House – 1974.
3. Rokert G.Bartle, Donal.R.Shelbert, Introduction to Real Analysis
4. Ajith Kumar, S.Kumaresan, A Basic Course in Real Analysis

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
CORE COURSE : III

Inst Hour : 6
Credit : 4
Code : 18KP1M03

ORDINARY DIFFERENTIAL EQUATIONS

UNIT-I

Second Order Linear Equation: The general solution of the homogeneous equation – The use of a known solution to find another – The method of variation of parameters – Power Series solutions and special functions: Introduction – Series solution of first order equations – Second order Linear equations.

Chapter 3: sections 15, 16, 19, and Chapter 5: Sections 26 to 28

UNIT-II

Power series and Special functions: Regular singular points – Gauss's hypergeometric equation – The point at infinity – Some special functions of Mathematical Physics: Legendre Polynomials – Properties of Legendre Polynomials – Bessel functions – Properties of Bessel Functions.

Chapter 5: sections 29 to 32 and Chapter 8 : Sections 44, 45, 46, 47

UNIT-III

Systems of First Order Equations: Linear systems – Homogenous Linear system with constant Coefficients – The Existence and Uniqueness of Solutions: The Method of successive Approximations – Picard's Theorem.

Chapter 10: Sections 55, 56 and Chapter 13: Sections 68, 69

UNIT-IV

Qualitative Properties of Solutions: Oscillations and the Sturm separation Theorem –The Sturm Comparison Theorem – Fourier series and Orthogonal functions: Orthogonal functions – The Mean Convergence of Fourier series.

Chapter 4: Sections 24 to 25: Chapter 6: 37, 38

UNIT-V

Non Linear equations:Autonomous Systems; the phase plane and its phenomena – Types of critical points ; stability – critical points and stability for linear systems – Stability by Liapunov's direct method – Simple critical points of nonlinear systems.

Chapter 11: Sections 58 to 62

TEXT BOOK

G.F.Simmons, Differential Equations with Applications and Historical Notes, TMH, New Delhi,1984

REFERENCES

1. W.T.Reid, Ordinary Differential Equations, John Wiley & Sons, New York, 1971
2. E.A. Coddington and N.Levinson, Theory of Ordinary Differential Equations, McGraw Hill Publishing Company, New York, 1955.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
CORE COURSE : IV

Inst Hour : 6
Credit : 5
Code : 18KP1M04

GRAPH THEORY

UNIT -I

Graphs and Simple Graphs – Graph Isomorphism – Incidence and Adjacency Matrices – Subgraphs – Vertex Degrees – Paths and Connections – Cycles – Shortest Path Problem – Sperner’s Lemma. Trees – Cut Edges and Books – Cut Vertices - Cayley’s Formula – Connector Problem. Chapter 1 and 2.

UNIT -II

Connectivity – Blocks – Construction of Reliable Communication Networks. Euler Tours – Hamilton Cycles – Chinese Postman Problem – Travelling Salesman Problem. Matchings – Matchings and Coverings in Bipartite Graphs – Perfect Matchings – Personnel Assignment Problem – Optimal Assignment Problem. Chapter 3, 4 and 5.

UNIT- III

Edge Chromatic Number – Vizing’s Theorem – Timetabling Problem. Independent Sets – Ramsey’s Theorem - Turan’s Theorem – Schur’s Theorem – A Geometry Problem. Chromatic Number – Brook’s Theorem – Hajo’s Conjecture – Chromatic Polynomials. Chapter 6, 7 and 8 (upto Section 8.4)

UNIT- IV

Plane and Planar Graphs – Dual Graphs – Euler’s Formula – Bridges – Kuratowski’s Theorem – Five - Colour Theorem and the Four – Colour Conjecture – Nonhamiltonian Planar Graphs – Planarity Algorithm. Chapter 9

UNIT -V

Directed Graphs – Directed Paths – Directed Cycles – Job Sequencing Problem – Designing an Efficient Computer Drum – Making a Road Sysem One – Way – Ranking the Participants in a Tournament. Chapter 10.

TEXT BOOK

A.Bondy and U.S.R Murty, Graph Theory with Applications, Macmillan, 1976.

REFERENCES

1. S.A.Choudum, Afirst Course in Graph Theory, Mac Millan India Limited, 1987
2. R.J.Wilson & J.J.WATKINS, Graphs: An Introduction Approach, John Wiley & Sons,1989.
3. Kobayashi S and Nomizu.K Foundations of Differential Geometry,Interscience Publishers, 1963
4. WIHELM Klingenberg: A Course in Differential Geometry, Graduate Texts in Mathematics, Springer Verlag, 1978
5. T.J.Willmore, An Introduction to Differential Geometry, Oxford University Press,(17th Impression) New Delhi 2002.(Indian Print).

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : I
ELECTIVE COURSE : I (1)

Inst Hour : 6
Credit : 4
Code : 18KP1MELM1

DIFFERENTIAL GEOMETRY

UNIT – I

SPACE CURVES: Definition of a space curve – Arc length – tangent and osculating plane – normal and binormal – curvature and torsion – contact between curves and surfaces – tangent surface – involutes and evolutes – Intrinsic equations – Fundamental Existence Theorem for space curves – Helics.

Chapter 1: Sections 1.1 to 1.7, 1.10, 1.13, 1.16, 1.17, 1.18

UNIT – II

INTRINSIC PROPERTIES OF A SURFACE: Definition of a surface – curves on a surface – surface of revolution – Helicoids – Metric – Direction coefficients – families of curves – Isometric correspondence – Intrinsic properties.

Chapter 2: Sections 2.1 to 2.11, 2.14, 2.15.

UNIT – III

GEODESICS: Geodesics – Canonical geodesic and their differential equations – Canonical geodesic equations – geodesics on surface of revolution - Normal property of geodesics – Differential equations of geodesics using normal property -Existence Theorems

Chapter 3: Sections 3.1 to 3.7

UNIT – IV

GEODESICS: Geodesic parallels – Geodesics curvature – Gauss – Bonnet Theorem – Gaussian curvature – surface of constant curvature – Conformal mapping – Geodesic mapping.

Chapter 3: Sections 3.8 to 3.15

UNIT – V

THE SECOND FUNDAMENTAL FORM AND LOCAL NON INTRINSIC PROPERTIES OF A SURFACE: The second fundamental form – Classification of points on a surface - Principal curvature – Lines of curvature – The Dupin indicatrix - Developable surfaces – Developable associated with space curves and with curves on surface – Minimal surfaces – Ruled surfaces – Three fundamental forms.

Chapter 4: Sections 4.1 to 4.12

TEXT BOOK

D. Somasundaram, Differential Geometry a First Course, Narosa Publishing House, New Delhi.

REFERENCES

1. Struik, D.T. Lectures on Classical Differential Geometry, Addison – Wesley, Mass. 1950
2. Kobayashi S. and Nomizu. K. Foundations of Differential Geometry, Interscience Publishers, 1963.
3. Wilhelm Klingenberg: A course in Differential Geometry, Graduate Texts in Mathematics, Springer Verlag, 1978.
4. J.A. Thorpe Elementary topics in Differential Geometry, Under – graduate Texts in Mathematics, Springer – Verlag 1979.
5. T.J. Willmore, An Introduction to Differential Geometry, Oxford University Press, (17th Impression) New Delhi 2002.(Indian Print).

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
CORE COURSE : V

Inst Hour	: 6
Credit	: 5
Code	: 18KP2M05

COMPLEX ANALYSIS

UNIT-I

Arcs & closed curves – Analytic functions in regions – Conformal mapping – Length and area - Line integrals – Rectifiable arcs – Line integrals as functions of arcs – Cauchy’s Theorem for a Rectangle – Cauchy’s Theorem in a disk.

Chapter – III : Sec 2.1 to 2.4 Chapter - IV : Sec 1.1 to 1.5

UNIT-II

Cauchy’s Integral Formula – The Index of a point with respect to a Closed Curve - The integral formula – Higher Derivatives – Morera’s theorem – Liouville’s theorem - Cauchy’s estimates – Fundamental theorem of algebra.

Chapter-IV : Sections 2.1 to 2.3

UNIT-III

Local properties of Analytical functions: Removable singularities – (Taylor’s theorem) - Zeros and Poles – Meromorphic functions – Essential singularities – The Local Mapping (Theorem – The Maximum Principle).

Chapter –IV : Sec 3.1 – 3.4

UNIT-IV

The General form of Cauchy’s theorem: Chains and Cycles – Simply connected sets – Homology – The general statement of Cauchy’s theorem and it’s proof – Locally exact differentials – Multiply connected Regions. The Calculus of Residues: The Residue Theorem - The Argument Principle - Evaluation of Definite Integrals.

Chapter 4 : Sec 4.1 to 4.7 & 5.1 to 5.3

UNIT-V

Harmonic functions – Definition and Basic properties – The mean value property – Poisson’s formula – Schwartz’s Theorem – Reflection Principle – Weirstrass’s Theorem – The Taylor series – The Laurent series.

Chapter 4 : Sec 6.1 to 6.5 & Chapter 5 : Sec 1.1 to 1.3

TEXT BOOK

L.V.Ahlfors – Complex Analysis – Third Edition Mc Graw Hill Education (India) Edition 2013.

REFERENCES

1. J.N. Sharma, Functions of Complex Variables.
2. SergeLang, Complex Analysis, Addison Wesley, 1977.
3. S.Ponnusamy, Foundations of Complex Analysis, Narosa Publishing House, 1977.
4. Dr.V Karunakaran, Complex Analysis, Narosa Publishing House

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
CORE COURSE : VI

Inst Hour : 6
Credit : 5
Code : 18KP2M06

LINEAR ALGEBRA

UNIT-I

Introduction – Vector Spaces – Subspaces – Linear Combinations and Systems of Linear Equations – Linear Dependence – Linear Independence – Basis and Dimension – Maximal Linearly Independent Subspaces.

Chapter 1: Sections 1.1 to 1.7

UNIT – II

Linear Transformations – Null Spaces and Ranges – The Matrix Representation of a Linear Transformation – Composition of Linear Transformation and Matrix Multiplication – Invertibility and Isomorphism – The change of Coordinate Matrix – Dual Spaces – Homogeneous Linear Differential Equations with Constant Coefficients.

Chapter 2: Sections 2.1 to 2.7

UNIT- III

Elementary Matrix Operations and Elementary Matrices – The Rank of Matrix and Matrix Inverses – System of Linear Equations – Theoretical and Computational Aspects. Determinants of Order 2 and Order n – Properties of Determinants.

Chapter 3: Sections 3.1 to 3.4 and Chapter 4: Sections 4.1 to 4.3

UNIT – IV

Eigen Values and Eigen Vectors – Diagonalizability – Matrix Limits and Markov Chains – Invariant Subspaces and The Cayley Hamilton Theorem.

Chapter 5: Sections 5.1 to 5.4

UNIT – V

Inner Product and Norms – The Gram Schmidt Orthogonalization Process and Orthogonal Complements – The Adjoint of a Linear Operator – Normal and Self – Adjoint Operators – Unitary and Orthogonal Operators and their Matrices

Chapter 6: Sections 6.1 to 6.5

TEXT BOOK

[1] Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, Linear Algebra, 4th Edition, Pearson New International Limited, 2014.

REFERENCES

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, New Delhi 1975.
2. I.S.Luther and I.B.S.Passi, Algebra, Vol I-Groups, Vol.II- Rings, Narosa Publishing House (Vol.I-1996, Vol.II-1999)
3. N.Jacobson, Basic Algebra, Vol.I& II.Freeman, 1980 Hindustan Publishing Company.
4. Kenneth Hoffman and Ray Kunze, Linear Algebra, Second Edition, Prentice– Hall of India Private Limited, New Delhi, 2014.

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
CORE COURSE : VII

Inst Hour	: 6
Credit	: 5
Code	: 18KP2M07

TOPOLOGY

UNIT - I
Topological Spaces – Basis for a Topology – The Order Topology – The Product topology on $X \times Y$ – The subspace Topology – Closed Sets and Limit points — Continuous Functions – The Product Topology – the Metric Topology.
Chapter 2: Sections 12 to 21.

UNIT - II
Connected Spaces – Connected Subspaces of the Real Line – Components and Local Connectedness.
Chapter 3: Sections 23, 24, 25.

UNIT- III
Compact Spaces – Compact Subspaces of the Real Line – Limit Point Compactness – Local Compactness.
Chapter 3: Sections 26, 27, 28, 29.

UNIT - IV
Countability Axioms – Separation Axioms – Normal Spaces
Chapter 4: Sections 30 to 32.

UNIT - V
Urysohn Lemma – Urysohn Metrization Theorem – Tietze Extension Theorem – Imbeddings of Manifolds.
Chapter 4: Sections 33 to 36.

TEXT BOOK

James R.Munkres, Topology, PHI Learning Private Limited, Delhi, 2013, 2nd Edition.

REFERENCES

1. A First course in Topology: James R.Munkres, Prentice Hall of India(p) Ltd., New Delhi, 1988.
2. George.F.Simmons, Introduction to Topology and Modern Analysis, Mc.Graw Hill Co., 1963.
5. J.L.Kelly, General Topology, Van Nostrand, Rein Hold Co., Newyork.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
CORE COURSE : VIII

Inst Hour	: 6
Credit	: 4
Code	: 18KP2M08

PROBABILITY THEORY

UNIT – I

Fields and σ Fields: Class of events – Functions and Inverse functions – Random variables – Limits of random variables.

Chapter 1 and 2 Omit (1.1 & 1.2)

UNIT –II

Probability Space: Definition of Probability – Some simple properties – Discrete Probability space – General probability space – Induced probability space.

Chapter 3 (Omit 3.6)

UNIT –III

Distribution functions: Distribution functions of a random variable – Decomposition of distributive functions – Distributive functions of vector random variables – Correspondence theorem.

Chapter 4

UNIT –IV

Expectation and Moments: Definition of Expectation – Properties of expectation – Moments, Inequalities.

Chapter 5

UNIT –V

Convergence of Random Variables: Convergence in Probability – Convergence almost surely – Convergence in distribution – Convergence in the r^{th} mean – Convergence theorems for Expectations.

Chapter 6 (6.1 to 6.5)

TEXT BOOK

B.R.Bhat (2007), MODERN PROBABILITY THEORY, 3rd Edition, New Age International private limited, New Delhi.

REFERENCES

- 1.Chandra T.K. and Chatterjee D.(2003), A first Course in Probability, 2nd Edition, Narosa Publishing House, New Delhi.
2. Kailai Chung and Farid Aitsahlia, Elementary Probability, Springer Verlag 2003, New York.
- 3.Marek Capinski and Tomasz zastawniak(2003), Probability through problems, Springer Verlag, NewYork.
- 4.Sharma.T.K(2005), A Text Book of probability and theoretical distribution, Discovery publishing house, New Delhi.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : II
ELECTIVE COURSE : II (3)

Inst Hour : 6
Credit : 4
Code : 18KP2MELM2

NUMERICAL ANALYSIS WITH PRACTICALS USING C++

- 1. False position method**
- 2. Fixed point iteration**
- 3. Newton-Raphson method**
- 4. Lagrange Interpolation**
- 5. Newton's Forward and Backward Difference Formula**
- 6. Gauss Elimination Method**
- 7. Gauss Jordan Method**
- 8. Jacobi's method**
- 9. Gauss Seidal Method**
- 10. Trapezoidal Rule**
- 11. Simpson's 1/3 Rule**
- 12. Euler's Method**
- 13. Runge-Kutta Method of order second and fourth**
- 14. Predictor-Corrector Method**
- 15. Payroll problem**
- 16. Electricity Bill**
- 17. Marks Statement**
- 18. Standard deviation**
- 19. Correlation Coefficient**
- 20. Method of least squares (straight line)**

REFERENCES

- 1. Numerical method for scientific and Engineering computation by M.K.Jain S.R.K.Iyengar and R.K.Jain, New age international publishers.**
- 2. Introductory methods of Numerical Analysis by S.S.Sastry- Prentice hall of India Pvt.Ltd.,**

SEMESTER : II
SELF STUDY COURSE : I

Inst Hour :
Credit : *5
Code : 18KP2SSM1

CSIR- NET, SET PREPARATORY COURSE - I

UNIT – I

Basic Concepts of Linear Algebra: Space of n-vectors, Linear dependence , Basic, Linear Transformation, Algebra of Matrices, Rank of a Matrix, Determinants, Linear equations, Quadratic forms, Characteristic roots and vectors.

Algebra: Permutations, combinations, pigeon - hole principle, inclusion-exclusion principle, derangements. Fundamental theorem of arithmetic, divisibility in \mathbb{Z} , congruences, Chinese Remainder Theorem, Euler's ϕ - function, primitive roots. Groups, subgroups, normal subgroups, quotient groups, homomorphisms, cyclic groups, permutation groups, Cayley's theorem, class equations, Sylow theorems. Rings, ideals, prime and maximal ideals, quotient rings, unique factorization domain, principal ideal domain, Euclidean domain. Polynomial rings and irreducibility criteria.

Fields, finite fields, field extensions, Galois Theory.

UNIT - II

Analysis: Elementary set theory, finite, countable and uncountable sets, Real number system as a complete ordered field, Archimedean property, supremum, infimum. Sequences and series, convergence, limsup, liminf. Bolzano Weierstrass theorem, Heine Borel theorem. Continuity, uniform continuity, differentiability, mean value theorem. Sequences and series of functions, uniform convergence. Riemann sums and Riemann integral, Improper Integrals. Monotonic functions, types of discontinuity, functions of bounded variation, Lebesgue measure, Lebesgue integral. Functions of several variables, directional derivative, partial derivative, derivative as a linear transformation, inverse and implicit function theorems. Metric spaces, compactness, connectedness. Normed linear Spaces. Spaces of continuous functions as examples.

UNIT – III

Complex Analysis: Algebra of complex numbers, the complex plane, polynomials, power series, transcendental functions such as exponential, trigonometric and hyperbolic functions. Analytic functions, Cauchy-Riemann equations. Contour integral, Cauchy's theorem, Cauchy's integral formula, Liouville's theorem, Maximum modulus principle, Schwarz lemma, Open mapping theorem, Taylor series, Laurent series, calculus of residues. Conformal mappings, Mobius transformations.

UNIT – IV

Real Analysis : Riemann integrable functions; Improper integrals, their convergence and uniform convergence. Euclidean space \mathbb{R}^n , Bolzano - Weierstrass theorem, compact Subsets of \mathbb{R}^n , Heine - Borel theorem, Fourier series. Continuity of functions of \mathbb{R}^n , Differentiability of $F:\mathbb{R}^n \rightarrow \mathbb{R}^m$, Properties of differential, partial and directional derivatives, continuously differentiable functions. Taylor's series. Inverse function theorem, implicit function theorem. Integral functions, line and surface integrants, Green's theorem, Stoke's theorem.

UNIT – V

Numerical Analysis: Finite differences , interpolation, Numerical solution of algebraic equation – Iteration – Newton Raphson Method – Solutions on linear system – Direct method – Gauss elimination Method – Matrix inversion – Eigen value Problems – Numerical differentiation and Picard's method – Euler's Method and Improved Euler's Method.

Basic Concepts of Probability: Sample space - Discrete probability – Simple theorem on Probability – Independence of events – Bay's theorem – Discrete and Continuous random variables – Binomial – Poisson and Normal Distributions – Expectations and Moments, Independence of Random Variables – Chebyshev's inequality.

REFERENCE

Kumaresan, Foundations in Mathematics.

Question Pattern

Answer ALL QUESTIONS (Each Carries 2 Marks; 50 x 2 = 100)

SEMESTER : III
CORE COURSE : IX

Inst Hour : 6
Credit : 5
Code : 18KP3M09

CLASSICAL DYNAMICS

UNIT-I

Introductory concepts : The mechanical system – Generalised coordinates – constraints - virtual work – energy and momentum.

Chapter I : Sec 1.1 to 1.5

UNIT-II

Lagrange's equations: Derivation of Lagrange's equations – examples – Integrals of motion-small oscillations.

Chapter 2 : Sec 2.1 to 2.4

UNIT-III

Special applications of Lagrange's Equations: Equation - Rayleigh's dissipation function – Impulsive motion – Gyroscopic systems – velocity – dependent potentials.

Chapter 3 : Sec 3.1 to 3.4

UNIT-IV

Hamilton's Equations: Hamilton's Principle – Hamilton's Equations.

Chapter 4 : 4.1 to 4.2

UNIT-V

Other Variational principles – Phase space

Chapter 4 : 4.3, 4.4

TEXT BOOK

Classical Dynamics, Donald T.Greenwood, PHI Pvt.Ltd., New Delhi

REFERENCE

Classical Mechanics, Goldstein Poole & Safco, Pearson Education.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
CORE COURSE : X

Inst Hour	: 6
Credit	: 4
Code	: 18KP3M10

MEASURE AND INTEGRATION

UNIT-I

Measure on Real line – Lebesgue outer measure – measurable sets – Regularity – Measurable functions Borel and Lebesgue measurability.

Chapter – 2: Sections 2.1 to 2.5

UNIT-II

Abstract Measure Spaces : Measures and outer measures – Extension of a Measure – Uniqueness of the Extension – Completion of a measure – measure spaces - Integration with respect to a measure.

Chapter – 5 : Sections 5.1 to 5.6

UNIT-III

L^p Spaces – Convex functions – Jensen's inequality – Inequalities of Holder & Minkowski – Completeness of $L^p(\mu)$.

Chapter 6 : Section 6.1 – 6.5

UNIT-IV

Signed Measures – Hahn Decomposition, The Jordan Decomposition – The Radon – Nikodym Theorem

Chapter 8 : Sections 8.1 to 8.3

UNIT-V

Some applications – Measurability in a product space – Fubini's Theorem.

Chapter 8 : Section 8.4

Chapter 10 : Section 10.1, 10.2

TEXT BOOK

Measure Theory and Integration – G.De Barra

REFERENCE

1. Measure and Integration 2nd Edition by M.E.Manroe Addison – Wesley Publishing Company 1971.
2. Measure and Integration by Inder Rana.
3. Measure and Integration by H.L. Royden

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
CORE COURSE : XI

Inst Hour	: 6
Credit	: 4
Code	: 18KP3M11

PARTIAL DIFFERENTIAL EQUATIONS

UNIT-I

First Order P.D.E – Curves and surfaces – Genesis of first P.D.E – Classification of integrals – Linear equations of the first order – Pfaffian Differential equations – Compatible systems – Charpit's method – Jacobi's method.

Chapter 1: Sections 1.1 to 1.8

UNIT-II

Integral surfaces through a given curve – Quasi- Linear equations – Non- linear first order P.D.E.

Chapter 1: Sections 1.9 – 1.11

UNIT-III

Second order P.D.E: Genesis of second order P.D.E – Classification of second order P.D.E – One dimensional wave equation – Vibrations of a string of an infinite string – Vibrations of a semi – infinite string – Vibrations of a string of finite length (Method of separation variables)

Chapter 2: Sections 2.1 – 2.3.5 except 2.3.4

UNIT-IV

Laplace's Equation : Boundary value problems – Maximum and minimum principles – The Cauchy problem – The Dirichlet problem for the upper half plane – The Neumann problem for the upper half plane – The Dirichlet interior problem for a circle- The Dirichlet exterior problem for a circle – The Neumann problem for a circle – The Dirichlet problem for a rectangle- Harnack's theorem – Laplace's equation – Green's function.

Chapter 2: Sections 2.4: 2.4.1 to 2.4.11

UNIT-V

Heat Conduction Problem – Heat conduction – Infinite rod case – Heat conduction - Finite rod case- Duhamel's principle – Wave equation – Heat conduction equation.

Chapter 2: Sections 2.5 : 2.5.1, 2.5.2 Section 2.6: 2.6.1 , 2.6.2

TEXT BOOK

An elementary course in partial differential equations by T.Amaranath, Narosa, 2nd Edition 2003.

REFERENCES

1. I.C. Evans, Partial differential equations, Graduate studies in Mathematics, vol.19 AMS 1998.
2. I.N.Snedden, Elements of partial differential equations.
3. F.John, P.Prasad, Partial differential equations.

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
ELECTIVE COURSE : III (1)

Inst Hour	: 6
Credit	: 4
Code	: 18KP3MELM3

STOCHASTIC PROCESSES

UNIT – I

Stochastic Processes: Some notions – Specification of Stochastic Processes – Stationary Processes – Markov Chains: Definition and examples – Higher Transition probabilities – Generalization of independent Bernoulli Trails: Sequence of chain – Dependent trials.

Chapter 2: Sec 2.1 to 2.3, Chapter 3: Sec 3.1 to 3.3

UNIT – II

Markov Chains: Classification of states and chains – Determination of Higher transition probabilities – Stability of a Markov system – Markov Chain with Denumerable Number of States – Reducible chains – Markov chains with continuous state space.

Chapter 3: Sec 3.4 to 3.6, 3.8, 3.9 and 3.11

UNIT –III

Markov processes with Discrete state space: Poisson processes and their extensions- Poisson process and related distributions – Generalizations of Poisson process – Birth and Death process – Markov processes with discrete state space (Continuous time Markov Chains)

Chapter 4: Sec 4.1 to 4.5

UNIT – IV

Renewal Processes and Theory : Renewal process – Renewal processes in continuous time – Renewal equation- stopping time – Wald's equation – Renewal theorems.

Chapter 6: Sec 6.1 to 6.5

UNIT – V

Stochastic Processes in Queuing Models – Queuing Systems – General concepts – the queuing model M/M/1: Steady State Behaviour – Transient Behaviour of M/M/1 Model – Non- Markovian models – the model GI/M/1.

Chapter 10: Sec 10.1 to 10.3, 10.7 and 10.8(Omit sec 10.2.3 and 10.2.3.1)

TEXT BOOK

1.J.Medhi, Stochastic Processes, New age international publishers, New Delhi- Second Edition.

REFERENCES

1. Samuel Karlin, Howard M.Taylor, A first course in stochastic processes, Academic press, Second Edition, 1975.
2. Narayan Bhat, Elements of Applied Stochastic Processes, John Wiley, 1972.
3. N.V.Prabhu, Stochastic Processes, Macmillan(NY).

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
ELECTIVE COURSE : IV (1)

Inst Hour : 6
Credit : 4
Code : 18KP3MELM4

OPERATIONS RESEARCH

UNIT-I

Methods of Integer Programming, Cutting - Plane Algorithms, Branch – and - Bound Method.
Chapter 8 – Integer Programming, Sections 8.2 to 8.4

UNIT – II

Dynamic (Multistage) Programming: Elements of the DP model – The Capital Budgeting Example, More on the Definition of the State, Examples of DP models and Computations.
Chapter 9 – Sections 9.1 to 9.3

UNIT-III

Decision theory and Games: Decisions under Risk – Decision Trees – Decisions under uncertainty – Game Theory.
Chapter 11 : Sections 11.1 to 11.4

UNIT-IV

Inventory Models: A Generalized Inventory model – Types of Inventory Models – Deterministic Models.
Chapter 13 : Sections 13.1 to 13.3

UNIT-V

Non-linear Programming Algorithms: Unconstrained Non-linear Algorithms – Constrained Non-linear Algorithms.
Chapter 19 : Sections 19.1 and 19.2.4

TEXT BOOK :

Operations research by Hamdy A.Taha (Third Edition)

REFERENCES

- 1. Prem Kumar Gupta & D.S.Hira, Operations Research : An Introduction, S.Chand and Co., Ltd., New Delhi.**
- 2. S.S.Rao, Optimization Theory and Applications, Wiley Eastern Limited, New Delhi.**

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : III
SELF STUDY COURSE : II

Inst Hour :
Credit : *5
Code : 18KP3SSM2

CSIR- NET, SET PREPARATORY COURSE - II

UNIT – I

Ordinary Differential Equations (ODEs):

Existence and uniqueness of solutions of initial value problems for first order ordinary differential equations, singular solutions of first order ODEs, system of first order ODEs. General theory of homogenous and non-homogeneous linear ODEs, variation of parameters, Sturm-Liouville boundary value problem, Green's function.

Partial Differential Equations (PDEs):

Lagrange and Charpit methods for solving first order PDEs, Cauchy problem for first order PDEs. Classification of second order PDEs, General solution of higher order PDEs with constant coefficients, Method of separation of variables for Laplace, Heat and Wave equations.

UNIT – II

Numerical solutions of algebraic equations, Method of iteration and Newton-Raphson method, Rate of convergence, Solution of systems of linear algebraic equations using Gauss elimination and Gauss-Seidel methods, Finite differences, Lagrange, Hermite and spline interpolation, Numerical differentiation and integration, Numerical solutions of ODEs using Picard, Euler, modified Euler and

Runge-Kutta methods.

UNIT – III

Mechanics: Generalized coordinates, Lagrange's equations, Hamilton's canonical equations, Hamilton's principle and principle of least action, Two-dimensional motion of rigid bodies, Euler's dynamical equations for the motion of a rigid body about an axis, theory of small oscillations.

Variational principles least action; Two dimensional motion of rigid bodies; Euler's dynamical equations for the motion of rigid body; Motion of a rigid body about an axis; Motion about revolving axes.

UNIT – IV

Basic concepts of probability: Sample space, discrete probability, simple theorem on probability, independence of events, Bayes Theorem. Discrete and continuous random variables, Binomial, Poisson and Normal distributions; Expectation and moments, independence of random variables, Chebyshev's inequality. Probability - Axiomatic definition of probability. Random variables and distribution functions (univariate and multivariate); expectation and moments; independent events and independent random variables; Bayes' theorem; marginal and conditional distribution in the multivariate case, covariance matrix and correlation coefficients (product moment, partial and multiple), regression. Moment generating functions; characteristic functions; probability inequalities (Chebyshev, Markov, Jensen). Convergence in probability and in distribution; weak law of large numbers and central limit theorem for independent identically distributed random variables with finite variance.

UNIT – V

Number Theory : Divisibility : Linear diophantine equations. Congruences. Quadratic residues; Sums of two squares, Arithmetic functions μ , τ , ϕ and σ (and).

Differential Geometry: Space Curves – Their Curvature and torsion, Serret-Frenet Formula; Fundamental theorem of Space curves; curves on surfaces – First and Second fundamental form – Gaussian curvatures – Principal directions and Principal Curvatures, geodesics, Fundamental equations of surface theory.

Topology: Elements of Topological spaces – Continuity, Convergence, Homeomorphism, Compactness, Connectedness – Separation axioms – First and Second countability, Separately, Subspaces, Product space – Quotient spaces – Tychonoff's theorem – Urysohn's Metrization theorem – Homotopy and Fundamental Groups.

REFERENCES

Kumaresan, Foundations in Mathematics.

Question Pattern

Answer ALL QUESTIONS (Each carries 2 Marks, $50 \times 2 = 100$ Marks)

SEMESTER : IV
CORE COURSE : XII

Inst Hour	: 6
Credit	: 5
Code	: 18KP4M12

FUNCTIONAL ANALYSIS

UNIT I

Banach Spaces: The definition and some examples- Continuous linear transformations – The Hahn-Banach theorem

Chapter 9: Section 46 to 48

UNIT II

The natural imbedding of N in N^{} - The open mapping theorem – The conjugate of an operator.**

Chapters 9: Section 49 to 51

UNIT III

Hilbert Spaces: The definition and some simple properties – Orthogonal complements – Orthonormal sets – The conjugate space H^* - The adjoint of an operator – Self-adjoint operators – Normal and unitary operators – Projections.

Chapter 10

UNIT IV

Finite – Dimensional Spectral Theory: Matrices – Determinants and the Spectrum of an operator – The Spectral Theorem.

Chapter 11: Section 60 to 62

UNIT V

General Preliminaries on Banach Algebras: The definition and some examples – Regular and singular elements – Topological divisors of zero – The spectrum – The formula for the spectral radius – The radical and semi – simplicity.

Chapter 12

TEXT BOOK

Introduction to Topology and Modern Analysis, G.F.Simmons, McGraw-Hill Education (India) Private Limited, New Delhi, Edition 2004.

REFERENCES

- [1] Walter Rudin, Functional Analysis, TMH Edition, 1974.
- [2] B.V. Limaye, Functional Analysis, Wiley Eastern Limited, Bombay, Second print, 1985.
- [3] K.Yosida, Functional Analysis, Springer – Verlag, 1974.
- [4] Laurent Schwarz, Functional Analysis, Courant Institute of Mathematical Sciences, New York University, 1964.
- [5] D.Somasundaram, Functional Analysis, Narosa Publications, New Delhi.

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : IV
CORE COURSE : XIII

Inst Hour	: 6
Credit	: 5
Code	: 18KP4M13

INTEGRAL EQUATIONS, CALCULUS OF VARIATIONS AND TRANSFORMS

UNIT – I

Calculus of variations – Maxima and Minima – the simplest case – Natural boundary and transition conditions – variational notation – more general case – constraints and Lagrange’s multipliers – variable end points – Sturm – Liouville problems.

Chapter 2: Sections 2.1 to 2.9 of [2]

UNIT – II

Fourier transform – Fourier sine and cosine transforms – Properties Convolution – Solving integral equations – Finite Fourier transform – Finite Fourier sine and cosine transforms – Fourier integral theorem – Parseval’s identity.

Chapter 7 of [3]

UNIT – III

Hankel Transform: Definition – Inverse formula – Some important results for Bessel function – Linearity property – Hankel Transform of the derivatives of the function – Hankel Transform of differential operators – Parseval’s Theorem.

Chapter 9 of [3]

UNIT – IV

Linear Integral Equations – Definition, Regularity conditions – special kind of kernels – eigen values and eigen functions – convolution Integral – the inner and scalar product of two functions – Notation – reduction to a system of Algebraic equations – examples – Fredholm alternative – examples – an approximate method.

Chapter 1 and 2 of [1]

UNIT – V

Method of successive approximations: Iterative scheme – examples – Volterra Integral equation – examples- some results about the resolvent kernel. Classical Fredholm Theory: the method of solution of Fredholm – Fredholm’s first theorem – second theorem – third theorem.

Chapters 3 and 4 of [1]

TEXT BOOKS

- [1] Ram.P.Kanwal- Linear Integral Equations Theory and Practise, Academic Press 1971.
- [2] F.B. Hildebrand, Methods of Applied Mathematics II ed. PHI, ND 1972
- [3] A.R. Vasishtha, R.K. Gupta, Integral Transforms, Krishna Prakashan Media Pvt. Ltd, India, 2002.

REFERENCES

- [1] S.J. Mikhlin, Linear Integral Equations(translated from Russian), Hindustan Book Agency, 1960.
- [2] I.N.Snedden, Mixed Boundary Value Problems in Potential Theory, North Holland, 1966.

Question Pattern

Section A : $10 \times 2 = 20$ Marks, 2 Questions from each Unit.

Section B : $5 \times 5 = 25$ Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : $3 \times 10 = 30$ Marks, 3 out of 5, One Question from each Unit.

SEMESTER : IV
CORE COURSE : XIV

Inst Hour : 6
Credit : 4
Code : 18KP4M14

FUZZY ANALYSIS

UNIT –I

Crisp sets and fuzzy sets - basic concept of fuzzy set - fuzzy logic - operations on fuzzy sets - general discussion fuzzy complements.

Chapter1: 1.4, 1.6 ; Chapter2 : 2.1& 2.2 in Text Book 1.

UNIT –II

Fuzzy union - fuzzy intersection - combinations operations.

Chapter 2: 2.3, 2.4, 2.5 in Text Book 1

UNIT –III

Fuzzy relations and fuzzy graphs : Fuzzy relation on sets and fuzzy sets - Composition of fuzzy relations - Properties of the Min - Max composition - Fuzzy graphs - Special fuzzy relations.

Chapter 6: 6.1, 6.1.1, 6.1.2, 6.2, 6.3 in Text Book 2

UNIT –IV

Fuzzy measures - general discussion - belief and plausibility measures - probability measures - possibility and necessity measures.

Chapter 4: 4.1, 4.2, 4.3, 4.4 in Text Book 1

UNIT –V

Fuzzy decision making - individual decision making - fuzzy ranking methods - fuzzy linear programming.

Chapter 15: 15.1, 15.2, 15.6, 15.7 in Text Book 3

TEXT BOOK

1. George J.Klir, Tina. A Folger, Fuzzy sets, Uncertainty and information, Prentice Hall of India Pvt. Ltd. New Delhi, 2008.
2. H.J.Zimmermann, " Fuzzy set theory and its applications" second edition, Springer New Delhi, 2006.
3. George J.Klir and Bo Yuan, Fuzzy sets and fuzzy logic theory and applications, Prentice- Hall of India , Pvt. Ltd, New Delhi, 2005.

REFERENCES

Timothy J.Ross, Fuzzy logic with Engineering Applications, McGraw - Hill,Inc. New Delhi, 2000.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

SEMESTER : IV
ELECTIVE COURSE : V(1)

Inst Hour	: 6
Credit	: 4
Code	: 18KP4MELM5

DISCRETE MAHEMATICS

UNIT - I

Connectives : Negation – conjunction – Disjunction – Statement formulas and truth tables – logical capabilities of programming languages – Conditional and Bi-conditional – well formed formulas – tautologies – Equivalence of formulas – Duality law – tautological implications- formulas with distinct truth tables – functionally complete sets of connectives – Other connectives.

Chapter 1 : Section 1.2.1 - 1.2.14

UNIT – II

Normal forms : Disjunctive normal forms - Conjunctive normal forms – Principal disjunctive normal forms: principal conjunctive normal forms – Ordering and uniqueness of normal forms – Completely parenthesized Infix notation polish notation – the theory of inference for the statement calculus- validity using truth tables – rules of inference – consistency of premises and indirect method of proof.

Chapter 1 : Section 1.3.1- 1.3.6 & 1.4.1-1.4.3

UNIT - III

The predicate calculus : Predicates – The statement function, variables and Quantifiers – Predicate Formulas- free and bound variables – The universe of discourse- Inference theory of predicate calculus : Valid formulas and Equivalences – Some valid formulas over finite universe – Special valid Formulas involving Quantifiers-Theory of inference for predicate calculus – Formulas involving more than one Quantifier.

Chapter – I Section 1.5.1-1.5.5 & 1.6.1 – 1.6.5

UNIT – IV

Boolean Algebra : Definition and examples – Sub Algebra, direct product and homomorphism – Boolean forms and Free Boolean Algebra – Values of Boolean expression and Boolean Functions.

Chapter – 4 Sections 4.2.1 -4.2.2 & 4.3.1 -4.3.2

UNIT – V

Group codes : The communication model and basic notion of error correction - Generation of codes by using parity checks – Error recovery in group codes

Chapter 3 : Section 3.7.1 to 3.7.3

TEXT BOOK

1. P. Trembly and R. Manohar : Discrete Mathematical Structures with Applications to Computer Science Mc.Graw Hill International Edition.

REFERENCE

1. Kolman Busby Ross, Discrete Mathematical Structure (6th Edition – 12th Printing) Prentice Hall of India, New Delhi, 2001.

Question Pattern

Section A : 10 x 2 = 20 Marks, 2 Questions from each Unit.

Section B : 5 x 5 = 25 Marks, EITHER OR (a or b) Pattern, One question from each Unit.

Section C : 3 x 10 = 30 Marks, 3 out of 5, One Question from each Unit.

**Kunthavai Naachiyar Govt. Arts College(W)Autonomous,
Thanjavur
B.Stat Syallabus 2018
Core Course – I Descriptive Statistics**

Hrs:6

18K1SO1

Credit:6

Unit – I

Statistics – Definition – functions, scope and limitations of statistics – Primary and Secondary data – Methods of collecting Primary data and sources of secondary data, Classification – Definition – Objectives and Types of Classification Tabulation – Steps in tabulation and types of tables.

Unit – II

Diagrams – Uses of diagrams – Types of diagrams – Bar diagrams – Simple, Component, Multiple and Percentage bar diagrams, Pie diagram, Graphs – Uses – Types of graphs – Histogram, frequency polygon, frequency curve and ogives.

Unit – III

Measures of Central tendency – Definition and Properties – Types of measures of Central tendency – Arithmetic mean, Median, Quartiles, Deciles, Percentiles, Mode, Geometric mean, Harmonic mean. Measures of Dispersion – Range, Quartile deviation, Mean deviation and Standard deviation and co-efficient of variation. Skewness and Kurtosis – Definition, Types and measures of skewness and Kurtosis – Simple problems.

Unit – IV

Correlation Analysis – Definition, types of correlation and properties of correlation. Methods of measuring correlation – Karl Pearson’s Method, Concurrent deviation method and Spearman’s Rank Correlation. Regression – Definition – Properties of Regression co-efficients, Regression equations and Regression co-efficients – Simple problems.

Unit – V

Association of attributes – Class frequencies, order of frequencies – contingency table – finding missing frequencies – Yule’s co-efficient of Association.

List of Books for Reference :

- 1. S.C.Gupta and V.K.Kapoor – Fundamentals of Mathematical statistics.**
- 2. S.P. Gupa – Statistical Methods (Revised Edition 2001)**

Allied Course – I - Statistics and Mathematics - I

Hrs:4
Credit:3

18K1SAS1

Unit – I

Census method – sampling method, Non – probability sampling – Judgement sampling, Quota sampling – advantages and disadvantages, probability sampling – Simple random sampling, stratified random sampling, systematic sampling – sampling errors.

Unit – II

Vital statistics – Definition – Methods Fertility – crude birth rate, specific birth rate, general birth rate, total fertility rate, gross reproduction rate and Net reproduction rate – problems. Mortality – crude death rate, SDR life table – uses – problems.

Unit – III

Eigen values and Eigen vectors – power of matrix, Inverse of matrix – Cayley Hamilton – theorem (without proof) – simple problems .

Unit – IV

Algebra – Binomial theorem – Expansion of rational fractions, summation of the series, approximation. Exponential series – expansion – summation of the series, logarithmic series – summation of the series– simple problems.

Unit – V

Matrices – Definition, Types of Matrices – Operations on matrices, Hamilton matrix, Orthogonal matrix, Rank of matrix. System of linear equations – Consistency – non-homogeneous linear equations, homogeneous linear equations, simple problems.

Books for Study :

- 1. A.Singaravelu – Allied Mathematics – (paper II) (1998)**
- 2. S.P. Gupa – Statistical Methods (Revised Edition 2001)**
- 3. S.P. Gupta – Fundamental of Applied Statistics.**

Core Course – II - Practical – I (Descriptive Statistics)

Hrs: 6(3+3)

18K2SO2P

Credit: 3

Unit – I

Construction of Univariate and Bivariate frequency tables. Diagrams – Bar Diagrams and Pie Diagrams. Graphs – Histogram, Frequency Polygon, Frequency curves and Ogives.

Unit – II

Computation of Arithmetic Mean, Median, Quartiles, Deciles, Percentiles, Mode, Geometric mean and Harmonic mean.

Unit – III

Computation of Dispersion – Quartile Deviation, Mean deviation, Standard deviation and co-efficient of variation.

Unit – IV

Computation of Karl Pearson's co-efficient of Skewness and Bowley's co-efficient of skewness, kurtosis.

Unit – V

Computation of Karl Pearson's co-efficient of Correlation, Concurrent deviation method and Spearman's Rank Correlation. Computation of Regression equations. Testing consistency of data and computation of Yule's co-efficient of Association.

List of Books for Reference :

- 1. S.C.Gupta and V.K.Kapoor – Fundamentals of Mathematical statistics.**
- 2. S.P. Gupa – Statistical Methods**

Core course – III – Probability Theory and Random Variables

Hrs:6
Credit:6

18K2SO3

Unit – I

Random experiment, sample space, Types of events – Definition classical approach to probability – Mathematical and Statistical definition, axiomatic approach to probability. Addition Theorem & Multiplication theorem on probability , conditional probability, Baye's theorem and Boole's inequality with proof – simple problems.

Unit – II

Random variable – Definition – Discrete random variable – probability mass function – Distribution function – properties – simple problems.

Unit – III

Continuous random variable – Definition – Distribution function of continuous random variable – properties – probability density function – simple problems.

Unit – IV

Mathematical Expectation – Definition – properties of Expectation, Addition and Multiplication Theorems, variance, covariance, and its properties – Simple problems.

Unit – V

Bivariate probability distribution – joint probability mass function and joint probability density function, joint probability distribution function, marginal probability density functions, conditional probability density functions, conditional Expectation, conditional variance, stochastic independence – Definition and simple problems.

Books for Study :

- 1. Rohatgi.V.K. – An Introduction to probability Theory and Mathematical Statistics, latest Edition**
- 2. S.C. Gupta and V.K. Kapoor – Fundamentals of Mathematical Statistics, latest Edition .**

Allied Course – II - Statistics and Mathematics - II

Hrs: 6(3+3)
Credit: 3

18K2SAS2

Unit – I

Index numbers – Definition, uses Problems in the constructions of index numbers. Methods of index numbers – simple aggregate index. Weighted index numbers – Laspeyre's, Paasche's and Fisher's index numbers. Time reversal and factor reversal tests. Cost of living index numbers – methods of construction (family budget method and aggregate expenditure method)

Unit – II

Statistical decision theory – common elements of decision theory – Pay off table – problems, maximin and minimax principles – EMV, EOL, EPPI, EVPI – problems.

Unit – III

Differentiation – Definition, formulae, simple problems, Inverse function, Differentiation by transformation, differentiation of implicit function, Higher derivatives, simple problems.

Unit – IV

Partial derivatives – Definition. Homogeneous function and Euler's theorem – Statement and Simple problems. Rolle's theorem (with proof).

Unit – V

Complex numbers – Properties, Arithmetic operations, Demoivre's theorem (statement only), Expansion of $\cos n\theta$, $\sin n\theta$ and expansion of $\cos^n\theta$, $\sin^n\theta$ - simple problems.

Books for Study :

1. Dr.S. Arumugam and A. Thangapandi Issac – Calculas Volume 1. (Differentiation and Applications) (1999)
2. Calculus Vol-I, S.Narayanan, T.K.Manicavachagom Pillay.(2010)
3. A. Singaravelu – Allied Mathematics – I (2002)
4. A. Singaravelu – Allied Mathematics (Paper II), (1998)
5. S.P.Gupta – StatisticalMethods (Revised Edition 2001)

Allied Course – III - Statistics and Mathematics - III

**Hrs:4
Credit:3**

18K2SAS3

Unit – I

Analysis of Time series – uses, components of time series, measurements of trend – Free hand method, Semi – average method moving Average method and Method of least squares – Problems.

Unit – II

Business forecasting : steps in methods of forecasting, choice of forecasting – theories of business forecasting.

Unit – III

Integration – Definition. Important results (simple problems). Integration by the method of substitution (9 important formulas). Trigonometric Substitution- simple problems.

Unit – IV

Integration of Rational algebraic function. Type I - $\int P(x)/Q(x)$ - problems. Integration by the method of partial fractions- Simple problems. Type II – partial fractions. Type III - $\int \frac{dx}{ax^2 + bx + c}$ and simple problems.

Unit – V

Reduction formula for $\int \sin^n x dx, \int \cos^n x dx, \int \sin^m x \cos^n x dx, \int \tan^n x dx$ - simple problems.

Books for Study :

- 1. Calculus Vol-II, S.Narayanan, T.K.Manicavachagom Pillay(2010).**
- 2. A. Singaravelu – Allied Mathematics – I (2002).**
- 3. S.P.Gupta – StatisticalMethods (Revised Edition 2001).**

Environmental Studies

Hrs:2
Credit:2

18K2ES

Unit – I

Definition, scope and importance, need for public awareness.

Unit – II

Natural Resources – Forest resources – Water resources – Mineral resources – Food resources – Energy resources – Land resources.

Unit – III

Eco Systems – Meaning – Forest eco System – Grassland eco System – Desert eco System – Aquatic eco system – Bio geographical classification of India – Hot – Spots of biodiversity.

Unit – IV

Environmental pollution – Air pollution – Water pollution – Soil pollution – Noise pollution – Thermal pollution – Nuclear hazards – Pollution Case studies.

Unit – V

Human population and Environment – Population explosion – Family welfare programme – Environment and human health – Human Rights – HIV / AIDS – Women and Child welfare.

Reference :

- N. Arumugam – Concepts of Ecology**
- N. Arumugam – Environmental studies**
- N. Arumugam – Survey of the Environment**
- B. Chandrasekaran – Environmental studies.**
- V. Kumaresan – Plant Ecology and Phytogeography**
- Purohit – A Test book of Environmental Science**
- D. Tharmaraj – Environmental science**
- M.P. Mishra – Our Environmental pollution control and future strategies.**
- Bharathidasan University publication – Environment studies (Tamil and English book).**

Core Course – IV – Discrete Distributions

Hrs :6
Credit:6

18K3S04

Unit – I

Moment Generating Function – Definition, Properties, Characteristic function – Definition and Properties. Inversion Theorem(statement only) . Cumulants – Definition and properties. Moments – Raw moments, central moments and their relationships.

Unit – II

Bernoulli distribution – Definition. Binomial distribution – Definition, Derivation of Binomial probability distribution, Derivation of moments, β_1 , β_2 co-efficients, cumulants. Recurrence relation for moments, mode. Additive property moment generating function, characteristic function and simple problems.

Unit – III

Poisson distribution - Limiting form of Binomial distribution– Definition, properties, Derivation of moments, β_1 , β_2 , Recurrence relation for moments, cumulants, mode, additive property, M.G.F, Characteristic Function and simple problems.

Unit – IV

Discrete uniform distribution – Definition ,derivation of mean and variance. Negative Binomial distribution – Definition, properties ,derivation of mean and variance, moment generating function. Cumulants, Poisson distribution as a limiting case of Negative Binomial distribution.

Unit – V

Geometric distribution – Definition, properties moments, moment Generating function. Hyper-geometric distribution – Definition, Mean and Variance.

Books for Study :

1. S.C.Gupta and V.K.Kapoor – Fundamental of Mathematical Statistics, Sultan Chand and Sons, Eleventh thoroughly revised edition.
2. Rohatgi. V.K. – An Introduction to Probability Theory and Mathematical Statistics.

Self Study Course – I
Competitive Exam Skills
(Contents in Tamil)

18K3SSS1

Credit -2

UNIT – I

(i) ,yf;fzk; :

,yf;fzk; - nghUj;Jjy; - gpupj;J vOJjy; - vjpu;nrhy; - gpijUj;jk; - Mq;fpy
nrhy;Yf;F Neuhd jkpo; nrhy; mwpjy; - mfutupirg;gb vOJjy; - ,yf;fzf; Fwpg;G
mwpjy; - tpizapd; tiffs; - ctikahy; nghUj;jkhd nghUisj; Nju;e;njOJjy; - vJif;>
Nkhid> ,iaG.

(ii),yf;fpak; :

jpUf;Fws; (gj;njhd;gJ mjpffhuq;fs; kl;Lk;) – mwe}y;fs; njhlu;ghd nra;jpfs; -
fk;guhkhazk;> GwehD}W> mfehD}W – njhlu;ghd nra;jpfs; - rpyg;gjpfhuk;>
IQ;rpW fhg;gpak; - ngupaGuhzk;> rpw;wpyf;fpak;> kNdhd;kzpak;>
ehl;LGwghl;L kw;Wk; rka Kd;Ndhbfs; gw;wpa nra;jpfs;.

UNIT – II

jkpo; mwpQu;fs; Mw;wpa njhz;L> ,ay;> ,ir> ehlfk; kw;Wk; ciueil gw;wpa nra;jpfs;.

UNIT – III

nghJ mwptpay; :

(i) ,aw;gpay; :

nghJ mwptpay; tpjpfs; - Njrpa mwptpay; Muha;r;rpf; \$lq;fs; - gUg;ngHuspd;
gz;GfSk;> ,af;fq;fSk; - ,aw;gpay; msTfs;> mstPLfs; kw;Wk; myFfs; - tpir>
,af;fk; kw;Wk; Mw;wy; - fhe;jtpay;> kpd;rhutpay; kw;Wk; kpd;dDtpay; -
ntg;gk;> xsp kw;Wk; xyp.

(ii) Ntjpapay; :

jdpkq;fs; kw;Wk; Nru;kq;fs; - mkpyq;fs;> fhuq;fs; kw;Wk; eg;Gfs; - nraw;if
cuq;fs;> capu; nfhy;ypfs; - Ez;Zapu; nfhy;ypfs;.

(iii) jhtutpay; :

capupdq;fspd; gy;NtW tiffs; - czT+l;lk; kw;Wk; jpl;l czT – Rthrk;.

(iv) tpyq;fpay; :

,uj;jk; kw;Wk; ,uj;j Row;rp - ,dg;ngUf;f kz;lyk; - kdpjdpd; Neha;fs; - guTk;
kw;Wk; guth Neha;fs; cl;gl- jw;fhj;jy; kw;Wk; jPu;Tfs; - tpyq;Ffs;> jhtuq;fs;
kw;Wk; kdpj tho;T

UNIT – IV

(i) Gtpapay; :

g+kpAk; Nguz;lKk; - #upa FLk;gk; - gUtf;fhw;W> kionghopT> fhypiy
kw;Wk; jl;gntg;gepiy – ePu;ts Mjhuq;fs; - ,e;jpahtpYs;s MWfs; - kz; tiffs;>
fdpkq;fs; kw;Wk; ,aw;if tsq;fs; - fhLfs; kw;Wk; td capu;fs; - tptrha Kiwfs;.

(ii),e;jpa murpay; :

,e;jpa murpay; mikg;G – kj;jpa khepy kw;Wk; kj;jpa Ml;rp;gFjpf; -
FbAupik – cupikfSk;> flikfSk; - kdpj cupik rhrdk; - ,e;jpa ehLhSkd;wk; -
ghuhSkd;wk; - khepy epu;thfk; - khepy rl;lkd;wk; -
rl;l rig – cs;shl;rp muR – gQ;rhaj;J uh[]; - ,e;jpa jzpf;if kw;Wk; fz;fhzpg;G
jiytu; - jfty; mwpAk; cupik – ngz;fs; Kd;Ndw;wk; - Efu;Nthu; ghJfhg;G
mikg;Gfs;.

(iii),e;jpa nghUshjhuk; kw;Wk; Njrpa ,af;fk; :

,e;jpa nghUshjhuj;jpd; ,ay;Gfs; - Ie;jhz;L jpl;lq;fs; - Ntshz;ikapy;
mwptpaypd; gad;ghL – njhopy; tsu;r;rp – fpuhk eyk; rhu;e;j jpl;lq;fs; -
r%fk; rhu;e;j gpur;ridfs; - kf;fl;njhif> fy;tp> Rfhjhuk;> Ntiytha;g> tWik –
Njrpa kWkyu;r;rp – Njrj;jiytu;fspd; vOr;rp (fhe;jp> NeU> jh\$u;) – gy;NtW
Nghuhl;l Kiwfs; - Rje;jpu Nghuhl;l;jpy; jkpo; ehL;bd; gq;F (,uh[h]p> t.c.rp>
ngupahu;> ghujpahu; kw;Wk; gyu;)

(iv),e;jpah kw;Wk; jkpo;ehL tuyhW kw;Wk; gz;ghL :

rpe;J rkntsp ehfupfk; - Fg;ju;fs;> nly;yp Ry;jhd;fs;> nkhfyhau;fs; kw;Wk;
kuhl;bau;fs; - tp[a efuj;jpd; fhyk; kw;Wk; ghkpdpfs; - njd; ,e;jpa tuyhW>
gz;ghL kw;Wk; jkpo; kf;fspd; Guhjhzk; - ,e;jpa Rje;jpuk;.

UNIT – V

(i) jpwdwpT kw;Wk; Gj;jpf; \$u;ik Nju;Tfs; :

jfty;fis tptuq;fshf khw;Wjy; - tptuk; Nrfupj;jy;> njhFj;jy; kw;Wk; ghui;tf;F
cl;gLj;Jjy; - ml;ltizfs;> Gs;sp tptu tiuglq;fs; - tptu gFg;gha;T tpsf;fk; -
RUf;Fjy; - rjtpfpjk; - kPg;ngU nghJ tFj;jp (HCF) – kPr;rpW nghJ klq;F
(LCM) – tpfpj; khw;W ruptfpjk; - jdptl;b - \$l;Ltl;b – gug;gsT – fdmsT –
Neuk; kw;Wk; Ntiy – ju;f;f mwpT – Gjpu;fs; - gfil – fhndhspju;f;f mwpT –
vz; fzpju;f;f mwpT – vz; njhlu;fs;.

(ii) elg;G epfo;Tfs; :

nra;jpfs;py; ,lk; ngWk; Gfo;ngw;w egu;fs; kw;Wk; ,lq;fs; - tpiahl;L kw;Wk;
Nghl;bfs; - E}y;fSk; E}yhrpupau;fSk; - tpUJfSk; kw;Wk; gl;lq;fSk; -
,e;jpahTk; mjd; mz;il ehLfSk;.

Books for Study :

Unit – I & Unit – II

6-Mk; tFg;G Kjy; 10-Mk; tFg;G tiu cs;s jkpo; ghLg;j;fq;fs;.

Unit – III

6-Mk; tFg;G Kjy; 10-Mk; tFg;G tiu cs;s mwptpay; ghLg;j;fq;fs;.

Unit – IV

6-Mk; tFg;G Kjy; 10-Mk; tFg;G tiu cs;s r%of mwptpay; ghLg;j;fq;fs;.

Unit – V

6-Mk; tFg;G Kjy; 10-Mk; tFg;G tiu cs;s fzpjg;; ghLg;j;fq;fs; kw;Wk; md;whl
nra;jpjhs;fs;.

Allied Course – IV - OPERATIONS RESEARCH – I

Hrs:4

18K3SAS4

Credit:3

Unit – I

Introduction – Origin – Nature of OR – Structure – Characteristics – Or in Decision making – Models in OR – Phase of OR – Uses and Limitations of OR – LPP- Mathematical formulation of LPP – Graphical Method.

Unit – II

LPP – Standard form of LPP - Maximization – Minimization – Simplex method – Artificial variable technique – Two-Phase Method -Big-M method.

Unit – III

Duality in LPP – Formulation of Dual LPP – Primal – Dual relationship – Solving LPP using Dual concepts – Dual Simplex Method.

Unit – IV

Transportation problem – Balanced, Unbalanced T.P. – Initial basic feasible solution – North West Corner Rule- Row Minima – Column Minima – Matrix Minima (LCM) – Vogel's Approximation Method – Optimality Test – MODI Method.

Unit – V

Assignment problem – Introduction – Balanced – Unbalanced – Maximization – Minimization – Hungarien Method.

Books for study:

- 1. KANTI SWARUP, P.K.GUPTA, and MANMOHN (1980) – “OPERATIONS RESEARCH”, Sultan Chand and sons, New Delhi.**

Books for Reference :

- 1. J. K. SHARMA (1997), “OPERATIONS RESEARCH” and Application, Mc.Millan and Company, New Delhi.**
- 2. NITA H. SHAH, RAVI M. GOR and HARDIK SONI (2010) -“OPERATIONS RESEARCH”, PHI Learning Private Limited, New Delhi.**

**Non Major Elective Course – 1
Statistical Methods**

**Hrs:2
Credit:2**

18K3SELO1

Unit – I

Definition of Statistics – Characteristics, Uses in business and limitations of statistics. Classification- Types – Tabulation – different parts of Table and Types.

Unit – II

Collection of data - Definition of primary and secondary data – methods of collecting primary data and secondary data.

Unit – III

Diagrams – Definition and uses – Types of diagrams – simple bar, sub-divided, multiple bar diagrams and pie diagram- Simple Problems.

Unit – IV

Graphs – Definition and uses, difference between diagrams and graphs. Types of graphs – Histogram, frequency polygon and frequency curve - Simple Problems.

Unit – V

Sampling – Definition of population, Sample, parameter, statistic. Difference between census and sampling – Merits and demerits of sampling. Methods of sampling – Simple Random Sampling – Stratified and Systematic sampling.

Books for Study :

- 1. Statistics – R.S.N. Pillai & V. Bagavathi**
- 2. Statistical Methods – S.P. Gupta**

**Core Course – V – Practical - II
(Bivariate Random Variables & Fitting)**

**Hrs:6(3+3)
Credit:3**

18K4SO5P

Unit – I

Fitting Binomial distribution. Testing goodness of fit using Chi-Square test.

Unit – II

Fitting Poisson distribution. Testing goodness of fit using Chi-Square test.

Unit – III

Fitting Negative Binomial distribution. Testing goodness of fit using Chi-Square test.

Unit – IV

**Bivariate Discrete probability Distributions – Marginal and conditional distributions
– Expectation, variance, covariance, correlation co-efficient for Bivariate discrete r.v.'s.
Calculation of conditional expectation and conditional variance.**

Unit – V

Fitting Normal distribution (Area Method). Testing goodness of fit using Chi-Square test.

Books for Study :

- 1. S.C.Gupta and V.K.Kapoor – Fundamental of Mathematical Statistics, Sultan Chand and Sons, Eleventh thoroughly revised edition.**
- 2. R.S.N.Pillai and Bagavathi - Statistics theory and practice**

Core Course – VI - Continuous Distributions

Hrs:5
Credit:5

18K4SO6

Unit – I

Continuous Uniform distribution – Definition, Derivation of moments, Moment Generating function (M.G.F) Characteristic function. Exponential distribution – Mean and Variance, M.G.F. and Properties.

Unit – II

Normal Distribution – Definition, Properties, Derivation of mean and variance, moments, mode, Median, M.G.F., Characteristic function. Cumulant generating function and Additive property of Normal distribution.

Unit – III

Beta Distribution of first kind and Beta distribution of second kind – Definition, Derivation of mean, variance and Harmonic mean- properties. Gamma distribution – Definition, Moments, M.G.F. C.G.F. and Additive property.

Unit – IV

Convergence in probability – definition , Chebychev's inequality with proof, weak law of large numbers with proof. Convergence in distribution – definition , Central limit theorem (statement only). Exact sampling distribution– Chi-Square distribution – Definition, mean, variance, M.G.F., C.F., Mode and Skewness, Additive property, limiting form of Chi-Square distribution and applications.

Unit – V

Student's t distribution – definition, Derivation, Constants, Properties, limiting form of Student's t distribution. F-distribution – definition, Derivation, Constants. Relationship between t, F and Chi-Square distributions.

Books for Study :

1. S.C.Gupta and V.K.Kapoor – Fundamental of Mathematical Statistics, Sultan Chand and Sons, Eleventh thoroughly revised edition.
2. An introduction to probability theory and Mathematical statistics – V.K.Rohatgi.

Self study Course – II
Quantitative Aptitude

Credit:2

18K4SSS2

Unit – I

Numbers- operations on numbers, H.C.F and L.C.M. of numbers, decimal fractions, simplification, square roots and cube roots, problems on numbers.

Unit – II

Average, problems on ages, surds and Indices, percentage.

Unit – III

Profit and Loss , Partnership , Chain Rule , Time and Work ,Ratio and Proportion.

Unit – IV

Time and Distance , Problems on Trains Pipes and Cistern , Allegation or Mixture, Area ,Volume and Surface Area.

Unit – V

Simple Interest, Compound Interest, Stocks and Shares, True Discount and Bankers Discount.

Books for Study :

1. Quantitative Aptitude – Dr.R.S.Aggarwal

Allied Course – V - OPERATIONS RESEARCH – II
ALLIED PRACTICAL – II
(Based on Second Allied Papers I & III)

Hrs:6(3+3)
Credit:3

18K4SAS5P

LIST OF PROBLEMS:

- i. Graphical Method.**
- ii. Simplex method.**
- iii. Big-M method.**
- iv. Two – Phase Method**
- v. Transportation problem.**
- vi. Assignment problem.**
- vii. Game Theory.**
- viii. Sequencing.**
- ix . Network Problems.**

Allied Course – VI - OPERATIONS RESEARCH – III

Hrs:3
Credit:3

18K4SAS6

Unit – I

Introduction – definition – pay-off – types of games – the maximin – minimax principles Saddle Point – Game with Saddle Point – without saddle point – mixed strategies - 2 x 2 games – graphical method for 2 x n or m x 2 games – dominance property – Resolving games by L.P.P. – Simple problems.

Unit – II

Sequencing – Basic Terms – Processing n jobs through two Machines, Processing n jobs through k Machines, Processing 2 jobs through k Machines.

Unit – III

Queuing system – elements of queuing system – operating characteristics of a queuing systems – deterministic queuing system – probability distribution in queuing system.

Unit – IV

Classification of queuing models – definition of transient and steady states – Poisson queuing system – Model I: {(M/M/1): (FIFO)} and Model II: {(M/M/1): (SIRO)} – Simple Problems.

Unit – V

Network analysis – Basic concepts – Constraints in network – Construction of network – Critical path method (CPM) - Program Evaluation Review Technique (PERT) – simple problems.

Books for study:

1. KANTI SWARUP, P.K.GUPTA, and MANMOHN (1980) – “OPERATIONS RESEARCH”, Sultan Chand and sons, New Delhi.

Books for Reference:

1. J. K.SHARMA (1997), “OPERATIONS RESEARCH AND APPLICATION”, Mc.Millan and Company, New Delhi.

2. NITA H.SHAH, RAVI M. GOR, and HARDIK SONI (2010) - “OPERATIONS RESEARCH”, PHI Learning Private Limited, New Delhi.

**SKILL- BASED ELECTIVE COURSE – I
LIFE SKILLS**

Part : IV **Maximum Marks :100**
SBE : I **Code : 18K4SBEC1**
Instruction Hours : 2
No. of Credits : 2

UNIT–I : ACCOUNTING, BANKING AND MARKETING (6 hours)

Accounting: Meaning – Process – Users – Branches. Accounts: Kinds – Rules – Final Accounts. Banking: Meaning – Deposits – Opening an account – Cheque – Demand Draft – Internet Banking. Marketing: Consumer Rights and Duties.

UNIT–II : ECONOMICS (6 hours)

National Income: Percapita Income – National Income Accounting – Methods of calculating National Income. Indian Money Market: Functions – Capital Market - Sensex. Planning: Long-term objectives – Employment Generation Programmes.

UNIT–III : VITAL STATISTICS AND COMPUTER (6 hours)

Vital Statistics: Meaning – Uses – Rate of vital events. Measurement of fertility – Crude Birth Rate – General Fertility Rate – Specific Fertility Rate – Total Fertility Rate – Gross Reproduction Rate – Net Reproduction Rate. Measurement of Mortality: General/Crude Death Rate – Age Specific Death Rate.

Measures of Central Tendency: Objectives of Averaging – Types: Arithmetic Mean – Weighted Arithmetic Mean. Interest: Simple Interest – Compound Interest.

Computer: Introduction – Components – Communication Systems – Internet – World Wide Web – E-mail – E-Commerce.

UNIT–IV : HOME REPAIRS AND SAFETY TIPS (6 hours)

Working of Electricity – Static Electricity – Electric Circuit – Electrical Grounding – Uses of Electricity – Commercial Electrical Building – Electrical Safety – Dangers from Electricity – Electric Fire – First Aid for Electric injury – Prevention tips.

**Acid in Eye – Alkali in Eye – Acid Burns – Alkali Burns – Poisoning – Inhalation of Gases – Cut by glasses – Heat Burns.
LPG Safety Measures at home.**

UNIT–V : HEALTH, HOUSE PLANTS AND DISASTER (6 hours)

Health Care System: Safety Education – Definition – Need – Safety at Home – Fire Safety in Living Room, Dining room, Kitchen and Bed Room.

House Plants as Hygenics: Introduction – Need – House Plants, Hydroponics – Health reasons such as Air Purification. Plants: *ACALYPA HISPIDA*, *AGAVE AMERICANA*, *BOUGAINVILLE GLABRA*, *BAMBUSA AURINDINACEA*, *EUPHORBIA SPLENDENSIS* and *SANSIVIERA TRIFASCIATA*.

Disaster: Flood and Deforestation – Cause Effect and Controlling Measures.

Books for Reference:

Unit I

1. Vinayagam.N, Mani.P.L, Nagarajan.K, *Principles of Accountancy*, S.Chand & Co., New Delhi.
2. Gordon & Natarajan, *Banking Theory Law and Practice*, Himalaya Publishing House, New Delhi.

Unit II

1. Dutt & Sundaram, *Indian Economy*, S.Chand & Company, New Delhi.
2. Dr.S.Sankaran, *Indian Economy*, Margham Publications, Chennai.

Unit III

1. Pillai.R.S.N, Bagavathi, *Statistics*, S.Chand & Company, New Delhi.
2. Vital.P.R, *Business Mathematics*, Margham Publications, Chennai.
3. Alexis Leon, Mathews Leon, *Information Technology*, Vikas Publishing House, New Delhi.

Unit IV

1. Gopalan.R, Subramanian.P.S and Rengarajan.K, *Elements of Analytical Chemistry*, Sultan Chand and Sons, New Delhi.
2. Theraja.B.L, *Basic Electronics Solid State*, S.Chand & Co., New Delhi.

Unit V

1. Periayya, *Safety Education and First Aid*, Sri Susee Data Processing Centre, Coimbatore.
2. Day. S.C, *Indoor Gardening*, Agrobios Publications, India.
3. Savindra Singh. 2009, *Environmental Geography*, Arti Printers, Allahabad.

Non Major Elective - II Biostatistics

**Hrs:2
Credit:2**

18K4SELO2

Unit – I

Definition of Bio – Statistics, characteristics of Statistics. Data collection of primary and secondary data – Definition and methods of collecting primary and secondary data.

Unit – II

Processing of data – Classification – Objectives & types of classification. Tabulation – Objectives – Components of Tables and types of Tables. Formation of frequency distribution – discrete & continuous.

Unit – III

Diagrammatic representation – definition, Rules for constructing diagrams and uses. Simple bar diagram, Component bar diagram, multiple bar diagram and pidiagram. Use any one of the Agriculture data for practice.

Unit – IV

Measures of central tendency – Mean, Median, Mode. Measures of dispersion – Range and standard deviation – Simple problems. Use any one of the weather data for practice.

Unit – V

Correlation – definition,Types of correlation, Methods of studying correlation – Karl Pearson’s coefficient of correlation , Rank Correlation (without repeated ranks),simple Regression lines(two variables only)-simple problems.Use any one of the medical data for practice.

Books for Study :

- 1. Statistics theory and practice- R.S.N.Pillai, Bagavathi**
- 2. Bio-statistics – P.Ramakrishna**
- 3. Statistical methods for Biologists – S. Palanichamy & M.Manoharan.**
- 4. Bio-Statistics – Gurusamy.**

Core Course – VII - Statistical Inference – I

Hrs:5
Credit:5

18K5SO7

Unit – I

Theory of Estimation – Definition, Parameter, Statistic, sampling distribution, standard error, level of significance, utility of standard error, Hypothesis – Definition of Null and alternative hypothesis, Type – I and Type – II errors, one – tailed and two –tailed tests, Critical region. Testing a hypothesis – General procedure (in section –C, two 5 marks questions may be asked as (a) and (b)).

Unit – II

Point estimation – properties of good estimator – consistency, unbiasedness, efficiency and sufficiency. Cramer Rao inequality with proof. Neymann factorization theorem statement only. Simple problems based on Binomial, Poisson, Normal and Exponential distribution.

Unit – III

Methods of estimation – Methods of maximum likelihood estimation (MLE) and methods of moments – simple problems based on Binomial, Poisson, Normal and exponential distribution. Rao Blackwell theorem . Properties of MLE's without proof.

Unit – IV

Interval estimation – Definition, confidence interval & confidence limits. Confidence interval based on normal distribution – confidence interval for single proportion and difference between proportions, confidence interval for single mean and difference of means – procedures and simple problems.

Unit – V

Confidence interval based on 't', 'F' and Chi-square distribution. Confidence interval for single mean and difference of means. Confidence interval for variance and Confidence interval for variance ratio – Procedure and Simple problems.

Books for Study :

1. Fundamentals of Mathematical Statistics – S.C. Gupta and V.K.Kapoor, Sultan chand & sons, New Delhi, 11th thoroughly revised edition.
2. Statistical Methods – S.P. Gupta, Sultan chand & Sons, New Delhi, 35th revised edition 2007.

Books for Reference:

1. An outline of Statistical Theory – Goon A.M. Gupta, M.A. and B.Das Gupta.

Core Course –VIII - Statistical Inference - II

Hrs:5
Credit:5

18K5S08

Unit – I

Testing of hypothesis – definition, Simple and composite hypothesis, power of a test, most powerful test. Test of significance based on Normal distribution – Test of Significance for single mean and difference of means, Test for single proportion and difference of proportions Test for single S.D & difference of S.D – Simple problems.

Unit – II

Small sample test based on ‘t’ distribution assumptions application – Test of significance for single mean and difference of means, Paired ‘t’ test, Test of significance of correlation coefficient- Partial correlation and Regression coefficient - simple problems.

Unit – III

F- Test - Application- Test for equality of population variances , Test for observed multiple correlation coefficient, observed sample correlation ratio, linearity of Regression.

Unit – IV

Chi-square test –Application- Test of significance based on population variance, test for goodness of fit and test for independence of attributes – simple problems.

Unit – V

Non-parametric tests – Definition, advantages and disadvantages – Run test, Median test, Sign test and Mann Witney U-test (One sample and two samples) – Simple problems.

Books for Study :

1. Fundamentals of mathematical statistics – S.C.Gupta & V.K.Kapoor, Sultan chand & sons, New Delhi, 11th thoroughly revised edition.
2. Statistical Methods- S.P. Gupta, Sultan chand & sons, New Delhi, 35th revised edition – 2007.

Core Course – IX - Sampling Techniques

Hrs : 5
Credit : 5

18K5S09

Unit – I

Definitions – Parameter, Statistic, Population, Sample, Sampling distribution, Standard error. Principal steps in a sample survey, principles of sample survey, sampling and non-sampling errors. Limitations of sampling.

Unit – II

Simple Random sampling – Selecting SRSWR & SRSWOR , Merits and limitations – Derivation of sample mean & variance, unbiased estimates of mean & variance, Comparison of SRSWOR with SRSWR (Variance alone).

Unit – III

Stratified Random Sampling – Derivation of unbiased estimates of mean and variance – Optimum Allocation and Proportional Allocation – Comparison of SRS with stratified sampling (variance alone) – Gain in efficiency due to stratification, merits of stratified Random sampling.

Unit – IV

Systematic sampling – Estimation of population mean and variance, merits of systematic sampling. Comparison of SRS, Stratified and systematic sampling using variance.

Unit – V

Method of Ratio estimation – definition, notations, estimation of the mean and variance from a sample, comparison of the variance of ratio estimator with the mean per unit – Bias of the ratio estimator.

Books for Study :

1. Sampling Techniques – W.G. Cochran
2. Fundamental of Applied Statistics – V.K. Kapoor and S.P.Gupta

CC-X Statistical Quality Control

Hrs:4
Credit:3

18K5S10

Unit – I

Statistical quality control – definition –Basis of SQC. Chance and assignable causes – Benefits of SQC – process and product control – control charts – 3σ control limits – tools for SQC.

Unit – II

Control charts for variables – steps for \bar{X} and R charts – control limits for \bar{X} charts and R charts – criterion for detecting lack of Control in \bar{X} charts and R charts. Interpretation of \bar{X} charts and R charts. Control charts for standard deviation.

Unit – III

Control charts for attributes – Types of attributes – p chart and d chart – definition, mean and variance. Three methods of p and d charts for variable Sample size. Interpretation of p chart.

Unit – IV

Control charts for no. of defectives per unit (c – charts) – definition – limits, mean and variance, c - chart for variable sample size – application – Natural tolerance limits and specification limits – interpretation.

Unit – V

AQL, LTPD, Consumer's risk, Producer's risk, AOQL, O.C curve, ASN - Definitions. Dodge and Roming rectifying sampling inspection – Single sample plan, determination of n and c.

Books for Study :

- 1.Fundamentals of Applied Statistics – S.C. Gupta and V.K. Kapoor, Sultan Chand and Sons. 4th thoroughly revised edition, Jan 2007.
- 2.Statistical Quality Control – R.C.Gupta, kanna Publishers, Delhi.
- 3.Statistical Quality Control –Montgomery.

Major Based Elective – 1(Numerical Analysis)

Hrs:5
Credit:5

18K5SELS1

Unit – I

Finite Differences – Forward and Backward differences, operators Δ , ∇ & E , and their basic properties – Interpolation with equal intervals – Newton's Forward & Backward Difference formula – Simple problem.

Unit – II

Interpolation with unequal intervals – Divided differences and their properties – Newton's divided difference formula – Lagrange's formula – Simple problems.

Unit – III

Central difference interpolation formula – Gauss Forward and Backward difference formula – Stirling's, Bessel's Central difference formula – Simple problems.

Unit – IV

Inverse interpolation : Lagrange's method – Interaction of successive approximation method – simple problems.

Unit – V

Numerical Integration : Trapezoidal Rule – Simpson's $\frac{1}{3}$ rd & $\frac{3}{8}$ th rules – Weddle's Rule – Euler's summation formula – Simple problems.

Books for Study :

1. Scarborough, B.Numerical Mathematical Analysis, OUP.
2. Sastry, S.S. Introductory method of numerical Analysis, P.H.I.
3. Balasubramanian : Numerical Mathematics, Vol I & II.
(Data can be taken from online)

Core Course – XI - Design of Experiments

Hrs:6
Credit:6

18K6S11

Unit – I

Analysis of variance - definitions, Assumptions, Cochran's Theorem (Statement only)
. One-way classification, Two-way classification –statistical analysis of one way & two way classification (Simple problems).

Unit – II

Experimental Designs – terms and definitions – efficiency of a design. Basic Principles of an experimental design. Completely Randomised Design (CRD) - Advantages and disadvantages – applications – Statistical analysis of CRD – Least Square estimates of effects – expectation of sum of squares(Simple problems).

Unit – III

Randomized Block Design (RBD) – Layout of RBD, advantages and disadvantages, statistical analysis of RBD for one observation only. Least square estimates and expectation of mean sum of squares, efficiency of RBD relative to CRD one & two missing observations in RBD (Simple problems).

Unit – IV

Latin square design - advantages and disadvantages – statistical analysis for one observation only, least square estimate and expectation of mean sum of squares. Efficiency of LSD over CRD & RBD. Estimation of missing values in LSD - (Simple problems).

Unit – V

Factorial experiments – 2^2 , 2^3 factorial design – main effects and interactions. Contrast, orthogonal contrast –statistical analysis of 2^2 , 2^3 design . Confounding and partial confounding- definition only.

Books for Study :

1. S.C.Gupta and V.K.Kapoor – Fundamental of applied Statistics, Sultan Chand and Sons, 4th thoroughly revised edition, Jan 2007.
2. Experimental Design – 2nd Edition – William G. Cochran & Gertrude M.Cox., John Wiley & Sons, Classic library edn. 1992.
3. Design & Analysis of Experiment- Montgomery.

CC-XII SIMULATION AND INVENTORY CONTROL

Hrs:6
Credit :6

18K6S12

Unit – I

Simulation – Definition, Reasons for applying simulation technique, Methodology of simulation, simulation models, Advantages and Limitations of simulation. Event – type simulation – Simple problems. Generation of random numbers – various methods of generation of random numbers. Monte – Carlo simulation and its general procedure – simple problems.

Unit – II

Definition of Inventory – Objectives of Scientific Inventory control – Reasons for maintaining Inventories – Types of Inventories – Cost associated with Inventories – Factors affecting Inventory control. The concept of EOQ.

Deterministic Inventory Model (EOQ Model) :Model : I – Derivation of EOQ model with uniform rate of demand, Infinite production rate, no shortage & lead time is zero – simple problems.

Unit – III

Deterministic inventory problems with no Shortages :

Model : II – Derivation of EOQ model with several production runs of unequal length, no shortage and lead time is zero – simple problems.

Model : III – Derivation of EOQ model with uniform rate of demand, finite production rate, no shortage and lead time is zero – simple problems.

Unit – IV

Deterministic inventory problem with Shortages :

Model : IV – Derivation of EOQ model with infinite production and variable order cycle time, shortage allowed and lead time is zero – simple problems.

Model :V – Derivation of EOQ model with finite production, shortage allowed and lead time is zero – simple problems.

Unit – V

Inventory problems with uncertain demand – Determining optimum buffer stock . Systems of Inventory control – Fixed order quantity system (Q-System), Periodic Review System (P- System) – simple problems. Comparison between Q-System and P- System.

Books for Study :

1. **Kanthi Swarup, Gupta, P.K. & Man Mohan : Operations Research – Suttan Chand & Sons – New Delhi.**

**Core Course –XIII - Practical – III
(Inference, Sampling & Design)**

**Hrs:6
Credit:5**

18K6S13P

Unit – I

Test of significance based on Normal distribution – test of significance for single mean and difference of means, single proportion and difference of proportions for large samples. Small sample tests based on ‘t’ distribution – test of significance for single mean and difference of means (paired t - test) χ^2 – tests for independence of attributes and goodness of fit.

Unit – II

Confidence interval for single proportion, difference between proportions, single mean and difference of means using Normal distribution. confidence interval for single mean and difference of means (Using ‘t’ statistic), confidence interval for variance (using ‘ χ^2 ’ statistic) and confidence interval for variance ratio (using ‘F’ statistic).

Unit – III

Non-parametric tests – Run test, Median test, sign test and Mannwhitney U – test (one sample and two samples)

Unit – IV

Estimation of mean and variance of the population of SRSWR and SRSWOR. Estimation of mean and variance of stratified random sampling using Neyman’s optimum Allocation method and proportional allocation. Estimation of mean and variance of systematic sampling. Comparison of simple random sampling, stratified and systematic sampling using variance and estimation of gain in efficiency.

Unit – V

Analysis of CRD, RBD, LSD. 2^2 Factorial Experiment.

Books for Study :

1. Fundamentals of Applied Statistics – S.C. Gupta and V.K. Kapoor, Sultan Chand and Sons. 4th thoroughly revised edition, Jan 2007.
2. Statistical Quality Control – R.C.Gupta, kanna Publishers, Delhi.
3. Fundamentals of mathematical statistics – S.C.Gupta & V.K.Kapoor, Sultan chand & sons, New Delhi, 11th thoroughly revised edition.

MBE – II - VITAL STATISTICS

Hrs : 6
Credit : 6

18K6SELS2

Unit – I

Vital statistics – meaning - – uses of vital statistics – methods of obtaining vital statistics – measurement of population – rates and ratios of vital events – Mortality – meaning - measurement of mortality.

Unit – II

Mortality table or life table – Theorems – Stationary and Stable population – Lotka and Dublin’s model for stable population – Central Mortality Rate – Force of Mortality.

Unit – III

Concepts of Life Tables - Construction of life tables – uses of life tables – problems.

Unit – IV

Fertility Rates – Crude Birth Rate – General Fertility Rate – Specific Fertility Rate – Age Specific Fertility Rate – Total Fertility Rate. Problems.

Unit – V

Measurement of population growth – Crude rate of natural increase and Pearle’s vital index – Gross Reproduction Rate – Net Reproduction Rate –problems.

Books for Study:

1. V.K.KAPOOR and S.C.GUPTA, “*FUNDAMENTALS OF APPLIED STATISTICS*”, Sulthan Chand and Sons, New Delhi. Reprint 2013.

Books for Reference :

- 1. SRIVASTAVA O.S (1983): “A TEXT BOOK DEMOGRAPHY”, Vikas Publishing.**
- 2. BOGUE, DONALD. J: “PRINCIPLES OF DEMOGRAPHY”, (1976), John Wiley, New York.**

Kunthavai Naachiyar Govt. Arts College (W) Autonomous, Thanjavur
B.Stat
Major Based Elective – III Programming in ‘C’

Hrs:5
Credit:5

18K6SELS3

Unit – I

Introduction to ‘C’ , Variables, Data types – declaration, type conversions, Operators, Bit wise, Logical and Assignment operators.

Unit – II

Expression and conditional expressions, control structures, If-Else, SWITCH, WHILE, FOR and DO WHILE loop structures. Break, Continue, Go and Label statements. Function, function returning, function arguments – static and register variables.

Unit – III

Arrays and strings – Array declaration, multi dimensional Arrays strings, character Array, array initialization – Pointers and Addressess. Pointers and Arrays – Pointer to functions.

Unit – IV

Structures and functions, arrays of structures, fields. Unions – Definition and types, standard input and output – formatted output – access to the standard library.

Unit – V

File Access, file handling in ‘C’ – file Descriptions – Error Handling – Low level i/o – read and write, Open, create, Close, Unlink – Random Access.

Books for Study :

Balagurusamy.E, “Programming in ANSI C”,Tata McGraw Hill Publishing company. Unit I(Chapter 2(2.1,2.3,2.4,2.6,2.7,2.8) Chapter 3(3.4,3.5,3.8,3.14). Unit II Chapter 3 (3.10,3.11,3.7), Chapter 5(5.3,5.4,5.7), Chapter 6(6.2,6.3,6.4), Chapter 9 (9.5,9.12).Unit III Chapter7(7.2,7.7),Chapter8(8.2,8.3,8.7,8.8),Chapter11(11.3,11.10,11.15),UnitIVChapter10(10.2,10.3,10.4,10.5,10.8,10.10,10.11,10.12,10.14), Unit V Chapter 12 (12.2-12.3,12.4,12.5,12.6)

Kundhavai Naachiyar Govt. Arts College (W) Autonomous, Thanjavur
B.Sc Degree – Mathematics Major
Allied course – Mathematical Statistics – I

18K3MAS1

Hrs:4 Credit:3

Unit – I

Statistical data – primary and secondary (definition only). Formation of frequency distribution. Various measures of central tendency – Mean, median, mode, geometric mean, Harmonic mean – Properties and Simple problems.

Unit – II

Measures of Dispersion – Range, Quartile deviation, Mean deviation, standard deviation – their coefficients – merits and demerits skewness – Karl Pearson’s and Bowley’s coefficient (Simple problems).

Unit – III

Probability – Definition, Axiomatic approach to probability – Additive and multiplicative laws of probability (Two variables only) and conditional probability. Concept of Random variables – Discrete and Continuous Random variables – Distribution function, pmf, pdf and their properties (simple problems).

Unit – IV

Mathematical Expectation – Addition and Multiplication theorems (two variables only). Moment generating and characteristics functions, their properties. Conditional expectation and conditional variance (simple problems).

Unit – V

Binomial and poisson distributions – moments, β_1 , β_2 , moment generating function and cumulant generation function. Fitting binomial distribution and poisson distribution (simple problems).

Books for Study :

- 1. Gupta S.C & Kapoor V.K. Fundamentals of Mathematical Statistics, Sultan Chand & Sons.**
- 2. Practical Statistics – R.S.N Pillai and V.Bagavathi.**
- 3. Statistical Methods – S.P. Gupta.**

Kunthavai Naachiyaar Govt. Arts College (W) Autonomous, Thanjavur
B.Sc Degree – Mathematics Major
Allied course – Mathematical Statistics – II (Practical)

Hrs:5 Credit:3

18K4MAS2P

Unit – I

Measures of central tendency – A.M, Median, G.M and H.M. Measures of Dispersion – Quartile deviation, Mean deviation (from mean & median), SD and their coefficient. Measures of Skewness, Calculation of first four moments, central moments, β_1 and β_2 .

Unit – II

Bivariate discrete probability distribution – Marginal distribution and conditional distribution. Calculation of Mean, Variance, Covariance, Correlation coefficient, expectation, conditional expectation and conditional Variance.

Unit – III

Fitting of binomial distribution, Poisson distribution and Normal distributions (area method only).

Unit – IV

Calculation of Karl Pearson's coefficient of correlation, Spearman's Rank Correlation coefficient and Regression equation.

Unit – V

Large sample tests – Test of Single mean, difference between means, single proportion and difference between proportions.

Exact sample test – 't' – test for single mean, difference between means, paired t – test, chi square test for goodness of fit and independence of attributes.

Books for Study :

- 1. Fundamentals of Mathematical Statistics - S.C. Gupta & V.K. Kapoor.**
- 2. Practical Statistics – R.S.N Pillai and Bagavathi (II Edition)(Reprint 2013).**

Kunthavai Naachiyar Govt. Arts College (W) Autonomous, Thanjavur
B.Sc Degree – Mathematics Major
Allied course – Mathematical Statistics – III

18K4MAS3

Hrs:4 Credit:3

Unit – I

Normal distribution – mean, median, mode, moments, β_1 and β_2 , moment generating function and uses of Normal distribution, Binomial, Poisson and Chi – Square distribution tends to Normal distribution.

Unit – II

Continuous distributions – Rectangular, Exponential, Beta, gamma and their pdf, mgf, mean and variance.

Unit – III

Correlation – Definition and uses, Karl Pearson’s coefficient of correlation, Spearman’s rank correlation and their properties. Simple linear regression lines, regression coefficient and their properties.

Unit – IV

Tests of significance – Definition of Null hypothesis, alternative hypothesis, sampling distribution, standard error and critical region. Type I and Type II errors, one tailed and two tailed tests. Large sample test for single mean, difference between means, single proportion and difference between proportions.

Unit – V

Small sample tests – ‘t’- test for single mean, Difference between means. Paired ‘t’ test, Chi – Square test for goodness of fit and independence of attributes.

Books for Study :

- 1. Fundamentals of Mathematical Statistics - S.C. Gupta & V.K. Kapoor.**
- 2. Statistical Methods – S.P. Gupta.(Revised edition 2001)**

Kunthavai Naachiyaar Govt. Arts College (W) Autonomous, Thanjavur
B. Sc Degree – Geography Major
Allied course – Applied Statistics – I

18K3GAS1

Hrs:4 Credit:3

Unit – I

Definition of Statistics – functions and Characteristics. Statistical Data – Primary and Secondary. Methods of collecting primary data & secondary data, GIS Definition and meaning only. Classification – Definition, objects of Classification and types of classification. Tabulation – Definition, rules for tabulation, Parts of a table and types of tables.

Unit – II

Diagrammatic representation – Significance, rules for construction, Types of diagrams – Simple bar diagram, component bar diagram, and pie diagram. Graphs of frequency distributions – Histogram and ogives, Problems related to Rainfall, weather data.

Unit – III

Measures of Central Tendency – Arithmetic mean, median, mode, Geometric mean & Harmonic mean, Quartiles – merits and demerits and problems related to weather and climate.

Unit – IV

Measures of Dispersion – Range, Quartile Deviation and Standard deviation – their coefficients, merits & demerits, problems.

Unit – V

Measures of Skewness – Karl Pearson's co-efficient of skewness and Bowley's co-efficient of skewness – problems. Kurtosis - Concept only.

Books for Study :

- 1. Statistics Theory and practice – R.S.N. Pillai & Bagavathi.**
- 2. Statistical Methods – S.P. Gupta.**

Kunthavai Naachiyar Govt. Arts College (W) Autonomous, Thanjavur
B. Sc Degree – Geography Major
Allied course – Applied Statistics – II

18K4GAS2

Hrs:6 Credit:3

Unit – I

Association of Attributes (two attributes). Nine Square table, types of association, Methods of studying association – Yule’s Co-efficient of association – Definition and problems.

Unit – II

Simple correlation – Definition and types of correlation – Methods of studying correlation – Scatter diagram, Karl Pearson’s coefficient of correlation, Spearman’s rank correlation coefficient and Simple Linear Regression analysis (problems).

Unit – III

Basic sampling methods – Simple random Sampling, Stratified random Sampling, systematic Sampling and quota Sampling (no derivations).

Unit – IV

Index numbers – definition, construction and uses – Laspeyer’s, Paasche’s and Fisher’s ideal index numbers. Tests of adequacy of a good index number – Time Reversal test & Factor Reversal test.

Unit – V

Time Series – concept and definition, Components of Time Series – Secular trend, Seasonal variation, cyclical variation and Irregular variations. Measurement of Trend by the method of moving average and method of least squares.

Books for Study :

- 1. Statistics theory and Practice – R.S.N. Pillai & V.Bagavathi(VII Edition)(Reprint - 2013).**
- 2. Comprehensive Statistical Methods –P.N.Arora,Sumeet Arora,S.Arora (IV Edition)(Reprint- 2013).**

Kunthavai Naachiyaar Govt. Arts College (W) Autonomous, Thanjavur
B. Sc Degree – Geography Major
Allied course – Applied Statistics - III

Hrs:3 Credit: 3

18K4GAS3

Unit – I

Elements of set theory, definition of sample space. Probability, its definition, additive and multiplicative laws of probability (Concepts and statements only) Simple problems (no derivations).

Unit – II

Binomial distribution, Poisson Distribution and Normal Distribution – Concept, definition, properties (without proof) and uses, simple problems in Binomial Distribution only.

Unit – III

Testing of hypothesis – Definition of hypothesis – null hypothesis and alternative hypothesis, standard error, level of significance, critical region, parameters and statistic. Type I and Type II errors, one tailed and two tailed tests, Test procedure.

Unit – IV

Large sample tests – Test for single mean and difference between two means. Test for single proportion and difference between proportions –procedure and problems.

Unit – V

Small sample tests – Chi-square test for independence of attributes (Two attributes only), ‘t’ test for single mean, difference between two means and paired ‘t’ test (procedure and problems).

Books for Study :

- 1. Statistics theory and Practice – R.S.N. Pillai & V.Bagavathi(VII Edition)(Reprint - 2013).**
- 2. Comprehensive Statistical Methods –P.N.Arora,Sumeet Arora,S.Arora (IV Edition)(Reprint- 2013).**

Kunthavai Naachiyaar Govt. Arts College (W) Autonomous, Thanjavur
B. A Degree – Economics Major
Allied course – Statistics For Economics – I

Hrs:4 Credit:3

18K2ECAS1

Unit – I

Definition of Statistics – its functions and Characteristics. Statistical data – Primary and Secondary data. Methods of collecting primary and secondary data. Classification – definition, objects of classification and types of classification.

Unit – II

Diagram -Types of diagrams – Simple bar diagram and component bar diagram. Simple Pie diagram . Graphs – Histogram and frequency polygon.

Unit – III

Measures of Central Tendency – Arithmetic Mean, Median, Mode, Geometric mean and Harmonic mean – merits & demerits, Quartiles.

Unit – IV

Measures of Dispersion – Range, Quartile deviation, Mean deviation and standard deviation – their coefficients, merits and demerits – simple problems.

Unit – V

Measures of Skewness – Karl Pearson’s coefficient of Skewness and Bowley’s coefficient of Skewness – problems. Concepts of Kurtosis only.

Books of Study :

- 1. Statistics theory and Practice – R.S.N. Pillai & V.Bagavathi(VII Edition)(Reprint - 2013).**
- 2. Comprehensive Statistical Methods –P.N.Arora,Sumeet Arora,S.Arora (IV Edition)(Reprint- 2013).**

Kunthavai Naachiyaar Govt. Arts College (W) Autonomous, Thanjavur
B.A Degree – Economics Major
Allied course – Statistics For Economics – II

18K3ECAS2

Hrs:5 Credit:3

Unit – I

Association of Attributes (two attributes), Nine Square table, types of association, Methods of studying association – Yule’s Co-efficient of association – Definition and problems.

Unit – II

Simple correlation – Definition and types of correlation – Methods of studying correlation – Scatter diagram, Karl Pearson’s coefficient of correlation, Spearman’s rank correlation coefficient and Simple Linear Regression analysis (problems).

Unit – III

Time Series – concept and definition, Components of Time Series – Secular trend, Seasonal variation, cyclical variation and Irregular variation. Measurement of Trend only by the method of moving average and method of least squares.

Unit – IV

Testing of hypothesis – Definition of hypothesis – null hypothesis and alternative hypothesis, standard error, level of significance, critical region, parameters and statistic. Type I and Type II errors, one tailed and two tailed tests, Test procedure.

Unit – V

Large sample tests – Test for single mean and difference between two means. Test for single proportion and difference between proportions – Procedure and problems
Small sample tests – Chi-square test for independence of attributes (Two attributes only), ‘t’ test for single mean, difference between two means and paired ‘t’ test (Procedure and problems).

Books of Study :

1. Statistics theory and Practice – R.S.N. Pillai & V.Bagavathi(VII Edition)(Reprint - 2013).
2. Comprehensive Statistical Methods –P.N.Arora,Sumeet Arora,S.Arora (IV Edition)(Reprint- 2013).

Kunthavai Naachiyaar Govt. Arts College (W) Autonomous, Thanjavur
BBA – Allied Course
Statistics and Mathematics for Management

Hrs:4 Credit:3

18K2BBAS1

Unit – I

Statistics – Definition, Merits and demerits. Methods of collecting Primary data and Secondary data. Classification and Tabulation – Objectives, Types and Uses. Bar Diagram – Simple, Component, Multiple, Percentage and Pie diagram. Graphs – Histogram & Ogives.

Unit – II

Measures of Central Tendency – Mean, Median, Mode. Merits, Demerits and simple problems. Measures of Dispersion Range, Quartile Deviation, Standard Deviation.

Unit – III

Simple correlation – Karl Pearson’s correlation coefficient and Spearman’s rank correlation coefficient. Simple Regression lines – Simple problems. Index numbers – Laspeyre’s, Paasche’s and Fisher’s Index numbers – Simple problems.

Unit – IV

Definition of Linear programming problem, Decision variable – Basic Assumptions – Mathematical formulation of the Problem – Procedure of solving LPP by Graphical Method – Simple problems (Two variables only)

Unit – V

Matrix – Definition, Types of Matrices, Addition, Subtraction and Multiplication of matrices. Determinants of order one, two and three and inverse of matrix (3x3)– simple problems.

Books for Study :

1. **Statistics Theory and Practice – R.S.N. Pillai & V.Bagavathi (VII Edition)(Reprint -2013).**
2. **Comprehensive Statistical Methods – P.N.Arora,Sumeet Arora,S.Arora (IV Edition) (Reprint- 2013).**
3. **OperationResearch-S.Kalavathy – II Edition (Reprint - 2007)**
4. **A. Singaravelu – Allied Mathematics – II .**

DISTRIBUTION THEORY

**Hours:6
Credit:5**

Unit – I

Discrete distribution – Binomial, Poisson and Geometric distributions – Derivation of the distributions and their constants properties and problems.

Unit – II

Continuous Distributions – Normal, Laplace, Exponential, Gamma ,Erlang, Weibull and Cauchy distributions – Derivation of the distributions and their constants, properties and problems.

Unit – III

Bivariate Normal distribution – Derivation of its Moment Generating Function, marginal and conditional distributions.

Unit – IV

Students's –t, Chi-square and Snecdecor's F Distribution – Derivations of the distributions, properties and relationship between 't', F and Chi-square distributions.

Unit – V

Order Statistics: Distribution of smallest, largest, and rth order Statistics – Distribution of Range and median – Joint distribution of two order statistics and joint distribution of several order statistics.

Text Book:

Gupta.S.C. and Kapoor V.K. – Fundamentals of Mathematical Statistics, Sultan Chand &

Sons.

Books for reference:

- 1. Rohatgi. V.K., An Introduction to Probability theory and Mathematical Statistics. Wiley Eastern.**
- 2. John and Kotz, Discrete distribution, John Wiley Publications New York.**
- 3. John and Kotz, Continuous distribution, John Wiley Publications New York.**

M.Stat
CORE COURSE - II
REAL ANALYSIS AND MATRIX THEORY

Hours:6
Credit:5

18KP1S02

Unit – I

Functions – Real valued function, Equivalence, countability, least upper bounds Sequence of real numbers – Definition, limit of a sequence, convergent sequence, divergent sequence, bounded sequence, monotone sequence, limit superior and limit inferior, Series of real numbers – convergence and divergence, series with non-negative terms, alternating series, conditional convergence and absolute convergence.

Unit – II

Calculus – Sets of Measure zero, Definition of the Riemann integral, existence of the Riemann integral, Derivatives, Rolle’s Theorem, the law of the mean, Fundamental theorems of calculus, improper integrals.

Unit – III

Rank of a matrix – elementary transformation of a matrix, Equivalent Matrices, Elementary matrices, Echelon matrix – Hermite Canonical form, sylvester’s law, Frobenius inequality, certain results on the rank of an Idempotent matrix.

Unit – IV

Eigen values and Eigen Vectors – properties, Cayley – Hamilton theorem, application of Cayley-Hamilton theorem – simple problems.

Unit – V

Generalized inverse of a matrix: Definition, different classes of generalized inverse, Properties of G- inverse – classes properties – properties of Moore and Penrose – application of generalized inverse in the solution of system of linear equations. Quadratic forms – Definition, classification of the quadratic form, positive semi-definite quadratic form and Canonical reduction.

Text Books:

- 1. Goldberg. R. (1963), Method of Real Analysis, Oxford & IBH publishers, New Delhi (Unit – 1: Chapter – 1: Page no.3 – 17, 21-75, Unit – II: Chapter-7 Page no.(156 – 194).Biswas.S(1996) , A Text book of Matrix Algebra, New Age International Publishers, New Delhi. (Unit – III: Chapter – 5, Unit – IV: Chapter – 7: Page no.185 – 198, 208 – 209, 213 – 227. Unit – V: Chapter – 8; page no.228 – 245 and Chapter – 9; page no. 267 – 268, 317 – 323).**

**M.Stat
CORE COURSE - III**

MEASURE AND PROBABILITY THEORY

18KP1S03

**Hours:6
Credits:4**

Unit-I

Events; algebra of sets, Fields:-fields; Borel fields, Intersection and union of fields monotone fields and necessary properties- minimal monotone class.

Unit-II

Function, inverse function, measurable function, borel function, induced- field, indicator functions, elementary function, concept of random variable, Borel function of a vector random variable, Limits of random variables, continuity property of probability space, Caratheodory extension theorem (Statement only), induced probability space, probability as a measure.

Unit-III

Distribution function, Properties, Jordan decomposition theorem, distribution function of a random vector, Marginal and conditional distributions, correspondence theorem (Statement only) empirical distribution function, Expectation properties- Cramer Rao-inequality, Holder's inequality, Cauchy Schwartz's inequality, Minkowski inequality, Jensen's inequality, Basic inequality.

Unit-IV

Convergence of random variables. Types of convergence: Monotone Convergence theorem, Dominated Convergence theorem, Characteristic function, properties, some inequalities on Characteristic functions, inversion theorem and simple problems.

Unit-V

Limit theorems, Law of large numbers, weak law of large numbers, Bernoulli, Poisson and Khinchine's law of large numbers; Strong law of large numbers, Levy-Cramer theorem, Central limit theorem, De-Moivre-Laplace, Liapounov's, Lindberg-Levy theorems. Statement of Lindberg-Feller theorem.

Books for study and Reference:

- 1. B.R.Bhat-Modern probability theory: units 1,2,3,4,5,6 (up to 6.55 only), 7 (up to 7.4 only)**
- 2. Mark Fisz-Probability theory and mathematical statistics: unit 6 (omitting 6.4,6.5,6.10,6.13,6.14,6.15)**

Core Course - IV
PRACTICAL-I
(Distribution, Matrices)

18KP1S04P

Hours:6
Credits:5

Unit-I

Fitting of Binomial, Poisson and Normal Distributions.

Unit-II

Student's t-distribution, chi-square distribution, F – distribution.

Unit III

Bivariate Normal – marginal and conditional distributions.

Unit –IV

Eigen values and Eigen Vectors – application of Cayley – Hamilton theorem – simple problems.

Unit- V

Rank of matrices(3X3),Generalized inverse of a matrix, G- inverse, Quadratic equation.

Reference:

1.Gupta, S.P.& Kapoor,V.K., Fundamentals of mathematical statistics, Sultan chand&Sons, New Delhi.

2. Biswas. S (1996), A Text book of Matrix Algebra, New Age International Publishers, New Delhi.

MAJOR BACSED ELECTIVE-I

REGRESSION ANALYSIS AND TIME SERIES

18KP1SELS1

**Hours:6
Credits:4**

UNIT - I

**Simple Linear Regression Model – Least Squares Estimation of the Parameters and Properties
Hypothesis Testing on the Slope and Intercept Estimation by Maximum Likelihood – Interval
Estimation in Simple Linear Regression Co- efficient.**

UNIT – II

**Multiple Regression Models – Estimation of the Model Parameters and Properties – Confidence
Interval in Multiple Regression – Hypothesis Testing in Multiple Linear Regression.**

UNIT – III

**Generalized and Weighted Least Squares –Robust Regression Estimation – Relationship between
Analysis of Variances Generalized Linear Models – Non Linear Regression Model.**

UNIT – IV

**Multicollinearity Sources of Multicollinearity – Effects of Multicollinearity – Methods for
Dealing with Multicollinearity.**

UNIT - V

**Models of Time Series. Additive and Multiplicative Models – Analysis and Forecasting
– Elimination of trend – Growth Curve – Modified Exponential Curve (Method of three selected
points only). Gompertz Curve – Logistic Curve (Method of three selected Points and Yulis Method
only – Auto Regression – Marcoff's Series). Auto Correlation and correlogram.**

Text Book:

**Douglas C. Montgomery and Elizabeth A. Peck – Introduction to Linear Regression Analysis –
John Wiley & Sons, New York.**

M.Stat

CORE COURSE - V

STATISTICAL QUALITY CONTROL

18KP2S05

Hours:6
Credits:5

Unit:I

Quality: Quality of Design – Quality of Conformance – Quality Assurance – Quality System – Quality management – Quality Policy – Quality Objectives – Quality Control – Quality Audit – Statistical Process Control(SPC): Chance and assignable causes of quality variation – Statistical basis of the control chart – Quality improvement tools – Implementing SPC – Control charts \bar{x} , R, p, np, c, and u (fixed and variable sampling sizes).

Unit:II

The Cumulative Sum control chart – Modified and Acceptance control charts – Group control charts – ARL procedures – Process Capability analysis – Introduction – DCA using Histogram, control chart and design of experiments – process capability ratios – estimating the natural tolerance limits of process.

Unit:III

Acceptance sampling: sampling inspection versus cent percent inspection – OC curve design of single, double, multi sequential sampling plans – attributes – Explanation of AOQL, ATI, ASN – use of sampling tables IS2500 part 1, Dodge – Roming system: Dodges AOQL plan for continuous production CSP- 1, CP- 2 or CSP- 3. The Phillips standard sampling system MILstd. – 105d (ABC standard) (ISO 2859).

Unit:IV

Concepts of reliability, maintainability and availability – reliability of series and parallel systems and others simple configurations, survival models (exponential), weibull, Lognormal, Rayleigh and bath-tub, different types of redundancy and use of redundancies in reliability improvement. Problems in life testing, censored and truncated experiments for exponential models.

Unit:V

Evaluation of software products – Quality Assurance in software development – software process maturity – five levels as per CMM – key process area – software quality assurance plan – Quality reviews and audits – reporting – Need for ISO 9000 – 3 certification scheme in various countries – TQM and software industry – planning for ISO 9000 – 3 certification.

Books for study and Reference:

- 1. Douglas C.Montgomery- Introduction to statistical quality control, John Wiley 3rd edn. 1996.**
- 2. Juran – Quality control handbook, Mc Graw Hill, 4th edn. 1998**
- 3. Joc Sanders & Eugene curran – Software Quality, Addison Wesley 1995.**
Integer Programming- Gomory's fractional cut method for all integer and fractional cut method for mixed integer, Branch and Bound method.

M.Stat

**CORE COURSE - VI
LINEAR MODEL AND DESIGN OF EXPERIMENTS**

18KP2S06

s:6
Credits:6

Unit:I

Hour Linear Models: Definition – Functionally Related Models – Mean Related Model – Regression Model – Experimental Design Model – Components of Variance Model – Point Estimation – Estimation of β and σ^2 under normal theory – Gauss Mark off theorem.

Unit:II

RBD – Missing observations in RBD – Analysis of RBD with one and two missing values – Analysis of LSD with one and two missing values – Orthogonal Latin Squares – Graeco LSD.

Unit:III

Factorial Experiment: Main effects, Interaction effects, Orthogonal, Contrasts- Designs for 2^n , 3^n experiments. Total and Partial confounding in 2^3 experiments – Analysis of Split Plot Design.

Unit:IV

Incomplete Block Design – Balanced Incomplete Block Design – Relationship between the parameters. Constructions of BIBD – Recovery of Inter Block Information – Resolvable Designs.

Unit:V

Analysis of PBIBD – Two Associate classes and Response surface design. Text Books:

1. Montgomery, Design & Analysis of Experiments.

2. Das, M.N. and Giri, N.C,(1997), Design and analysis of experiments, Wiley Eastern Ltd., New Delhi.

Books for study and Reference:

1. Cochran & Cox, Experimental Designs.

Unit : I

Linear Programming Problem(LPP) – Graphical Method, Algebraic solutions, Simplex Method Two-Phase Simplex, Duality in Linear Programming, Dual simplex method and revised Simplex method.

Unit : II

Non-Linear Programming Problem(NLLP) – Formulating a Non-Linear Programming Problem, Kuhn- Tucker conditions for non-linear Programming . Quadratic Programming – Wolfe’s method and Beale’s method.

Unit : III

Integer Programming – Gomory’s fractional cut method for all integer, fractional cut method for mixed integer and Branch and Bound method.

Unit : IV

Inventory control – deterministic Inventory problems with no shortages and with shortages. Project Scheduling by PERT and CPM – Network, Critical path method and PERT calculations.

Unit : V

Dynamic Programming-Recursive equation-Characteristics of Dynamic Programming- Dynamic Programming Algorithm-Solution of Discrete D.P.P.-Some Applications-Solution of L.P.P. by Dynamic Programming.

Text Book:

Kanti Swarup, P.K. Gupta and Man Mohan, Operation Research, Sultan and Chand, New Delhi.

Books for Reference:

- 1. Hamdy A.Taha, An Introduction to Operation Research, Prentice Hall of India, New Delhi.**
- 2. Ravindran.A, Don.T.Philips and James J.Solberg, Operation Research Principles and Practice, John Wiley & Sons.**
- 3. Pannerselvam.R, Operation research, prentice Hall of India, New Delhi.**
- 4. Prem Kumar Gupta, Hira.D.S, Operation Research, S.Chand & Company Ltd, New Delhi.**

**CORE COURSE - VII
PRACTICAL-II
(SQC, Design, OR)**

18KP2S08P

**Hours:6
Credits:5**

Unit-I

Control Charts for charts, R- charts, np-charts, U-chart, Acceptance sampling plan- Attributes (OC,AOQ,ASN : single and double sampling), Sequential sampling plans- Moving average range charts, O.C. Curves for control charts.

Unit II

Group control chart, moving average and moving range control chart, single double sampling plan for attributes ,variable sampling plan.

Unit III

Analysis of RBD with one two missing values, Analysis of LSD with one and two missing values

Unit IV

Linear programming Problem (LPP): Two-phase Simplex, Duality and Dual Simplex method. Revised Simplex method.

Unit V

Integer programming- Gomory's fractional cut method for all integer and fractional cut method for mixed integer, Branch and Bound method.

Books for study and Reference:

- 1. Douglas C.Montgomery- Introduction to statistical quality control, John Wiley 3rd edn. 1996.**
- 2. Hamdy A.Taha, An Introduction to Operation Research, Prentice Hall of India, NewDelhi.**

**MAJOR BASED ELECTIVE-II
MULTIVARIATE ANALYSIS**

18KP2SELS2

**Hours : 6
Credit: 4**

Unit : I

Aspects Of multivariate Analysis, Applications of Multivariate techniques – Some basics of matrix and vector algebra – Mean vectors and covariance matrices – Generalized variance – Multivariate normal distribution – multivariate normal density and its properties.

Unit : II

Hotelling T^2 Statistic: Introduction – derivation and its distributions –Uses of T^2 Statistic – Properties of the T^2 Test. Wishart distribution – definition and properties only.

Unit : III

Principle components: Introduction – population principle components – summering sample variation by principle components – Graphing the principle components. .

Unit : IV

Factor analysis and inference for structured covariance matrices: Orthogonal factor model – methods of estimation – Factor rotation – Factor scores.

Unit : V

Discrimination and classification – Separation and classification for two populations – Classification with two multivariate normal populations – Evaluating classification functions – Fisher's discriminant function – Fisher's method for discriminating among several populations.

Text Book:

Richard A.Johnson and Dean W.Wichern (2003): Apllied Multivariate Statistical Analysis, Third Edition, Prentice Hall of India Private Ltd, New Delhi.

Books for Reference:Anderson T.W. (1957): An Introduction to Multivariate Statistical Analysis, Wiley Eastern Private Ltd, New Delhi.

Self Study Course-I

18KP2SS1

ADVANCED QUANTITATIVE APTITUDE

Credit: 5

Unit : I

Profit and Loss - Partnership - Chain Rule - Ratio and Proportion .

Unit : II

Boats and Streams

Unit : III

Calendar, Clock, Odd man out and series.

Unit : IV

Data Interpretation- Tabulation.

Unit : V

Pie-Chart.

Books for Reference:

- 1. QUANTITATIVE APTITUDE – Dr.R.S.Aggarwal**

CORE COURSE - IX

18KP3S09

Estimation Theory

Hours : 6

Credit: 4

UNIT – I

Point Estimation – properties of estimators. Consistency and efficiency of an estimator. Sufficiency of a statistic. Simple problem.

UNIT – II

Unbiasedness – properties, minimum variance unbiased estimators, Rao – Blackwell theorem. Sufficiency and completeness, Lehman – Scheffe’s Theorem, Cramer –Rao Inequality – Simple problems.

UNIT – III

Methods of Estimation: Maximum Likelihood Estimation method – Asymptotic properties of MLE. Simple problems.

UNIT – IV

Interval Estimation – confidence level and confidence co-efficient, Confidence interval for proportion, difference between proportions, single mean and difference proportions – simple problems.

UNIT – V

Construction of Confidence intervals for variance based on chi square, Student’s-t, and F distributions. Simple problems.

Text Books:

- 1. Rohatgi.V.L”An introduction to probability theory and Mathematical Statistics”, Wiley Eastern limited.**
- 2. Gupta.S.C. and Kapoor V.K., Fundamentals of Mathematical Statistics, Sultan Chand & Sons.**

Book for Reference:

C. Radhakrishna Rao, “Linear Statistics Inference and its Applications”, Wiley Eastern limited.

CORE COURSE - X

18KP3S10

Testing of Statistical Hypothesis

**Hours : 6
Credit: 4**

UNIT – I

Statistical Hypothesis - Simple and Composite, Null and Alternative Hypothesis. Concept on Critical Region, Types of errors, Level of Significance, Power of a test. Optimum tests – Most Powerful Test (MPT), Uniformly Most Powerful Test (UMPT) and Neyman – Pearson Lemma – Simple Problems.

UNIT – II

Likelihood Ratio Test – Definition and Properties – Likelihood ratio test for a mean of a Normal Population, equality of means of two Normal Population, Variance of Normal Population, equality of Variances of two Normal Populations.

UNIT – III

Hypothesis testing – Prior and Posterior odds, Base factor for Simple VS Simple Hypothesis, Base factor for Composite VS Composite Hypothesis. Lindley’s Procedure for test of Significance, Lindley’s Paradox and Decision Theoretic Approach to testing Problems.

UNIT – IV

Sequential Analysis – Wald’s Sequential Probability Ratio Test, Properties, efficiency and Fundamental Identity of Sequential Analysis.

UNIT – V

Non – Parametric tests – Advantages and Disadvantages – Sign test, Median test, test for randomness, Wald – Wolfowitz run test, Kolmogrow – Smirnov (one and two samples) tests and Mann Whitney Wilcoxon U-test.

Test Books:

- 1. Gupta S.C. and Kapoor V.K (1993), Fundamental of Mathematical Statistics, Sultan Chand & Sons, New Delhi (Unit I, Unit II and Unit V).**
- 2. Radhakrishna Rao C., Linear Statistical Inference and its Applications – Second Edition, Wiley Eastern Limited (Unit IV).**
- 3. Leonard T. and Hsu.JSJ, Bayesian Methods, Cambridge University Press (Unit III).**

Books for Reference:

- 1. Rohatgi. V and Saleh (2002), Statistical Inference, Asia Publications.**
- 2. Lehmann.E.L, Testing of Statistical Hypothesis, John Wiley.**
- 3. Gibbons.J.D, Non – Parametric Statistical Inference, Duxbury.**
- 4. Berger J.O, Statistical Decision Theory and Bayesian Analysis, Sriges Verlog.**

Unit – I

Simple random sampling with and without replacement. Simple random sampling for proportions. Properties of estimates of mean and variance-confidence limits-Estimation of sample size for proportions, Estimation of sample size.

Unit – II

Stratified random sampling – methods of allocation – Relative precision of stratified random sampling with simple random sampling – Estimation of gain in precision due to stratification – stratified sampling for proportions – Estimation of sample size.

Unit – III

Systematic random sampling –Linear systematic sampling – Circular systematic sampling Estimation of the variance – comparison of systematic sampling with SRS and stratified sampling – Concept of ratio and regression estimators.

Unit – IV

Cluster sampling – Equal cluster sampling – Estimator of mean and its variance – relative efficiency of cluster sampling optimum cluster size – Multi – Stage sampling – Two stage sampling with equal first stage units – Estimator of mean and its variance. Two – stage sampling with unequal first stage units Estimators of mean and its variance.

Unit – V

Multistage sampling – Double sampling for stratification – Optimal allocation – Double sampling for difference estimator – Double sampling for ratio estimator – Double sampling for regression estimator.

Text Book:

Daroga Singh and F.S.Chaudhary, Theory and analysis of Sampling Survey Design, New Age International (P) Ltd., Chennai.

Books for study Reference:

- 1. Moorthy, M.N (1967)- Sampling Theory and Methods, Statistical Publishing Society, Calcutta.**
- 2. Cochran, W.G. (1994) – Sampling Techniques, Wiley Easter Lt**

MAJOR BASED ELECTIVE - III

POPULATION STUDIES

18KP3SELS3

**Hours:6
Credits:4**

UNIT – I

Definition of vital statistics and demography – concepts of population and measurement of population, uses of vital statistics, sources of collecting Vital Statistics, parts of demography,

UNIT – II

Concepts and definitions of Sex Ratio, Rate of a Vital Event, Cohort, Generation, Marriages, Divorce, Separation, Stable Population, Stationary Population, Fertility and Mortality. Birth Rates – Crude Birth Rate, General Fertility Rate, Specific Fertility Rate and Total Fertility Rate (only concepts and formulae).

UNIT – III

Measurement of Mortality – Crude Death Rate, Specific Death Rate, Infant Mortality Rate, Standardized Death Rate – Direct and Indirect method of standardization (No problems), Central Mortality Rate and Force of Mortality.

UNIT – IV

Life Table – Assumptions, Descriptions, Construction and Uses of Life Table.

Definitions of l_x , d_x , np_x , p_x , q_x , L_x and e_{0x} . Expectation of life – Curate expectation and complete expectation of life. Basic theorems with proof.

UNIT – V

Reproduction Rates – Gross Reproduction Rates and Net Reproduction Rates – Graduation of Mortality Rates – Makehem’s Graduation Formula, Gompertz Makehem formula for Mortality,

Text Book:

- 1.Gupta S.C.and Kapoor V.K (1993), Fundamental of Mathematical Statistics, Sultan Chand & Sons, New Delhi (Unit I, Unit II and Unit V).**
- 2. Peter R Cox, Demography, Fifth edition, Vikas Publishing House, New Delhi. (unit I and Unit II).**

Book for reference:

Hansraj, Fundamentals of Demography, Surjeet Publications, New Dehli.

SELF STUDY -II

18KP3SS2

SET EXAM

Credit: 5

UNIT – I

Teaching – Nature , Objective , Characteristics.

UNIT – II

Research Aptitude- Meaning , Characteristics and Types , Steps of Research , Method of Research.

UNIT – III

Reasoning – Series, Codes, Relationship.

UNIT – IV

Logical Reasoning – Alphabet test , Number Related Test , Missing Numbers.

UNIT – V

Data Interpretation – Bar chart , Pictograph , Line graphs, Pie – chart.

Books for study Reference:

1 . Dr.K.Kautilye - Teaching and Research Aptitude

UGC-NET/SET)- General Paper –I .

2. Upkar`s - Teaching and Research Aptitude

UGC-NET/SET)- General Paper –I .

COMPUTER PROGRAMMING WITH C++

Hours : 4

Credit: 4

Unit : I

Introduction of C++: - Application of C++ - A simple C++ Program – More C++ statements – Structure of C++ Program. Tokens, Expressions and Control Structures:-Identifiers and Constants- Basic Data Types-User-Defined Data Types-Derived Data Types-Declaration of Variables- Dynamic Initialization of Variables- Reference Variables – Operators in C++.

Unit : II

Functions in C++ : - The Main Functions – Functions Prototyping – Call by Reference – Return by Reference – Inline Functions – Function Overloading. classes and Objects:- Specifying a class – Defining Member Function – Nesting of members Functions – Private members Functions – Arrays within a class – Static Data members – Static members Functions.

Unit : III

Constructors and Destructors: - Constructors – Copy Constructor- Dynamic Constructor- Constructing Two – Dimensional Arrays – Destructors. Operator Overloading and Type Conversions:- Defining Operator Overloading – Overloading Unary Operators – Overloading Binary Operators – Overloading Binary Operators Using Friends.

Unit : IV

Inheritance, Extending classes: - Defining Derived classes – Single Inheritance – Making a Private Member Inheritable- Multilevel Inheritance – Multiple Inheritance - Hierarchical Inheritance - Hybrid inheritance – Virtual Base Classes.

Unit : V

Pointers, Virtual Functions and Polymorphism: - Introduction- Pointers to Objects – this Pointer- Pointer to Derived Classes – Virtual Functions –Pure Virtual Functions.

Books for Study and Reference:

1. E.Balagurusamy (2001): Object Oriented Programming with C++.Second Edition, Tata McGraw Hill Publishing Company Limited.

**Kunthavai Naachiyar Govt. Arts College (W) Autonomous, Thanjavur.
M.stat**

CC-XIV Practical –IV (C++)

**Hrs: 4
Credit: 3**

Programme to find

- 1. Ascending order**
- 2. Descending order**
- 3. Mean**
- 4. Median**
- 5. Mode**
- 6. Standard Deviation**
- 7. Correlation**
- 8. Matrix Addition**
- 9. Matrix Subtraction**
- 10. Matrix Multiplication**

MBE-V - RESEARCH MEHODOLOGY

Hrs:6 Credit:4

Unit – I

Definitions of Research and Methodology – 7 stages in research – Types of research – Research design planning. Formulation of research problem – Data Collection: Experimental methods of collecting data – Reducing experimental error through CRD, RBD, LSD, incomplete experiments (concept only).

Unit – II

Survey Methods: Primary Source and Secondary Source – Methods of collection of Primary data – Interview method, Telephone Survey, ICT based survey local correspondents – Enumeration and Questionnaire method. Questionnaire development process: Pointers to remember, evaluating the questions – measurement and scaling – reliability and validity of measurements – Pretest.

Unit – III

Sampling process and selection: Probability sampling SRS, Stratified, systematic and multistage sampling (No derivations). Non Probability sampling judgment sampling, Quota sampling, Convenience sampling, Sample size determination.

Unit – IV

**Interpretation: Mistakes commonly committed in interpreting data.
Report writing: Outline of a research project – Title page – Table of contents – Preface – Introduction – Objectives – Methodologies – Findings – Limitations – Conclusions and Recommendations – Appendices – Guidelines for writing the research projects.**

Unit – V

Statistical Test: Basic statistical test – Using normal, t, χ^2 and F distributions – Non-parametric tests.

Books for Study :

- 1. C. R. Kothari., “Research Methodology”, Second Revised Edition (2004), New Age International Publishers.**
- 2. Tripathy, P.C., “A Textbook of research Methodologies in social sciences”, Sultan Chand, 2005.**
- 3. Uma Sekaran, “Research Methods for Business: A skill building approach”, John Wiley & Sons, 2003.**
- 4. Ajai, s. Gaur and Sanjaya S. Gaur, “Statistical Methods for practice and Research: A guide to data analysis using SPSS”, Response Books, 2006.**

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DEPARTMENT OF TAMIL- BA TAMIL LITERATURE

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1T1	Seyyul Ikkala Ilakkiyam, Sirukathai, Illakiya Varalaaru, Payannmurai Tamizh	Examine short stories and novels analytically and interpretively, to identify and analyze literary elements like plot, character, setting, tone, point of view, theme, style, symbol, metaphor, and image .
			.Compare and contrast authors' treatments of theme, character, and subject matter, as well as synthesize diverse critical studies of a given author or particular short stories or novels.
			Trace the historical development of the short story and the novel by examining selected representational works
	18K1T01	Ikkala Ilakkiyam	Identify representative works of the modern literature of Tamil Literature in terms of the historical, political and cultural backgrounds
			Analyze representative works of the modern literature of Tamil Literature in terms of the historical, political and cultural backgrounds
			Identify literary aspects such as symbols, themes, characters, point of view, mood, tone, setting, plot, and style as found in the selected works of the authors surveyed
	18K1T02	Illakkiya Thiranaaivu	Demonstrate an understanding of the salencies of Tamil literary texts
			Identify literary aspects such as symbols, themes, characters, point of view, mood, tone, setting, plot, and style as found in the selected works of the authors surveyed
			Students will demonstrate speaking, listening, reading, and writing skills in Tamil
	18K1T1T1	Tamizh Illakkiya Varalaaru	Introduction to literary periods
Understand the impact of socio-cultural and political events on the literary texts.			
Introduction to literary writers and genres specific to literary periods			
II	18K2T2	Seiyul (Idaikala Ilakkiyam) Pudhinam, Tamizhil Pirasolzh Kalappu Ilakkiya Varalaaru	Compare and contrast authors' treatments of theme, character, and subject matter, as well as synthesize diverse critical studies of a given author or particular short stories or novels
			Students will demonstrate speaking, listening, reading, and writing skills in the
	18K2T03	Nannul Ezhluthuadhikaaram	Introduction to the work of grammar in Tamil language
			Demonstrate an awareness of the structural combination of words
II	18K2T04	Ilakkana Varalaru	Introduction to Tamil grammar.
			Demonstrate an understanding of the salencies of ancient Tamil Literature

Semester	Subject Code	Title of the Paper	Course Outcome
	18K2TAT2	Naatupuraviyal	Introduction to folk literature
			To analyze the folk-life through Folk materials with Interdisciplinary approach
			To apply the Folklore for the study of people culture and nature
			Understand the classification of folk arts , theatre, culture, beliefs and religion
III	18K3T3	Seiyyul (Kaapiyanghal) Urainadai, Aluvazh Murai Madalkal, Illakkiya Varalaaru	Examine short stories and novels analytically and interpretively, to identify and analyze literary elements like plot, character, setting, tone, point of view, theme, style, symbol, metaphor, and image .
			.Compare and contrast authors' treatments of theme, character, and subject matter, as well as synthesize diverse critical studies of a given author or particular short stories or novels.
			Trace the historical development of the short story and the novel by examining selected representational works
			Students will demonstrate speaking, listening, reading, and writing skills in Tamil
III	18K3T05	Ara Illakkiyam	Acquaint the student with some important works of systematic ethical philosophy and to bring to bear the viewpoint of those works on the study of classic works of literature
III	18K3T06	Nannul Soladhikaaram	Deals with words and parts of speech
			Demonstrate understanding of the classification of Tamil words into four categories – <i>iyar chol</i> (words in common usage), <i>thiri chol</i> (words used in Tamil literature), <i>vada chol</i> (words borrowed from Sanskrit), <i>thisai chol</i> (words borrowed from other languages)
III	18K3TAT3	Maghaleeriyazh	Introduction to the role of women in the society
			Know about the achievements of exemplary women
			Awareness about the legal rights of women
	18K3TELO 1	Pannithervu Tamizh	Introduced to the role of Tamil in State Government competitive examinations
			Facilitate preparation for competitive examinations like TNPSC
			Students demonstrate speaking, listening, reading, and writing skills in Tamil

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3SST1	Siddhar Illakkiyam	Introduction to Saiva Siddhanta philosophy and literature
			Analysis of the use of Tamil as a medium by the Siddhars
			Recognition of the place of Siddhar literature within the accepted standards of Tamil literature
IV	18K4T4	Seiyul (Pandaya Illakkiyam), Illakkiya Varalaaru, Natagam, Podhukatturai	Examine short stories and novels analytically and interpretively, to identify and analyze literary elements like plot, character, setting, tone, point of view, theme, style, symbol, metaphor, and image .
			.Compare and contrast authors' treatments of theme, character, and subject matter, as well as synthesize diverse critical studies of a given author or particular short stories or novels.
			Trace the historical development of the short story and the novel by examining selected representational works
	18K4T07	Thatthuveyyal	Introduction to Indian traditional thought and thinkers with special reference to Tamil sources.
			Foster a comparative study of Eastern and Western thought in Tamil Language
			Focus on the study of different systems of Indian Philosophy, especially from the rich materials embedded in the Tamil philosophical works and their commentaries
IV	18K4T08	Yaaparunkalaakaarikai	Introduction to the parts of speech- verbs
			Learn about the predominance of speech over that of written word
			Learn to write without grammatical error
	18K4TAT4	Tamizh Varalaatrum Panpaadum	Understand the relation between language and culture
			Understand the salencies of Tamil culture and language
			Ability to analyse and compare the salencies of Tamil culture and language with that of other cultures in India
	18K4TEL02	Inaiyum Tamizhum	Introduced to the role of Tamil in media
			Students will demonstrate speaking, listening, reading, and writing skills in Tamil
	18K4SST2	Koyirkalaiyum Panpaadum Aatchiyum	Documentation of ancient and traditional sculptures of India
			Documentation of Tamil and Sanskrit iconography terminologies
V	18K5T09	Kaappiyangal	Focus is on ancient Tamil epic poetry
			Demonstrate an understanding of the salencies of epic poetry
			Develop the techniques of literary criticism applied by classical scholars to the study of the ancient texts
			An understanding of the internal structure and unity of the individual epics studied

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5T10	Thandiyaalangaram	Introduction to metaphor from linguistics and cognitive level
			Examines metaphorical expressions from word level up to discourse level
			Emphasis on the functions of metaphor
			Analyse how metaphors structure our thinking
	18K5T11	Chittrillakkiyam	Introduction to interior landscape in the psyche of an individual
			Understanding of the relationship between the exterior and interior landscape and culture
	18K5TET1	Kalvettiyal	To study the culture and civilization of South India based on the archaeological and epigraphical sources.
			To understand the antiquity of Tamil Nadu both in time and space and to study the political, social and economic development of Tamil Nadu using primarily archaeological and epigraphical sources.
	18K5SBEC3	Pottithervu Tamil	Introduced to the role of Tamil in State Government competitive examinations
			Facilitate preparation for competitive examinations like TNPSC
Students demonstrate speaking, listening, reading, and writing skills in Tamil			
Students will demonstrate speaking, listening, reading, and writing skills in Tamil			
VI	18K6T12	Nambikaiporul	Akam dealt with 'that which is inside' or 'the inner world' - in other words, love poems, written in highly structured form
	18K6T13	Puraporul Venbamalai	Introduction to puram – one of the genres of Tamil Classical poetry
			Understanding of vPuram's themes that dealt with the outer world', public life, war, death, and the glory of kings.
	18K6T14	Sanga Illakkiyam	Introduction to ancient Tamil Literature
			Understanding of Sangam literature that deals with emotional and material topics such as love, war, governance, trade and bereavement.
			Analyse the relevance of Sangam topoi in the current literary scenario

Semester	Subject Code	Title of the Paper	Course Outcome
	18K6T15	Tamilan Semmozhi Panbugal	Demonstrate some knowledge of dialectical cultural differences in Tamil
			Students will demonstrate an accurate understanding of linguistic concepts related to the target language, including the fundamentals of phonetics, semantics, and morphology and syntax, as well as basic pragmatic and sociolinguistic aspects
			Demonstrate knowledge of the interrelation between language and culture
			Communicate in contexts relevant to oneself and others, and one's immediate environment
	18K6TELT2	Suvadiyal	Introduction to manuscriptology
			Learn about preservation of Palm leaf manuscripts using new scientific techniques
			Learn about preservation of rare manuscripts through digitization and microfilming
			Learn about publication of the materials related to humanities and science from the Palm-leaf manuscripts
	19K6TELT3	Padaippu Illakkiyam	Compose, revise, discuss and critique their own poems, stories and fiction taking into cognizance techniques, conventions, and forms.
			Recognize, define, and identify poetic terms and genres

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Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1T01	Ikkala Illakkiyam- I	Identify representative works of the modern literature of Tamil Literature in terms of the historical, political and cultural backgrounds
			Analyze representative works of the modern literature of Tamil Literature in terms of the historical, political and cultural backgrounds
			Identify literary aspects such as symbols, themes, characters, point of view, mood, tone, setting, plot, and style as found in the selected works of the authors surveyed
	18KP1T02	Ikkala Illakkiyam- II	Identify representative works of the modern literature of Tamil Literature in terms of the historical, political and cultural backgrounds
			Analyze representative works of the modern literature of Tamil Literature in terms of the historical, political and cultural backgrounds
			Identify literary aspects such as symbols, themes, characters, point of view, mood, tone, setting, plot, and style as found in the selected works of the authors surveyed
	18KP1T03	Ara Illakkiyam	Acquaint the student with some important works of systematic ethical philosophy and to bring to bear the viewpoint of those works on the study of classic works of literature.
	18KP1T04	Tholkapiyam Eluthuadhikaaram	Introduction to the work of grammar in Tamil language
			Demonstrate an awareness of the structural combination of words
	18KP1TELT1	Sindhanaiyal	Introduction to the thoughts and ideologies of literary and philosophical persona
			Demonstrate an understanding of public speech
			Imbibe the saliences of thoughts in life
II	18KP2T05	Bakhti Illakkiyam	Introduction to the Bhakti movement in India
			Impact of the Bakti movement on literary works
			Demonstrate an understanding of the Bhakti literature reflects a new form of devotion to God i.e., a personal bond between the devotee and the deity
18KP2T06	Kaapiyangal	Focus is on ancient Tamil epic poetry	
		Demonstrate an understanding of the saliences of epic poetry	
		Develop the techniques of literary criticism applied by classical scholars to the study of the ancient texts	
		An understanding of the internal structure and unity of the individual epics studied	
			Engagement with the central critical approaches and scholarly theories concerning these works

Semester	Subject Code	Title of the Paper	Course Outcome	
II	18KP2T07	Tholkkapiyam Soladhikaaram	Deals with words and parts of speech	
			Demonstrate understanding of the classification of Tamil words into four categories – <i>iyar chol</i> (words in common usage), <i>thiri chol</i> (words used in Tamil literature), <i>vada chol</i> (words borrowed from Sanskrit), <i>thisai chol</i> (words borrowed from other languages)	
	18KP2T08	Mozhiyal	Grasp the complexity of language as a communication system shaped by cognitive, biological, cultural, and social factor	
			Demonstrate understanding of the concepts, theories, and methodologies used by linguists in qualitative and quantitative analyses of linguistic structure, and patterns of language use.	
			Demonstrate understanding of processes of language change and variation,	
	18KP2TELT2	Uraiaasiriyargal	Demonstrate understanding grammatical discourse	
			Demonstrate understanding of literary discourse	
			Contributions made by eminent rhetoricians	
			Analyse the relevance of discourse in the present scenario	
	II	18KP2SST1	Sorpolivu Kalai	Develop and innovate effective writing processes to compose texts for varied readers;
				Recognize, explain, and apply various rhetorical modes in writing
				Demonstrate an understanding of the ethical and political responsibilities inherent in producing, receiving, and assessing written discourse
Exhibit knowledge of digital technologies and discourse and produce writing for audiences of digital media				
II	118KP3T09	Tholkaapiyam Poruladhikaaram (Mudhal 5 Iiyalgal)	Introduction to the work of grammar in Tamil language	
			Classification of land types, and seasons and defines modes of life for each of the combinations of land types	
			Defines the modes of personal life i.e. life of couples	
			Defines the modes of one's public life	

Semester	Subject Code	Title of the Paper	Course Outcome
	18KP3T10	Molipeyarbiyal	Critically apply theories, methodologies, and knowledge to address fundamental questions in TS
			Demonstrate skills in oral and written communication sufficient to publish and present work in TS and to prepare grant proposals
			To enable students to engage in advanced study and research with scholars in the field of Translation Studies
			To foster original and scholarly research in the field
	18KP3TELT3	Ariviyal Tamil	To popularize science through Tamil and to make aware of scientific achievements and technological progress
			To prepare Scientific Terminology in Tamil for various science subjects like Physics, Chemistry, Mathematics, Biology, Engineering
			To publish Scientific Tamil Text books for professional courses
III	19KP3TELT4	Oppillakkiyam	Demonstrate knowledge in the interdisciplinary field of comparative and world literature
			Demonstrate an informed appreciation of cross-cultural interconnections and diversity of literatures and cultures across time and space
			Demonstrate expertise in two or three literary traditions as defined by language; period, region, genre, theme, or movement.
			Demonstrate advanced research and analytical skills
	18KP3SST2	Thiraipada Varalaaru	Introduction to the history of cinema
			Demonstrate an ability to analyze basic techniques employed by screenwriters, filmmakers, and writers of fiction and/or drama
			Analyze selected novels, plays, and short stories and to compare them with corresponding film adaptations.
			Evaluate the strengths and weaknesses of adapted works in comparison with the original printed versions.

IV	18KP4T12	Tholkaapiyam Poruladhikaaram (Pin Naangu Illakkiyangal	Introduction to the work of grammar in Tamil language
			Classification of land types, and seasons and defines modes of life for each of the combinations of land types
			Impact of feelings, a psychological views exposed in ancient literatures
			Deals with a grammar for classical Tamil poetry based on principles of prosody
	18KP4T13	OppittuNokkil Ulaga Semmoligal	Introduction to study of world classical languages
			Demonstrate the ability to understand the origin of languages
			Identity, Compare and Contrast the saliencies of languages
	18KP4T14	Aaraaitchi Nerimuraigal	Understand some basic concepts of research and its methodologies
			Identify appropriate research topics
			Ability to write analytically and lucidly.
			Demonstrate proficiency with standard documentation styles, i.e

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DEPARTMENT OF ENGLISH - BA ENGLISH LITERATURE

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1E1	English Made Easy -I	Develop productive and active skills
			Understand and appreciate poetic and prose texts
			Reinforcement of LSRW skills
			Use of grammar in day to day life
	18K1E01	Prose	Develop reading and writing skills
			Improve vocabulary and writing skills
			Introduced to literary prose pieces.
	18K1E02	British Poetry: Chaucer to the Moderns	Understand and appreciate poetry of different literary periods
			Introduced to literary movements
			Learn to write poems
			Learn to appreciate the content and form
	18K1EAE1	Social History of England	Know the historical events of England
			Know the social events and its impact on literature of the period
			Know the politico-economical events and its impact on the literature of the period
			Learn the cultural and religious orientation of the people of England.

Semester	Subject Code	Title of the Paper	Course Outcome
II	18K2E2	English Made Easy- II	Develop productive and active skills
			Understand and appreciate poetic and prose texts
			Reinforcement of LSRW skills
			Use of grammar in day to day life
	18K2E03	Short Stories and Fiction	Introduction to the genre of short story and fiction.
			Learn the techniques of short story and fiction
			Learn to write short story

Semester	Subject Code	Title of the Paper	Course Outcome
II	18K2E04	Literary Forms and Terms	Introduction to literary genres
			Introduction to literary terms and forms
	18K2EAE2	History of English Literature- I	Introduction to literary periods
			Understand the impact of socio-cultural and political events on the literary texts.
			Introduction to literary writers and genres specific to literary periods

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3E3	Fluency in English -I	Develop productive and active skills
			Understand and appreciate poetic and prose texts
			Reinforcement of LSRW skills
			Use of grammar in day to day life
	18K3E05	British Drama	Introduction the genre of drama
			Learn the salient features of dramatic techniques
			Introduced to eminent British dramatists
	18K3E06	American Literature	Identify key ideas, representative authors and works, significant historical or cultural events
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods
			Demonstrate knowledge of the different styles of writing .
			Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3EAE3	History of English Literature- II	Introduction to literary periods
			Understand the impact of socio-cultural and political events on the literary texts.
			Introduction to literary writers and genres specific to literary periods
	18K3SSE1	Single Author Study- Rabindranath Tagore	Introduction to the literary oeuvre of Tagore
			Familiarise the students with the theme and socio-cultural ethos of the writer.
			Learn to appreciate and critically analyse the salient features of a literary text- form, language and narration.
	18K3EEL01	Modern English and Usage - I	Introduction to the basic grammar in English
			Introduction to the usage of common words in English
			Learn to grammatically write and speak in English

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4E4	Fluency in English - II	Develop productive and active skills
			Understand and appreciate poetic and prose texts
			Reinforcement of LSRW skills
			Use of grammar in day to day life
	18K4E07	Indian Writing in English	Introduction to eminent literary writers of Indian origin
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			Demonstrate knowledge and comprehension of the literary texts
			Read with interpretive and analytical proficiency-

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4E08	Literature and Environment	Analyse creative representations of human relationships with the non-human world
			Compare environmental literary texts from a range of periods, with attention to their contexts and their formal qualities
			Consider issues of environment from social, historical, cultural and aesthetic perspective
			Understand the interrelationship between man and environment.
	18K4EAE4	History of English Language	Understand how the English language has changed over time from its origins to the present day
			Understand the relationship between the history of the English language and social and political processes
	18K4EEL02	Modern English and Usage- II	Introduction to the basic grammar in English
			Introduction to the usage of common words in English
			Learn to grammatically write and speak in English
	18K4SSE2	Major Literary Movement and Literary Terms	Introduction to literary genres
Introduction to literary terms and forms			
Introduction to literary periods			

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5E09	Literary Criticism: Aristotle to T. S. Eliot	Identify major theoretical/critical movements and theorists, as well as primary concepts with which they are associated
			Examine historical contexts for the development of contemporary theory and criticism
			Evaluate and analyze strengths and limitations of critical/theoretical arguments
			Strengthen and deepen critical reading, writing, and interpretive practices
	18K5E10	National Literature in Translation	Discuss the origin and aspects of Indian writers in Translation
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			Introduce theories of translation
			Demonstrate knowledge and comprehension of the literary texts
	18K5E11	Subaltern Literature	Introduced to the socio-cultural and historical nuances of the concept subaltern
			Discuss the aspects of subaltern writing
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			Demonstrate knowledge and comprehension of the literary texts
	18K5E12	Women's Writing in English	Discuss aspects of women's writing;
			Demonstrate understanding of critical and theoretical debates surrounding women's writing
			Demonstrate awareness of cultural and intercultural concerns relating to women's writing
			Interpret and analyse literary works by women
	18K5EELE1	Comprehension Skills	Interpret and analyse literary works by women
			Interpret and analyse literary works by women
			To promote think aloud activity (reading for meaning)
			To develop reading skills

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6E13	Shakespeare	Gain an insight into the age of Shakespeare
			Understand the themes and techniques of Shakespearean plays and sonnets
			Analyse Shakespeare's works critically
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
	18K6E14	Diasporic Literature	Create students' awareness of contemporary literature written in English by Asian diasporic writers.
			Understanding of contemporary transnational and transcultural themes and issues through a study of a number of stories, non-fiction, and filmic texts.
			Students learn about the aspects of various Asian diaspora experiences and issues surrounding multiculturalism
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
	18K6E15	Children's Literature	Research the background, the history and the cultural context of children's literature
			Analyze literature for children
			Discuss and experiment with the art of storytelling
			Student will analyze writing for children in terms of literary and artistic elements and standard
	18K6EELE2	Common Errors in English	Introduce the students to basic grammar in English
			Learn to use common words in English
			Learn to speak and write grammatically correct English
18K6EELE3	News Reporting and Editing	Learn the basics of news gathering and news writing.	
		Demonstrate the ability to read, comprehend, and analyze current events	
		Identify and appreciate depth, balance, transparency, and accountability in news coverage	

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF ENGLISH - MA ENGLISH LITERATURE

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1E01	British Literature I (1340-1660)	Identify key ideas, representative authors and works, significant historical or cultural events
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods
			Demonstrate knowledge of the different styles of writing .
			Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities
	18KP1E02	Contemporary Indian Writing in English	Introduction to eminent literary writers of Indian origin
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			Demonstrate knowledge and comprehension of the literary texts
			Read with interpretive and analytical proficiency-
	18KP1E03A.*	Linguistics: Theory and Practice	Grasp the complexity of language as a communication system shaped by cognitive, biological, cultural, and social factor
			Demonstrate understanding of the concepts, theories, and methodologies used by linguists in qualitative and quantitative analyses of linguistic structure, and patterns of language use.
			Demonstrate understanding of processes of language change and variation,
	18KP1E03B	Applied Language Skills	Awareness of correct usage of English grammar in writing and speaking
Improve their speaking ability in English both in terms of fluency and comprehensibility			
Improve their reading fluency skills through extensive reading			
Students will attain and enhance competence in the four modes of literacy: writing, speaking, reading and listening			
18KP1E04	Contemporary American Literature	Identify key ideas, representative authors and works, significant historical or cultural events	
		Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods	
		Demonstrate knowledge of the different styles of writing .	
		Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities	

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1EELE1	Translation Studies	Critically apply theories, methodologies, and knowledge to address fundamental questions in TS
			Demonstrate skills in oral and written communication sufficient to publish and present work in TS and to prepare grant proposals
			To enable students to engage in advanced study and research with scholars in the field of Translation Studies
			To foster original and scholarly research in the field
Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2E05	British Literature II (1660-1798)	Identify key ideas, representative authors and works, significant historical or cultural events
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods
			Demonstrate knowledge of the different styles of writing .
			Articulate the aesthetic principles .
	18KP2E06	Contemporary Literary Theory	Appreciate the relevant value of theoretical models in literary study
			Demonstrate an understanding of important theoretical methodologies by summarising key concepts or arguments.
			Apply these concepts or arguments successfully in a close reading of a literary text.
			Examine important themes in literary interpretation inclusive of character, voice, narrative, and genre
	18KP2E07A*	English Language Teaching	To comprehend the concepts related to language and the relationships between these concepts
			To develop new materials to be used in the teaching process
			To select materials for classroom use according to usefulness, , and students' age and language level
			To provide an atmosphere that enhances student participation.
18KP2E07B	English For Specific Purpose	Awareness of correct usage of English grammar in writing and speaking	
		Improve their speaking ability in English both in terms of fluency and comprehensibility	
		Attainment of competence in the four modes of literacy: writing, speaking, reading and listening	

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2E08	World Classics in Translation	Discuss the origin and aspects of world wide writers translated in English
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			Introduce theories of translation
			Demonstrate knowledge and comprehension of the literary texts
	18KP2EELE2	South Asian Writing in English	Ability to demonstrate awareness of the wide range of Asian cultures
			Introduction to eminent literary writers of South Asian countries
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			ability to describe and analyze pre-eminent literary texts
	18KP2SSE1	Critical Terms and Literary Movements	Demonstrate an understanding of important theoretical terms
			Introduction to literary genres
			Introduction to literary terms and forms
			Introduction to literary periods

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3E09	British Literature (1798-2014)	Identify key ideas, representative authors and works, significant historical or cultural events
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods
			Demonstrate knowledge of the different styles of writing .
			Articulate the aesthetic principles that guide the scope and variety of works in the arts and humanities

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3E10	Comparative Literature	Demonstrate knowledge in the interdisciplinary field of comparative and world literature
			Demonstrate an informed appreciation of cross-cultural interconnections and diversity of literatures and cultures across time and space
			Demonstrate expertise in two or three literary traditions as defined by language; period, region, genre, theme, or movement.
			Demonstrate advanced research and analytical skills
	18KP3E11A*	Research Methodology	Understand some basic concepts of research and its methodologies
			Identify appropriate research topics
			ability to write analytically and lucidly.
			demonstrate proficiency with standard documentation styles, i.e
	18KP3E11B	Rhetoric : Style and Writing	Develop and innovate effective writing processes to compose texts for varied readers;
			Recognize, explain, and apply various rhetorical modes in writing
			Demonstrate an understanding of the ethical and political responsibilities inherent in producing, receiving, and assessing written discourse
			Exhibit knowledge of digital technologies and discourse and produce writing for audiences of digital media
	18KP3EELE3	Indian Literature in Translation	Discuss the origin and aspects of Indian writers translated in English
			Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts
			Introduce theories of translation
			Demonstrate knowledge and comprehension of the literary texts
18KP3EELE4	African Literature in English	Ability to demonstrate awareness of the wide range of African cultures	
		Introduction to eminent literary writers of African countries	
		Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts	
		Ability to describe and analyze pre-eminent literary texts	

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF ENGLISH - MA ENGLISH LITERATURE

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3SSE2	English For SET/ NET	Introduction to literary terms, genres, movements
			Demonstrate comprehensive understanding of history of literatures- British, American, New Literature

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4E12	Women's Writing in English	Discuss aspects of women's writing;
			Demonstrate understanding of critical and theoretical debates surrounding women's writing
			Demonstrate awareness of cultural and intercultural concerns relating to women's writing
			Interpret and analyse literary works by women
	18KP4E13	Postmodern Literature	Analyze the relationship between modernism and postmodernism as well as what differentiates the two movements from a critical perspective
			Critically respond to a range of theoretical debates within modernism and postmodernism.
			Examine some of the major works produced in the context of postmodernism
			Apply postmodern concepts or arguments successfully in a close reading of a literary text
	18KP4E14A*	Postcolonial Literature	Discusses literary texts written by British authors during the period of colonial and imperialist expansion
			Focuses on texts written by authors who live in a country that was colonised, and who write in English.
			Know how race, class, gender, history, and identity are presented and problematised in the literary text
			Apply postcolonial concepts or arguments successfully in a close reading of a literary text

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4E14B	African American Literature	Analyze representative works of African American literature in terms of its historical progression
			Analyze representative works of African American literature in terms of cultural, regional, and ethnic considerations
			Analyze representative works of African American literature in terms of unifying themes and motifs
	18KP4EELE5	Creative Writing	Compose, revise, discuss and critique their own poems, stories and fiction taking into cognizance techniques, conventions, and forms.
			Recognize, define, and identify poetic terms and genres

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1EC01	Indian Economic Development	Develop ideas of the basic characteristics of Indian economy, its potential on natural resources
			Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development
			Grasp the importance of planning undertaken by the government of India
			Understand agriculture as the foundation of economic growth and development
	18K1EC02	Micro Economics - I	Develop ideas of the basic characteristics of Indian economy, its potential on natural resources.
			Understand the importance, causes and impact of population growth and its distribution
			Grasp the importance of planning undertaken by the government of India
			Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector a
	18K1ECAEC1	Marketing	Identify core concepts of marketing and the role of marketing in business and society.
			Ability to develop marketing strategies based on product, price, place and promotion objectives.
			Ability to create an integrated marketing communications plan which includes promotional strategies and measures of effectiveness

Semester	Subject Code	Title of the Paper	Course Outcome
II	18K2EC03	Micro Economics - II	Identify the various types of investment function analysis and understand the elements of social cost benefit analysis
			Understand international and inter regional trade, identify and understand various trade theories, analyze the various types of restrictions of international trade.
	18K23C04	Tamil Nadu Economy	Understand the process of growth in Tamil Nadu economy
			Comprehend the specific economic issues pertaining to the region
	18K2ECAEC2	Advertising Management	Explain the roles which advertising can play in the contemporary marketing mix and marketing environment.
			Explain different theories of advertising effectiveness.
Explain the process of advertising planning			

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3EC05	Macro Economics	Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income
			Understand Say's law of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principle of effective demand and income determination.
			Explain the meaning of consumption function, relationship between APC and MPC, consumption and income
			Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI.
	18K3EC06	Agricultural Economics	Sensitize the overall development and engine of growth in agriculture
			Learn and identify the opportunities open/available in those flourishing sectors such as horticulture, fishing and floriculture and forestry.
			Gain knowledge of the causes of regional variations in productivity and production, social and economic inequality
			Make them aware of the availability of rich natural endowments to achieve sustainable agricultural development
	18K3ECAS1	Statistics For Economics-I	To provide essential knowledge of the theory and key properties of probability and random variables,
			Facilitate an understanding of the main branches of basic statistical inference
			Introduction of the fundamental concepts statistical modelling
	18K3ECEL01	Risk Management	Demonstrate knowledge of the range of financial and financial related risks facing organisations
Understand the approach to risk management through risk identification, risk measurement and risk management			
Understand operational risk and how to manage it.			
18K3SSEC1	Economics of Transportation	Think critically about transportation economics.	
		Evaluate economic policies that affects the transportation system.	
		Apply basic econometric methods to the analysis of transportation data	

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4EC07	Monetary Economics	Introduction to monetary economics: main questions of monetary economics, the role of models
			Econometric analysis of the monetary transmission mechanism: empirical facts about monetary economics
			Studies uncertainty in monetary economics that is pervasive in macroeconomic modelling
	18K4EC08	Entrepreneurship Development	Definition of entrepreneurship, historical background, Gandhian philosophy, rural, village and cottage industries
			Develop an understanding of Entrepreneurship scenario in the country
			Ability to discern distinct entrepreneurial traits
	18K4ECAS2	Statistics for Economics- II	To provide essential knowledge of the theory and key properties of probability and random variables,
			Facilitate an understanding of the main branches of basic statistical inference
			Introduction of the fundamental concepts statistical modelling
	18K4ECEL02	Energy Economics	Understand the role of energy in economic activity
			Have a knowledge of methods to assess alternative energy projects, technologies, and policies
			Know what key factors and principles need to be considered in evaluating alternative energy policy options
18K4SSEC2	Regional Economics	Explores how economic activity is distributed across space	
		Investigates the implications of including spatial aspects in economic analysis.	
		Apply economic theory to topical issues of regional economics	

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5EC09	Fiscal Economics	Assess how tax implications affect public budgeting and finance.
			Evaluate the notion of tax equity and how public administrators strive for balance and fairness.
			Discuss various impacts of fiscal policy on the execution of budgeting process
	18K5EC10	Economic Growth and Development	Acquire a basic understanding of the issues and on-going debates on development economics.
			Apply an analytical framework to understand the important structural characteristics of development
			Acquire skills in conducting research related to development issues
	18K5EC11	International Economics	To be familiar with the main economic theories and models of international trade, -
			Understand economists' arguments concerning trade policy and its analysis
			Apply economic reasoning to issues of the day surrounding globalization
V	18K5EC12	History of Economic Thought	Understand key models and concepts of the history of economic thought
			Understand scholarly articles concerned the history of economic thought
			Historical consciousness of economic ideas.
	18K5ECELEC1	Tourism Economics	Demonstrating knowledge and understanding of the basic principles of tourism in all its dimensions and areas
			Identify and evaluate the elements of the tourism system and its interaction with the environment as well as their impact.
			Determining the economic impact generated by tourism
VI	18K6EC13	Managerial Economics	Understand the different costs of production and how they affect short and long run decisions
			Understand economies of scale, diseconomies of scale, economies of scope, and cost complementarities, and how each affects the cost of production
			Apply the economic way of thinking to individual decisions and business decisions
	18K6EC14	Capitalist Market	Explain the basic concepts about capital market
			Analyze the capital market institutions
			Analyze bond and other capital market instruments

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6EC15	Economic System	Learn about the complex system of modern economy
			Define market, planned and command economy
			Define and explain the characteristics of a competitive market
	18K6ECELEC2	Economics of Insurance	Understand the concepts and principles of insurance
			To know the various types of insurance and insurance business in India
			To become aware of insurance legislation in India
	18K6ECELEC3	Human Resource Development	Differentiate between human resource development (HRD) and other human resource management functions
			Explain the strategic importance of HRD in the success of organisations within the context of social and environmental pressure
			Develop skills in identifying HRD needs and in designing, implementing and evaluating HRD programs.

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF ECONOMICS - MA ECONOMICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1EC01	Micro Economics-I	Demonstrate marginal productivity theory of distribution, theory of wages, identify different types of rent
			Understand how factor market works, illustrate basic tools in welfare economics, and illustrate the concept of social welfare functions and compensation principles
			Identify the various types of investment function analysis and understand the elements of social cost benefit analysis.
	18KP1EC02	Macro Economics - I	Demonstrate the meaning and function of money, high powered money, monetary and paper system
			Identify types of banks, explain the meaning and function of commercial banks, illustrate how banks create credit, and suggest the instruments to control credit.
			Analyze different phases of trade cycle, demonstrate various trade cycle theories
			Illustrate the meaning of inflation, deflation, stagflation and reflation, identify different kinds of inflation, causes and effects of inflation on different sectors of the economy
	18KP1EC03	Methods for Economic Analysis – I (Mathematical Methods)	Examine basic economic problems facing society while applying simple microeconomic theory to practical problems
			Evaluate the major economic aggregates and determine how they are measured
			Analyze and discuss the nature of business cycles to justify decision making in a professional context
	18KP1EC04	Indian Economic Development	Understand the various aspects of India's economy
			Develop a perspective on the different problems and approaches to economic planning and development in India
Understand the role of the Indian Economy in the global context, and how different factors have affected this process			
18KP1ECELEC1	Environmental Economics	Realize the importance and influence of environment on the economy including the quality of manpowe	
		Understand that environmental problem is not the problem of a single country or region but a global problem.	
		Demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean	

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2EC05	Micro Economics - II	Define and calculate consumer, producer and total surplus; graphically illustrate consumer, producer and total surplus
			Differentiate between marginal utility and total utility
			Analyze different strategies to control monopolies, including natural monopolies
	18KP2EC06	Macro Economics- II	Define the term “economic indicator;” identify the major economic indicators used to assess the state of the macroeconomy
			Describe the relationships among GDP, net domestic product, national income, personal income, and disposable income
			Connect globalization, international trade, and international finance.
	18KP2EC07	Methods for Economic Analysis- II (Statistical Methods)	Introduce statistical methods and provide an insight into their uses in economics
			Demonstrate application of a range of statistical techniques to economic problems
			Ability to relate statistical methodology to economic enquiry
	18KP2EC08	International Economics	Introduction to the main economic theories and models of international trade
			Understanding of open-economy macroeconomics and the determinants of exchange rates and the balance of payments
			Apply economic reasoning to issues of the day surrounding globalization
18KP2ECELEC2	Agricultural Economics	Student learn to list and explain different agricultural economic fields, including the food industry, demand theory	
		To be able to combine various theories and concepts of economics for evaluation of measures for agrarian and rural development policies;	
		To be able to integrate various theories of economics and marketing for performing research in and forecasting of the local, regional, and international agricultural and foodstuff markets;	
18KSSEC1	Personnel Management	Explain the importance of human resources and their effective management in organizations	
		Evaluate, interpret issues of international training, development and compensation	
		Demonstrate the ability to use conflict resolution skills in practical situations	

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3EC09	Fiscal Economics	Assess how tax implications affect public budgeting and finance.
			Evaluate the notion of tax equity and how public administrators strive for balance and fairness
			Discuss various impacts of fiscal policy on the execution of budgeting processes.
	18KP3EC10	Research Methodology	Understand some basic concepts of research and its methodologies
			Select and define appropriate research problem and parameters
			Organize and conduct research (advanced project) in a more appropriate manner
	18KP3EC11	Econometrics	A broad knowledge of regression analysis relevant for analysing economic data.
			Interpretation and critical evaluation of the outcomes of empirical analysis
			Elementary procedures for model validation in the single equation context
III	18KP3ECELEC3	Economics for Competitive Examinations	Learn to compete and succeed in competitive examinations
	18KP3ECELEC4	Human Resource Management	Develop, implement, and evaluate employee orientation, training, and development programs.
			Present and evaluate communication messages and processes related to the human resources function of the organization
			Facilitate and communicate the human resources component of the organization's business plan.
	18KP3SSEC2	Rural Economics	Gain insight into the socio-economic structure of rural India
			Understand the prospects and problems of rural development in India
IV	18KP4EC12	Entrepreneurship Development	Understand different innovation and entrepreneurship theories and their implications
			Understand the various scientific research methods commonly used to study innovation, entrepreneurship and new technology
			Students will be able to define, identify and/or apply the principles of new venture financing, growth financing, and growth financing for existing businesses

Semester	Subject Code	Title of the Paper	Course Outcome
	18KP4EC13	Industrial Economics	Identify and compare different market structures
			Describe and apply the fundamentals of game theory and its application to entry deterrence.
			Describe and compare different views of profits persistence based on market structure and innovation
	18KP4EC14	Banking	Describe the context of banking: the financial system
			Explain the principles of banking
			Analyse and explain the basic raison d'etre for banks.
	18KP4ECELEC5	Computer Applications in Economics	The student should be able to analyze, evaluate, and make recommendations regarding business technology
			Students will be required to not only identify problems but also generate solutions and make recommendations based on a logical and thorough analysis of the alternatives
			Students will work collaboratively, demonstrating courtesy, using appropriate etiquette, in preparing and presenting presentations and cases

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF HISTORY - BA HISTORY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1H01	History of India up to 1206 C.E	Understand the salient features of Indus valley civilization II
			Evaluate the features of Buddhism and Jainism
	18K1H02	History of Tamil Nadu up to 1800 C.E	Understand the socio, economic and cultural condition of the Sangam age
			Identify the contribution of Pallavas to art and architecture
	18K1HAH1	Modern Governments - I	Demonstrate understanding basic facts about the historical origin of government
			Demonstrate a generalized understanding of the dynamic relationship between politics and economics globally
II	18K2H03	History of India from 1206 to 1707 C.E	Identify the condition of India under the Mughal Empire. IV
			Explain the Administration and art and architecture of Mughal
	18K2H04	History of Tamil Nadu from 1801 to 1967 C.E	Evaluate the establishment of the British rule in Tamil Nadu and Vellore mutin
			Identify the socio- religious reform movements in Tamil Nadu.
	18K2HAH2	Modern Governments- II	Understand the theoretical and practical roles of state legislatures as policymaking institutions
			Demonstrate an understanding of common ethical problems that arise in contemporary politic
III	18K3H05	History of India From 1707 to 1857 C.E	Discuss the advent of Europeans and their administration II
			Evaluate the Anglo-Mysore wars and Anglo-Sikh war
	18K3H06	History of Europe from 1453 to 1789 C.E	Describe the Geographical discoveries and the Renaissance movement in Europe. II-
			Assess the causes and effects of Reformation and Counter-Reformation movements.
	18K3HAH3	Public Administration - I	Imparting the knowledge, skills, and values necessary to effectively lead public service organizations;
			Providing students with opportunities to explore and identify career choices and achieve their public service goals
18K3HELO1	History of Freedom Movement in India from 1885 to 1947 C. E	Understand modern Indian history	
		Identify the importance and the legacy of Freedom Movement	
18K3SSH1	Principles and Methods of Museology	Demonstrate a critical awareness of how museums communicate complex ideas to a general audience.	
IV	18K4H07	History of India from 1858 to 1947 C. E	Evaluate the Anglo-Mysore wars and Anglo-Sikh wars.
			Realise the Permanent Revenue system and Lord Ripon's Local Self Government

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4H08	History of Modern Europe from 1789 to 1945 C.E	Describe the Geographical discoveries and the Renaissance movement in Europe
			Assess the causes and effects of Reformation and Counter-Reformation movements
	18K4HAH4	Public Administration- II	Students will be able to lead and manage in public governance
			Students will be able to communicate and interact productively with a diverse and changing workforce and citizenry.
IV	18K4HELO2	Panchayatraj with Special Reference to Tamil Nadu	Understand the ancient panchayatraj system under the Cholas
			. Narrate the reforms of Lord Ripon to Local Government
	18K4SSH2	Indian History for Competitive Examinations	Evaluate the intelligence, creativity and assessment in Competitive examinations.
			Understand the verbal abilities and Fluency
V	18K5H09	History of India from 1947 to 1997 C.E	Recognise the integration of Indian states and Sardar Vallabai Patel's effort for this.
			Examine the internal and external policy of Jawaharlal Nehru, LalBahadurSastri and Indhira Gandh
	18K5H10	History of USA from Colonization to 1865 C.E	Discuss the Causes for the American war of Independence
			Debate the achievements of George Washington
	18K5H11	History of China and Japan from 1894 to 1970 C.E	This course imparted students the knowledge of the political developments and the important events related to it in the 19th and early 20th centuries in China. • It imparted knowledge on the economy and society of the said perio
			• It imparted knowledge on the economy and society of the said period
	18K5H12	History of Russia up to 1991 C.E	Understand the role of Peter the Great and Catherine II in Russia
			Discuss the implementation of Five Year Plan by Stalin
	18K5HELH1	Archaeology	Understand the various Kinds of Archaeology II.
			Study of the important Archaeologists

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6H13	History of Science and Technology	Trace the achievements of Plato and Aristotle II.
			Highlight the contributions of Great Persons to Science and Technology
	18K6H14	Introduction to Historiography	The course introduced to the students 'what exactly is history'. • It teaches the students, how to study history.
			It teaches the students, how to study history
	18K6H15	History of England from 1603 to 1760 C.E	Learn about the history of British Colonisation.
			Learn the impact of colonisation on States
	19K6HELH2	Journalism	Students will be able to write a variety of mass media products, including news stories, press releases, and advertising copy, following accepted journalistic standards, including Associated Press style.
			Students will be able to create and design emerging media products, including blogs, digital audio, digital video, social media, digital photography, and multimedia.
	18K6HELH3	Human Rights	Students identify problems and issues related to human rights
			The role of human rights in contemporary issues

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF HISTORY - MA HISTORY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1H01	Socio- Economic and Cultural History of India up to 1206 C. E	Identify the administration of Guptas and their contribution to Nalanda University.
			Examine the Arab conquest of Sindu and the battle of Tarain
	18KP1H02	Socio- Economic and Cultural History of Indian from 1206 to 1707 C.E	Recognise the Socio, economic and religious conditions under Vijayanagar Empire.
			Identify the condition of India under the Mughal Empire
	18KP1H03	Socio- Economic and Cultural History of Tamil Nadu from Sangam Age to 1800 C.E	Narrate the socio, economic condition of Tamil Nadu under the rule of Chola
			Describe the advent of Islam in Tamil Nadu
18KP1H04	World Civilization up to 1453 C.E (Excluding India)	This paper balances political, economic, religious, and cultural history of Continental Europe till the early modern period.	
		Beginning with the fifteenth-century conquest of the “Atlantic Mediterranean”, it imparts the knowledge on the emergence of Europe as the first truly global power	
	18KP1HELH1	Human Rights	Understand the historical growth of the idea of human rights
			Demonstrate an awareness of the international context of human rights

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2H05	History of India from 1707 to 1857 C.E	Understand about the Socio-religious reform movements in 19th century.
			State the role of moderates and extremists in the freedom movement
	18KP2H06	Socio- Economic and Cultural History of Tamil Nadu from 1800 C.E to the present day.	Know the significance of South Indian Rebellion
			Understand the role of Tamil Freedom Fighters in National Movement
	18KP2H07	History of Europe from 1453 to 1789 C.E	Visualise the importance of revolt of 1830 and 1848 in France and the efforts of Bismarck for the unification of Germany.
			Understand the causes and results for the First world war
	18KP2H08	History of Science and Technology	Bring out the significance of Atomic Energy .
Analyse the progress of Science and Technology in modern India			
18KP2HELH2	Principles and Methods of Archaeology	Trace the Megalithic cultural sites in Tamil Nadu V.	
		Analyse the archaeological sites in South India	
III	18KP2SSH1	Hospitality Management	Assess the leadership, supervisory, and human relations skills within the hospitality industry
			Apply knowledge of convention management skills.
III	18KP3H09	Colonialism and Nationalism in Modern India	Knowledge of the social, economic, cultural and administrative changes in India between 1780 and 1965.
			A clear understanding of the various historiographical currents in South Asian history
	18KP3H10	History of Modern Europe From 1789 to 1919 C.E	Realize the cause and results of French Revolution and the achievements of Napoleon Bonaparte
			Visualise the importance of revolt of 1830 and 1848 in France and the efforts of Bismarck for the unification of German

Semester	Subject Code	Title of the Paper	Course Outcome
	18KP3H11	Historiography	Study the scope and purpose of history
			Compare the uses and abuses of history
	18KP3HELH3	Women's Studies	Study the concept of Gender justice
			Describe the abolition of Devadasi system in Tamil Nadu
IV	18KP3HELH4	Environmental History	Describe the field of environmental history
			Explain how historical events have been influenced by the natural environment
	18KP3SSH2	History For Competitive Examinations	Narrate the spatial and perceptual abilities and situation reaction test..
			State the memory and inductive reasoning for competitive examinations
IV	18KP4H12	History of U.S. A from 1865 to 1974 C.E	Elucidate rise of USA as a World Power V.
			Illustrate the participation of USA in the World Wars
	18JP4H13	International Relations since 1919 C.E	Evaluate the causes of the Cold War III. Discuss the origin and achievements of Common Wealth of Nation
			Discuss the origin and achievements of Common Wealth of Nation
	18KP4H14	History of Thanjavur up to 1947 C.E	To understand the scope of ancient history of India
			To understand the socio- cultural and religious import of Thanjavur
IV	18KP4HELH5	Intellectual History of Modern India	Recognise the integration of Indian states and SardarVallabai Patel's effort for this.
			Examine the internal and external policy of Jawaharlal Nehru, LalBahadurSastri and Indhira Gandhi.

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF COMMERCE – B.COM

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1CO01	Principles of Accountancy	Know about basic accounting
			Learn the accounting practices for the preparation of final accounts
			Learn about consignment and joint venture
			Learn the accounting methods for non-trading organisation
	18K1CO02	Business Law	Learn about business laws
			Understand the relation between law and contract
			Learn about the interrelation among law indemnity and guarantee
			Understand about the contract of sales of Goods Act
	18K1COAC01	Business Economics	Introduction to business economics
			Understand the production function and law of Returns
			Learn about pricing under monopoly
			Learn about the theory of distribution

Semester	Subject Code	Title of the Paper	Course Outcome
II	18K2CO03	Business Tools For Decision Making	Learn the basics of Statistics
			Understand the relation of Statistics to that of business
			Understand the concepts of correlation and regression
	18K2CO04	Auditing	Learn the methods and principles of auditing
			Learn about Internal check and audit
			Learn about vouching of cash transaction
			Learn about the auditor's report
	18K2COAC02	Business Environment and Management	Understand the emerging issues in Business
Understand the concept of MBO and MBE			
Learn about the functions of management			
Learn about the preparation of budgeting			

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3CO05	Financial Accounting	Understand the nature and concept of partnership account
			Creates a working knowledge of partnership account brand account royalty account
			Learn about the dissolution and insolvency of a firm
	18K3CO06	Business Organisation	Students learn about the role of business organisations
			Learn about different types of business organisation
			Understand the concept of location and LPG and regulation of SEBI
			Introduced to trade unions and Chambers of Commerce
	18K3COAC03	Business Communication	Develop effective business communication skills
			Introduced to the types of business letters
			Learn to draft letters about agents and bank correspondences
			Learn to draft business report
	18K3COEL01	Banking Practices	Practical knowledge of banking
			Learn about the types of bank accounts and procedures
Learn about the modern services of banking and their uses			
Learn about negotiating matters like bill and cheque			
18K3SSCO1	Advanced Accounting Techniques	Students hone varied accounting skills	
		Learn about pay roll accounting and stores accounting	
		Learn about sales accounting and accounts receivable balances	
		Learn about current assets accounting and fixed asset accounting	

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4CO07	Cost Accounting	Learn the definition of Cost
			Learn about the principles of cost accounting
			Learn to prepare cost statement
			Learn to analyse cost
	18K4CO08	Marketing	Introduced to the concept of marketing
			Know about the pricing strategy
			Learn about the nuances of promotion strategy
			Learn about the consumers, their psychology and behaviour
	18K4COAC04	Company Law	Know about the provisions of Company Act
			Learn the litigations related to Companies
			Conceptual learning of shares and debentures
			Know the legal provisions of Company Act
	18K4COEL02	General Commercial Knowledge	Introduced to the varied types of business
			Learn about the different types of business communication
			Introduced to the varied levels of management
			Learn about business activity and etiquette
18K4SSCO2	Statutory Compliance in Taxation	Introduced to the concept of taxation	
		Know about the export and import procedures	
		Understand the working of small scale industries	
		Gain practical knowledge of the procedures of taxation	

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5CO09	Corporate Accounting	Learn about company accounts
			Learn about the procedural issues of shares and debentures
			Learn to prepare the accounts for companies
			Understand the procedures of accounting for banking and insurance companies
	18K5CO010	Management Accounting	Analyse and interpret financial statement
			Learn to prepare varied financial statements
			Understand marginal costing and prepare budgets
			Apply accounting techniques for management decisions
	18K5CO11P	Computer Applications in Business Practices- Practicals	Understand the usage of computer in business
			Learn to prepare edit and format word documents
			Learn to prepare, format and edit excel worksheet
			Generate various accounting reports using Tally
	18K5COELC01	Basics of E- Commerce	Learn to differentiate between traditional commerce and e-commerce
			Learn the B2B concept and trade cycle
			Learn the application of e commerce
Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6CO12	Income Tax Law and Practices	Introduced to the basic concepts of direct tax
			Learn to compute income from salary
			Learn to compute income from home property
			Learn to compute income from capital gain and other sources

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6CO13	Personnel Management	Introduced to the concept of personnel management
			Differentiate between personnel management, human resource management and human resource development
			Students learn to prepare manpower planning
			Students learn to face interviews with confidence
	18K6CO14	Financial Management	Introduction to financial decision making processes
			Learn about the value of money as a tool for making financial decisions
			Apply leverages as a tool for financial decisions
			Introduced to the concept of WC and its role in financial management
	18K6CO15	Banking Theory Law and Practice	Introduced to the concept of banking as a concept in business
			Understand various rates that influence the credit quantum of an organism
			To inculcate independent handling of financial transactions
			Learn to use mobile and internet banking
	18K6COELC02	Entrepreneurial Development	Understand the role of entrepreneurs in economic development
Understand the problems encountered in becoming an entrepreneur			
Understand the role of entrepreneurship as a way towards personal development.			
Know about the support extended by the central and state government to budding entrepreneurs			
18K6COELC03	Financial Market and Services	Introduced to the financial system of India	
		To acquaint the students with the financial market and services available in India	

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF COMMERCE – M. COM

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1CO01	Project Management	Learn the definition of what a project is ?
			Learn the guidelines to prepare a project .
			Learn the procedural factors involved in the collection of data from primary and secondary sources
			Learn about the various project appraisal methods
	18KP1CO02	Quantitative Techniques	Gain knowledge about hypothesis testing
			Learn about Typel I and Type II error.
			Learn about the various tools for testing hypothesis
			Under quantitative techniques
	18KP1CO03	Strategic Management	Introduction to strategic management
			Learn to prepare the vision, mission of an organisation
			Learn about the strategies of survival in an organisation
	18KP1CO04	International Business Environment	Introduced to the environ of international business
			Access to various international economic institutions
Analysis of globalisation from an Indian perspective			
Analysis of the MNC and FDI from Indian perspective			
18KP1COELC01	Managerial Economics	Students learn to use economic tools	
		Understand about production function as a resource of an organisation	
		To understand about business cycle for the betterment of an organisation	

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2CO05	Advanced Corporate Accounting	Students learn the features of shares and debentures
			Given an exposure to company final accounts
			Learn about internal reconstruction
	18KP2CO06	Business Finance	Understand the role of finance in an organisation
			Understand the different types of markets institutions and individuals
			Understand the types of risk factors
	18KP2CO07	Customer Relationship Management	Understand the role of customer in business organisation
			Learn about customer service with in the global market place.
			Students hone effective communication skills
			Learn about the role of business ethics
	18KP2CO08	Corporate Law	Study the evolution of company law in India
			Learn the formation of companies
	18KP2COELC02	Management Information System	Role of information in business system
			Learn about computer hardware and software platforms
18KP2SSCO1	Research Practices	To formulate research problems	
		Learn to design a questionnaire	

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3CO09	Research Methodology	Introduction to methods in research
			Learn about the types of sampling
			Develop a comprehensive research methodology for a research question
			Learn to decipher and differentiate appropriate research designs and methods
	18KP3CO10	Production and Materials Management	Learn the importance of Material Management
			Learn the basics of the production of goods
			Know about issues pertaining to management like stores, receipt, traffic and transportation
			Know about warehousing and physical distribution
	18KP3CO11P	Accounting Software-Practicals	Introduced to accounting software
			Learn practical accounting skills
			Learn the use of accounting software to record and report business transactions
			Analysis of financial data through critical thinking skills
	18KP3COELC03	Services Marketing	Introduced to the concept of services
			Understand the mix strategies and trends of service marketing
			Understand the role of quality in services
			Understand the role of physical evidence, people and service process
	18KP3CO3LC04	Total Quality Management	Introduced to quality management
			Learn about the techniques of quality management
			Know about the quality tools used in management
	18KP3SSCO2	Competitive Skills	Develop cognitive skills to take up competitive examinations
Quantitative and numerical			

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4CO12	Security Analysis and Portfolio Management	Introduction to security analysis
			To create an awareness about risk and return of different investments
			Introduce the evolution of securities and derivatives
			Understand the investment decisions and portfolio performance
	18KP4CO13	Export Management	Identify major product decisions that are relevant for export matters
			Know about procedures involved in export
			Learn about the formalities to start an export business
			Learn about the various incentives of exporters
	18KP4CO14	Human Resource Management	Introduction to human resource management
			Introduction to placement and training
			Know about performance appraisal methods
			Know about different compensation policies
	18KP4COELC05	Marketing Management	Learn about marketing and its functions
			Learn about the behaviour of consumers
			Introduction to pricing policies
			Introduction to the concept of sales forecast
	18KP4CO15PW	Project	Learn to formulate a research problems
			Understand research designs
			To determine data sources
			Learn to design a questionnaire

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF COMMERCE – M. PHIL

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KM1CO1	Research Methodology	Understand sampling and its types
			Describe research process and types of scales
			Describe hypothesis testing
			To practice correlation and regression
	18KM1CO2	Statistical Analysis For Business Research	Learn the techniques to analyse business data
			Describe data analysis
			Learn to interpret business data
			Present report findings and give suggestions to business
	18KM1CO3	Advanced Functional Management (Theory only)	Introduced to functional management
			Identify the cause of stress in managerial life
			Identify managerial activities that contribute to managerial effectiveness
	18KM1CO4	Teaching and Learning Skills (Common Paper)	Learn the contextual application of knowledge and skills
			Identify a range of the works of art and artists.
Learn to assess and evaluate			
Know to evaluate and defend their response.			
II	Dissertation & Viva Voce	Understanding of various sampling techniques used for data collections	
		Describe data analysis	
		Learn to communicate the research results and follow ups	

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN (A)
THANJAVUR -7
COURSE OUTCOME FOR THE SLLABUS 2018 ONWARDS
DEPARTMENT OF BBA

SEMESTER	SUBECT CODE	TITLE OF THE PAPER	COURSE OUTCOME
I	18K1BB01	Principles Of Management	Introduction to the evolution of Management and its affect on the managers
			Enable the students to know the functions of Management
			Insight into decision making process.
			Enables the student to learn how to delegate the task effectively
	18K1BB02	Marketing Management	Introduction to the basics of Marketing concepts
			To make known the factors influencing buyer behaviour
			Introduction to the concepts of segmentation and targeting
			Introduction to the techniques for making pricing decisions
	18K1BBBB1	Managerial Skills	To assist the students to know their strength and weakness through SWOT Analysis
			To enable the students to identify the ways to improve relationships
			To foster an understanding of Lateral thinking
			Introduction to the techniques for conflict resolution

SEMESTER	SUBECT CODE	TITLE OF THE PAPER	COURSE OUTCOME
II	18K2BB03	Human Resource Management	Introduction to the understanding of recruitment and selection
			To learn the effective application of human resources theory
			Introduction to the performance evaluation method
			Introduction to the grievance handling procedure
	18K2BB04	Business Law	Introduction to Indian Legal system on business
			Students learn the knowledge of legal environment in which she has to operate
			Students are acquainted with legal aspects of various legislations
			Students will the prerequisites of doing a partnership business
	18K2BB1S1	Statistics And Management	Students learn to apply statistics in decision making
			Introduction to basic statistical skills needed for business analysis
			To develop the ability to interpret and analyse data in order to make business decisions
			Introduction to basic mathematics needed for business analysis.

SEMESTER	SUBJECT CODE	TITLE OF THE PAPER	COURSE OUTCOME
III	18K3BB05	Financial & Management Accounting	To develop an understanding of Accounting Principles
			Interpretation of financial statements
			To develop an understanding of accounting information to make economic decisions
			To understand the role of accounting in modern business
	18K3BB06	Managerial Economics	Introduction to economic theory.
			To Understand the concepts of demand
			Students learn to analyse the different market structure
			To understand the different techniques of demand forecasting
	18K3BBBB2	Advertising And Sales Promotion	Students learn the basic concepts of advertising and sales promotion
			Students examine the relationship between advertising and product life cycle
			Students learn the methods of sales promotion
			To understand the concepts of pull and push strategy
	18K3BBELO1	An Introduction To Principles Of Management	Introduction to the contribution of experts to management thought
			Analysis of the problems in decision making
			Students learn how to delegate a work
			Students gain an understanding of Organizational structure
18K3SSBB1	English And Logical Reasoning	Students learn how to analyse a business situation	
		Students develop the skill of reading comprehension	
		The importance of reasoning skill is underscored.	
		Students learn to compete for competitive exams	
IV	18K4BB07	RETAIL MANAGEMENT	Students learnt to identify and understands the concepts in retailing
			To develop an understanding of the type of retailers and retail formats
			Students learn to analyse the steps and problems in site selection
			Introduction to the importance of branding in retail management.

SEMESTER	SUBJECT CODE	TITLE OF THE PAPER	COURSE OUTCOME
	18K4BB08	Organizational Behaviour	Students develop a basic understanding of individual behaviour
			Exploration of the theories and issues in motivation
			Students learn to analyse the behaviour of individuals in an organisation
			To develop an understanding of the concept of power and authority
	18K4BBABB3	Company Law	Introduction to the basic concepts of Business law
			Introduction to the relation between law and business.
			Introduction to Memorandum of Association and Articles of Association
			CO4 – Identify the application of prospectus and concepts of share
	18K4BBELO2	An Introduction To Organizational Behaviour	To foster an understanding of the factors that influence individual behaviour
			Students learn to examine the steps to improve morale in organization
			Introduction to the theories of motivation
			Students imbibe the qualities of effective leadership
18K4SSBB2	Quantitative Aptitude	Students learn to prepare for competitive exams	
		Introduction to time related problems	
		Introduction to the concepts of divisibility and partnership related problems	
		Students learn to interpret data	
V	18K5BB09	Research Methodology	Students learn to define a problem
			Students learn to identify a research problem
			Students learn to develop a sample design
			Students understand and develops a research proposal or plan.
	18K5BB10	Retail Management Ii	Students understand and applies consumer behaviour in retailing
			Students learn to identify the problems in retail selection process
			Students analyses the key areas in merchandise management
			Students learn to identify the unfair trade practices and understands the business ethics

SEMESTER	SUBJECT CODE	TITLE OF THE PAPER	COURSE OUTCOME
	18K5BB011	International Business Management	Students identifies the complexity in International business
			Students analyze the International market entry strategies
			Introduction to International pricing methods and terms
			Students learn about the actors to finalize a joint venture agreement
	18K5BBELBB1	Entrepreneurial Development	Introduction to the world of business
			Students learn to identify the problems faced by women entrepreneurs and how to overcome it
			Students learn the preparation of a business plan
			Students learn to analyse and formulate a business plan
VI	18K6BB12	Retail Marketing & Sales Promotion	Students learn to understand the factors influencing retail planning
			Students learn to identify the problems in supply chain
			Introduction to the strategies in retailing
			Students learn about the method to proceed with complaints management
VI	18K6BB13	Production Management	Introduction to the theories of production
			Introduction to the problems of managing production
			To develop an understanding of the process of New product development
			Students learn how to select a plant location and plant layout
V	18K6BB14	Business Communication	Introduction to the concepts of media in communication
			Analysis of the barriers to listening and the tips for effective listening
			Students learn to write business letters and application letters
			Students learn the nuances of conducting meeting

SEMESTER	SUBJECT CODE	TITLE OF THE PAPER	COURSE OUTCOME
	18K6BB15	Project	To develop an understanding of the link between various departments of an organization
			Students learn to understand the real time business
			Students learn the application of SWOT in business
			Students learn about the process of how production is carried out in a firm
	18K6BBELBB2	Computer Literacy For Managers	To develop an understanding of the
			Understands the basics of computer
			Students learn how to work in Ms Word
			Students understand the application of EXCEL in business
			Students learn how to prepare a business power point presentation
	18K6BBELBB3	Financial Services	Students understand the concept of financial services
			Students learn the benefits mutual funds
			Students learn to analyse the concept of Hire purchase
			Introduction to the steps in leasing transaction

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR-
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS

DEPARTMENT OF ZOOLOGY- B.SC ZOOLOGY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1ZO1	Invertebrata	Introduction to the basics of animal kingdom
			Introduction to the classification of animals
			Students learn to understand the relationship of the organs and its functions
			Students learn about the diseases caused by the invertebrates
II	18K2ZO3	Chordata	I Introduction to the evolution of Chordates
			Students learn about the Parental care and Biological significances.
			Students learn to identify pPoisonous and non poisonous species of snake.
			Students understand birds migration and dentition in mammals.
III	18K3ZO4	Cell And Molecular Biology	Students learn about the differentiation of primitive cell and developed cell
			Introduction to cell organelles
			Introduction to cell division
			Students understand the importance of DNA as genetic material and synthesis of proteins
	18K3ZO5	Genetics And Evolution	Introduction to the Mendelian Principles
			Students learn to study the family tree based on hereditary diseases
			Students acquire knowledge about gene transfer and sudden changes occurring in the genes
			Students gain knowledge about the origin of life and evolutionary theories
III	18K3SSZ1	Economic Entomology (Self Study)	Introduction to the lifecycle of insects
			Students understand the importance of insects in Agriculture and Pest management.
			Students understand the interrelationship between insects and Public health
			Students learn about the economic importance of insects.

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3ZELZO1	Poultry Science	Introduction to the types of Poultry and their economic importance
			Introduction to the rearing of the desirable species
			Students learn about the diseases of poultry
			Students learn how to market and grade poultry products
IV	18K4Z07	Biological Techniques	Students learn about different types of microscopes
			Students learn about the preservation methods of living cells and organisms
			Students learn about the separation of cellular and molecular components
			Students understand the principle and applications of analytical instruments
IV	18K4ZELZO2	Vermiculture	Introduction to the characteristics of indigenous and exogenous species of earth worm.
			Introduction to Vermiculture
			Students learn about the Steps of vermicompost
			Students learn about the factors that affect vermicompost
IV	18K4SSZ2	Medical Zoology	Introduction to the history of medical zoology.
			Introduction to the lifecycle of parasites
			Introduction to the life cycle of vectors
			Introduction to clinical diagnosis
V	18K5Z08	Animal Physiology And Biochemistry	Students understand the concept of Nutrition and Respiration
			Students learn to compare the types of circulation and metabolic waste products
			Introduction to the concept of nerve and muscle Physiology
			Introduction to the structure and properties of Biological molecules

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5Z09	Developmental Biology	Introduction to the theories of development
			Introduction to the process of Gametogenesis
			Students learn about the developmental process of various organs.
			Introduction to the concept of nuclear transplantation
V	18K5ZELZ1	Microbiology	Introduction to the concept of microbes
			Introduction to the culturing of microbes
			Students learn about microbial metabolism and generation of ATP
			Students study the interaction of microbes
VI	18K6Z11	Immunology	Introduction to Immunology
			Introduction to cells of immune system
			Students learn to differentiate the antigen and antibody
			Students learn about the concept of autoimmunity
VI	18K6Z12	Environmental Biology And Animal behaviour	Students understand the concept of the interaction between the animal and their habitat.
			Introduction to biogeochemical cycle and characteristics of the community.
			Students learn learning behavior
			Students learn about the concept of reproductive behaviour.
VI	18K6ZELZ2	Biotechnology	Introduction to the concept of genetic Engineering.
			Students learn blotting techniques.
			Introduction to the concept of enzyme technology.
			Introduction to the principle of industrial and Agricultural biotechnology.
VI	18K6ZELZ3	Sericulture	Introduction to the milestones in Sericulture and status in India.
			Students learn about the process of mulberry cultivation.
			Introduction to the life cycle of silk worm.
			Introduction to sericulture.

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS

DEPARTMENT OF ZOOLOGY- M.SC ZOOLOGY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1Z01	Functional Morphology and Palaeontology Of Invertebrates	Introduction to the concept of binominal nomenclature
			Introduction to various physiological activities.
			Students learn about minor phyla.
			Introduction to invertebrate fossils.
I	18KP1Z02	Functional Morphology and Palaeontology Of Chordata	Introduction to the conceptual origin of Chordate origin.
			Students learn about the evolutionary significance.
			Introduction to ornithology.
			Introduction to a comparative study of various organ system.
I	18KP1Z03	Cytology And Genitics	Introduction to cellular components.
			Introduction to the concept of giant chromosome.
			Introduction to gene and its composition.
			Introduction to population genetics.
I	18KP1ZELZ1	Avian Biology	Introduction to the history of Avifauna.
			Introduction to Birds of biological importance.
			Students learn about the role of birds in Agriculture and Horticulture.
			Students learn to understand the concept of migratory birds.
II	18KP2Z06	Animal Physiology	Introduction to metabolic pathways.
			Introduction to the concept of Circulation and Excretion
			Introduction to photo biological processes
			Introduction to Reproductive and endocrine system of animals

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2Z07	Microbiology	Knowledge about the history of microbiology.
			Understand the concept of sterilization.
			Comprehend the knowledge about biofertilizer.
			Perceive information about the disease diagnosis.
II	18KP2ZELZ2	Apiculture	Derive knowledge about the history of apiculture.
			Interpret the information about bees and bee colony.
			Learn about the enemies of bee.
			Extrapolate the information of economics of apiculture.
II	18KP2SSL1	Nanotechnology	Learn about nanomaterials.
			Learn about the properties of nanomaterials.
			Know about the characterization of nanoparticles.
			Assimilate the applications of nanomaterials.
III	18KP3Z09	Biotechnology And Bioinformatics	Learn e about biotechnology.
			Cognize the blotting techniques.
			Infer knowledge about animal tissue culture.
			Derive knowledge about bioinformatics tools.
III	18KP3Z10	Developmental Biology And Immunology	Comprehend the basic knowledge about development.
			Learn about organogenesis and human welfare.
			Learn about histocompatibility.
			Learn about immunotechniques.
III	18KP3ZELZ3	Aquaculture	Understand the history of aquaculture.
			Learn about pond construction and pond management.
			Learn about cultivable species of fishes.
			Learn about disease control and economics of Aquaculture.

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3ZELZ4	Public Health And Hygiene	Learn about public health and hygiene
			Understand environment and health.
			Learn about various diseases.
			Introduction to health education.
III	18KP3SSZ2	Environmental Toxicology	Learn to identify the types of toxic substances.
			Learn to identify and interpret toxicants in the Environment.
			Learn about environmental diseases.
			Introduction to environmental health and Risk assessment..
IV	18KP4Z12	Environmental Management	Learn about Environmental Education.
			Learn about the derivative knowledge of MAB.
			Introduction to the measures of biodiversity.
			Introduction to the conservation strategies and wild life conservation projects.
IV	18KP4Z13	Research Methodology And Biostatistics	Introduction to the t selection of research problem.
			Introduction to micro technique.
			Introduction to analytical techniques.
			Introduction to statistical analysis.
IV	18KP4ZELZ5	Clinical Laboratory Technology	Introduction to clinical lab.
			Introduction to haematology.
			Introduction to disease diagnosis.
			Know the idea prenatal diagnosis.

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF BOTANY B.SC BOTANY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1B01	Algae, Fungi and Lichens	Introduction to the classification and structure of algae
			To learn about classification and structure of fungi and Lichens
			Learn about the reproductive importance of fungi and lichens
			Introduction to the life cycle and economic importance of algae
I	18K1ZAB1	Allied Botany: Thallophytes, Bryophytes, Pteridophytes and Gymnosperms	Introduction to the classification and structure of algae and fungi
			Introduction to the structure of Bryophytes
			Introduction to the Bryophytes and Pteridophytes
			Introduction to Gymnosperms
II	18K2B03	Bryophytes, Pteridophytes, Gymnosperms and Paleobotany	To learn about classification, general characters, structure, internal structures, life cycle and economic importance of Bryophytes, Pteridophytes and Gymnosperms
			To study the methods of fossilization and fossil plants
II	18K2ZAB3	Allied Botany: Taxonomy, Anatomy, Embryology, Horticulture and Ecology	To identify all the kinds of plants with their names, distributions, habit characteristics & affinities
			Students understand complete details about fertilization, structure and development of embryo, types of endosperms
			To acquaint the student with the broad field of horticulture including greenhouse and nursery crops
			To understand the interactions of organisms & their environments and the consequences of these interactions for population, community and ecosystem dynamics
III	18K3B04	Anatomy and Embryology	To learn about internal features of stem (normal and anomalous) root and leaf (dicot and monocot).
			To know about fertilization and their significance
			To study the structure and development of dicot and monocot Embryo

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3BEL01	Medicinal Botany	To know about history and relevance of herbal drugs in Indian systems of medicine
			To learn the macroscopic and microscopic characters, chemical constituents, therapeutical and pharmaceutical uses of medicinal plants.
IV	18K4B06	General Microbiology and Plant Pathology	To learn about classification, characteristics, ultrastructure of prokaryotic microbes.
			To know about organisms and causal factors responsible plant diseases
IV	18K4BEL02	Biofertilizer and Edible Mushroom Technology	To learn about classification, characteristics, ultrastructure of prokaryotic microbes
			To know about organisms and causal factors responsible for plant diseases
			To know the knowledge and skills of edible & poisonous mushrooms which allow them to establish a mushroom cultivation
V	18K5B07	Morphology, Taxonomy and Economic Botany	Students will acquire knowledge about the morphology of plants
			To identify all the kinds of plants with their names, distributions, habit characteristics & affinities
			To give an accumulated information & scientific knowledge of the plants resources
V	18K5BELB1	Cytogenetics and Molecular Biology	Students will recognize plant responses to changing environment conditions
			To acquaint the student with the broad field of horticulture including greenhouse and nursery crops, ornamental horticulture
			To know the varieties, yield, quality, disease resistance, drought frost tolerance and important characteristics of crops

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6B10	Plant Physiology	To learn the structure, function of plants and their metabolic activities.
			To know about the mineral nutrition for plant growth
			To understand the process of photosynthesis and respiration
			To learn about photobiology
VI	18K6B11	Biophysics and Biochemistry	An interdisciplinary science that applies the approaches and methods traditionally uses in physics to study biological phenomena
			Understanding of fundamentals, biochemical principles such as the structure, functions of biomolecules, metabolic pathways and the regulation of biological and biochemical processes.
VI	18K6B12	Plant Ecology and Phytogeography	To understand the distribution and abundance of living things in the environment
			To understand the interactions of organisms & their environments and the consequences of these interactions for population, community and ecosystem dynamics.
			To learn about endemism and distributional ranges of species
VI	18K6BELB2	Biotechnology – Concepts and Techniques	Students will gain and apply knowledge of science of biotechnology and engineering concepts to solve the problems rebooted to field of biotechnology
			Introduction to biological knowledge
VI	18K6BELB3	Bioresources and Biostatistics	To understand renewable and non-renewable resources
			Students will have knowledge of statistical methods for analysis of biological data

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF BOTANY – M.SC. BOTANY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1B01	Plant Diversity-I (Algae, Fungi and Bryophytes)	Learn about the structure, pigmentation, food reserves and methods of reproduction and life cycle of Algae
			Learn about the structure, pigmentation, food reserves and of reproduction of Algae
			Know about structure, life history of major groups and economic importance of Bryophytes
I	18KP1B02	Plant Diversity-II (Pteridophytes, Gymnosperms and Paleobotany)	To learn about classification, general characters, structure, internal structures, life cycle and economic importance of Bryophytes, Pteridophytes and Gymnosperms
			To study the methods of fossilization and fossil plants
I	18KP1B03	Analytical Techniques in Plant Sciences	Gain skill on working principles of various instruments
			Learn the techniques of electrophoresis and chromatography
I	18KP1BEL B1	Biofertilizer and Mushroom Technology	To introduce the application of biofertilizer
			To create self employment opportunities
			To know the knowledge and skills of edible & poisonous mushrooms which allow them to establish a mushroom cultivation
II	18KP2B05	Anatomy, Embryology and Microtechniques	To learn about internal features of stem (normal and anomalous) root and leaf (dicot and monocot).
			To know about fertilization and their significance
			To study the structure and development of dicot and monocot Embryo
			Gain knowledge on fixation, dehydration, embedding, hand sectioning, microtome sectioning

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2B06	Genetics and Molecular Biology	Learn about Mendelian principles, blood grouping, linkage, crossing over, mutation and polyploidy
			To enhance the knowledge about central dogma of molecular biology, bio molecules, cell signalling, cell cycle and cell line protein, molecular cloning, macromolecule blotting, probing etc
II	18KP2B07	Plant Physiology and Biochemistry	To learn the structure, function of plants and their metabolic activities
			Understanding of fundamentals, biochemical principles such as the structure, functions of biomolecules, metabolic pathways and the regulation of biological and biochemical processes
II	18KP2BELB2	Herbal Science	Students will have the opportunity to explore the uses of plants as medicine, ranging from traditional indigenous approaches for treating ailments
			Students learn about the biology of medicinal plants and gain insight as to what makes them useful in treating everything from common cold to cancer
III	18KP3B09	Plant systematic and Economic Botany	To identify all kinds of plants, distribution, habit characteristics and affinities
			Naming of plants according to the International Code of Nomenclature
			Documentation which includes the preservation of living or fossil flora via herbarium
			To give an accumulated information & scientific knowledge of the plants resources
III	18KP3B10	Horticulture and Ecology	Students recognize plant responses to changing environment conditions
			To acquaint the student with the broad field of horticulture including greenhouse and nursery crops, ornamental horticulture
			To understand the distribution and abundance of living things in the environment
			To understand the interactions of organisms & their environments and the consequences of these interactions for population, community and ecosystem dynamics

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3BELB3	Pharmacognosy	To learn the study of crude drugs
			To know the uses of various naturally occurring drugs, its history, sources, distribution, method of cultivation, active constituents, medicinal uses, identification and preservation of drugs, substituent and adulterants.
III	18KP3BELB4	Food Technology	To learn the production process which makes foods
			To know the process of food preservation
IV	18KP4B12	Microbiology and Plant Pathology	To learn about classification, characteristics, ultrastructure of prokaryotic microbes
			To know about organisms and causal factors responsible for plant diseases
			To learn about parasitism and host-parasite interactions
IV	18KP4B13	Biotechnology and Bioinformatics	Students gain and apply knowledge of science of biotechnology and engineering concepts to solve the problems rebooted to field of biotechnology
			Broad range of biological knowledge
			Application of laboratory skills
			Students will be able to predict the secondary and tertiary structures of protein sequences
IV	18KP3BELB5	Research Methodology and Biostatistics	It is the process used to collect information and data for the purpose of research
			Students learn about research, surveys & other research techniques, paper publications
			. Students learn about statistical methods for analysis of biological data

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF BOTANY- M.PHIL

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KM1BT1	Research Methodology	It is the process used to collect information and data for the purpose of research
			Students learn about research, surveys & other research techniques, paper publications etc
I	18KM1BT2	Advances in Botany	To develop an understanding of plant growth and function under challenging environmental conditions
			Application of the knowledge will allow development of plants with enhanced tolerance to environmental stresses and help to establish sustainable agriculture systems in arid regions of the world.
I	18KM1BT3	Research Trends in Plant Science	Students learn about transgenic plants, production of secondary metabolites
			To learn about industrial botany, genetic recombination and gene transfer methods in plant cells
I	18KM1BT4	Teaching and Learning Skills	To acquire the programme specification at the level of award like the tripos, M.Phil. or at a major subdivisions

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF PHYSICS- B.SC PHYSICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1PO1	Properties of matter	To understand the properties of materials
			To study the elastic behavior of beams and pendulums
			To understand the surface tension and viscosity of fluids
			To study the basic properties of sound waves and ultrasonics
II	18K2PO2P	Physics Practical –I	To understand the elastic behavior of materials
			To understand the working of optical lenses
			To understand the heating behavior of elements
			To understand the laws of transverse vibrations in strings
II	18K2PO3	Mechanics and Relativity	To know about dynamics and gravitation
			To study the behavior of rigid body dynamics
			To analyse the performance of hydrostatic and hydrodynamics
			To gain knowledge in theory of relativity
III	18K3PO4	Optics and Laser Physics	To understands the various theories of light
			To understand the properties of light like reflection, refraction etc
			To understand the resolving power of different optical instruments
			To gain knowledge of applications of light in various fields
IV	18K4PO5P	Physics Practical –II	To study the diode characteristics
			To study the wavelength of light
			To understand the specific heat capacity
			To learn to calibrate ammeter and voltmeter

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K4PO6	Thermal and Statistical physics	To-gain knowledge in kinetic theory of gases
			To understand the nature of thermodynamic properties like enthalpy, entropy, etc.
			To understand the laws in thermodynamics
			To understand the statistical method to solve practical problems
V	18K5PO7	Electricity and Magnetism	To gain knowledge about the basic concepts of electric and magnetic fields
			To analyse the chemical and heating effect of current
			To understand the faradays law of induction
			To gain knowledge on nature of magnetic materials
V	18K5PO8	Analog Electronics	To understand the basics of diode
			To analyse the characteristic of transistors
			To study the working of amplifiers and oscillators
			To understand the application of amp and IC's
V	18K5PO9	Wave mechanics and nuclear physics	To understand the wave particle duality and postulates of quantum theory
			To learn the application of Schrodinger wave equation
			To understand the basics of nucleus
			Students learn about fission and fusion and nuclear power energy.
V	18K5PELP1	Numerical Methods	To understand the basic elements of numerical methods with application
			Students learn to find a stable algorithm for solving mathematical problems
			To create, analyze and implements algorithms for numerical solutions
			Introduction to differential and integral equations

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6P10P	Physics Practical – III	Introduction to the optical properties of prism
			To know and understand the behavior of thermocouple
			Introduction to self inductance and mutual inductance
			To know about the behavior of magnets
VI	18K6P11P	Physics Practical – IV	To understand the logic functions
			To understand the performance of microprocessor
			To understand number systems and codes
			To understand oscillators and pumps
VI	18K6P12	Microprocessor and Programming in C	To understand the basic concepts of operators and expressions
			To analyse the relationships between various statements
			To study the different types of arrays, structures.
			To write programs for solving problems
VI	18K6P13	Digital Electronics	To gain knowledge on number systems
			To gain knowledge on logic circuits
			Introduction to Boolean algebra and k-maps
			To learn about microprocessor
VI	18K6PELP2	Atomic and Solid state physics	To learn about the basic concepts of force between atoms and bonding
			To understand the behaviour of conductors and insulators
			To understand the properties of dielectric materials
			To study the crystal system

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6PELP3	Advanced Physics	Introduction to Solar energy applications
			To understand the renewable energy sources
			To gain knowledge on thin films
			To study the properties of nano materials.

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF PHYSICS- M.SC PHYSICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1PO1	Mathematical Physics	To understands the fundamental principles of physics
			To understand mathematics to solve applied problems
			To understand matrices group theory and tensor
			To solve non-routine physical problems.
I	18KP1PO2	Classical Dynamics and Relativity	To understand the mechanical concepts of system of particles
			To understand the rotational motion of rigid bodies
			To understands the Lagrangian and Hamiltonian formalism
			To understands special and general theory of relativity
I	18KP1PO3	Statistical Physics	To gain knowledge on microscopic properties of system
			To correlate classical mechanics with thermodynamics
			To understands the different statistics (FD,BE,MB)
			To understands canonical ensembles
I	18KP1PO4P	Practical I	To understand the elasticity of materials
			To understand the electric and magnetic fields
			To understand the use of spectrometer and spherometer
I	18KP1PELP1	Analog and digital electronics	To understand the basics of diode, transistors amplifiers
			To analyse the application of amp and IC's
			To gain knowledge on sequential logic circuits
			To gain knowledge on microprocessor and microcontrollers

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2PO5	Electromagnetic theory	To gain knowledge of mathematical concept of grad, div, curl
			To learn about electric field lines
			To learn about magnetic field characteristics
			To know on transmission lines
II	18KP2PO6	Quantum Mechanics	To understand the discrete behavior of particle and wave
			To understand exactly solvable systems
			To gain knowledge on scattering theory
			To understand relativistic quantum mechanics
II	18KP2PO7	Solid State Physics	To understand the crystallography
			To understand the behaviour of conductors and insulators
			To understand the properties of dielectric materials
			To understand the superconducting materials
II	18KP2PO8P	Practical II	To understand the elasticity of materials
			To understand the electric and magnetic fields
			To understand the use of spectrometer and spherometer
			To study the working of transistor
II	18KP2PELP2	Numerical Methods	To understand the basic of numerical methods with application
			To find a stable algorithm for solving mathematical problems
			To analyze and implements algorithms for numerical solutions
			To study the solution for differential and integral equations

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2PELP2	Numerical Methods	To understand the basic of numerical methods with application
			To find a stable algorithm for solving mathematical problems
			To analyze and implement algorithms for numerical solutions
			To study the solution for differential and integral equations
II	18KP2SSP1	Laser Physics	To understand the interaction of light with matter
			To understand the principle of laser
			To gain knowledge on different types of laser
			To understand the applications of laser in different fields
III	18KP3PO9	Spectroscopy	Introduction to spectroscopy
			To analyze and interpret the spectroscopic data
			To study the use of spectroscopic techniques with systematic skills
			To gain knowledge on analysis of complex molecules
III	18KP3P10	Nuclear and Particle Physics	To acquire knowledge of basic properties of nucleus
			To understand theoretical background of nuclear energy
			To understands the application of nuclear energy
			To understand the particle physics and classification of particles.
III	18KP3P11P	Practical III	To gains knowledge on o amps circuits
			To understands the behavior of IC and flipflops
			To writes C programs for various numerical problems
			To understands memory circuits and microprocessor

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3PELP3	Communication electronics	To understand the communication systems
			To gain knowledge on microwaves and its applications
			To understands optical fiber communication system
			To understand satellite and cellular communication
III	18KP3PELP4	Microprocessor and microcontroller	To understand the microprocessor architecture
			To gain knowledge on programming using microprocessor
			To understands the microcontrollers and communication
			To gain knowledge on applications of microprocessors
III	18KP3PSSP2	Solar Energy	To understand the structure of sun
			To gain knowledge on various solar collectors
			To study solar cell and its types
			To know the application of solar energy
IV	18KP4P12	Nano Physics	To understands the types of nanomaterial
			Introduction to nanostructures
			To know about the synthesis of nanomaterials
			To learn the applications of nanomaterials
IV	18KP4P13	Thin Film Physics	To gain basic knowledge on thin films
			To study the various deposition techniques
			To gain knowledge of the properties on thin films
			To understand the various applications of thin films

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4P14P	Practical IV	To gain knowledge on o amps circuits
			To understands the behavior of IC and flipflops
			To writes C programs for various numerical problems
			To understands memory circuits and microprocessor
IV	18KP4PELP5	Medical Physics	To understand the method of developing new disease control tools
			Introduction to medical diagnostic imaging
			To understand the ultrasound imaging
			To understand the use of x-ray

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF CHEMISTRY- B.SC CHEMISTRY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1CH01	Inorganic, Organic and Physical chemistry- I	To know the arrangement of elements in the periodic table and the periodic properties
			To understand the geometry and the method of naming organic compounds
			To learn the various methods of preparations of aliphatic hydrocarbons
			To appreciate the basics of gaseous and colloidal states
II	18K2CH02P	Inorganic Qualitative Analysis Chemistry Practical I	To enable the students to develop analytical skill in inorganic qualitative analysis
			To learn and appreciate the various coloured chemical reactions of metal ions.
	18K2CH03	Inorganic, Organic and Physical chemistry- II	To identify the nature of chemical bond in a given inorganic compound
			To know the nature of compounds formed by p-block elements
			To introduce the students to the basics of organic polymers
			To understand the concept of thermodynamics
III	18K3CH04	Inorganic, Organic and Physical chemistry- III	To understand the different kinds of chemical forces in molecules
			To learn the preparation and mechanism of organic halide compounds
			Introduction to the basic principles of quantum chemistry
			To know the relation between colligative properties and molecular weight of solutes
	18K3B/P/ZA CH1	Allied Chemistry-I	Introduction to the basic concepts of chemistry
			To facilitate pursuit of a career in chemistry.

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3CHEL01	Agro Chemistry	Understand the principles and properties of soil
			Importance of agricultural chemistry
			Understand the use chemicals in improvement of agricultural crops
			An exposure to find, analyse and find the suitable method to cultivate and promote agricultural methods
III	18K3SSCH1	Food Chemistry	Introduction to basics of Food Chemistry
			Know the nutritional values of food
			Awareness on the food spoilage and adulteration
			Gain knowledge in food analysis
IV	18K3CH05P	Volumetric Analysis Chemistry Practical II	Enable the students to acquire the quantitative skills in volumetric analysis
			At the end of the course, the students should be able to plan experimental projects and execute them
IV	18K4CH06	Inorganic, Organic and Physical chemistry- IV	Know the nature of compounds formed by halogens and noble gases
			Understand the mechanism of reactions of aromatic hydrocarbons
			Learn the preparation of organic compounds of oxygen based functional groups
			Enable the students to understand the effect of pressure and temperature on phase equilibrium
IV	18K4B/P/ZACH2P	Allied Chemistry II Practical	Enable the students to acquire the quantitative skills in volumetric analysis
			Understand better the concepts of organic analysis
			Appreciate the chemistry of various functionalized organic compounds through analysis

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4B/P/ZACH3	Allied Chemistry III	Introduction to the basic concepts of chemistry
			To enable the students to pursue careers related to chemistry
IV	18K4CHEL02	Hydro Chemistry	Understanding of water quality parameters
			Methods employed for purification of water for industry and home
			Know about pollutants, pollution and toxic effects
			Know about water borne diseases
IV	18K4SSCH2	Dairy Chemistry	Importance of nutritional values of milk
			Know about the composition and processing of milk
			Know about the milk products and its preservation
V	18K5CH07	Inorganic Chemistry- I	Know the occurrence of lanthanides and actinides in nature and their uses
			Understand the basic concept of co-ordination compounds and early theories
			Know the existence of special types of compounds through π -acid ligands
			Know the industrial applications of binary compounds
V	18K5CH08	Organic Chemistry –I	Understand the stereochemistry of optically active compounds
			Understand the physical and chemical properties of carbonyl compounds
			Learn and practice the mechanism of above such reactions
			Learn the basic aspects of heterocyclic compounds

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5CH09	Physical Chemistry-I	Understand the concepts of thermodynamics and apply it to physical and chemical system
			Enable to explain the concepts of reaction mechanism from experimental data
			Relate the rates of reactions with different temperatures
			Understand the photochemical activation and deactivation of molecules
			Develop an attitude of critical thinking
			Learn the basic analytical methods
VI	18K5CH10P	Gravimetric & Organic Analysis-Practical III	Enable the students to develop analytical skills in organic qualitative analysis and preparative skills in organic preparations
			Enable the students to check the purity of organic compounds by determining the melting or boiling points
			Enable the students to acquire the quantitative skills in gravimetric analysis
			Planning and execution of experimental projects
VI	18K5CH11P	Physical Chemistry Practical IV	Introduction to the principles involved in the conduct of experiments in the laboratory
			Interpretation of experimental data
VI	18K6CH12	Inorganic Chemistry-II	Identify the nature of metallic bond in an inorganic compound
			Know the importance of nuclear reactions in the modern world
			Understand the use of chemicals in improvement of agricultural crops

Semester	Subject Code	Title of the Paper	Course Outcome
			Enumerate the molecular motif of a living cell, structural and functional hierarchy of bio molecules
			Students learn the practice of molecular rearrangement and the reaction mechanisms
			Students learn the basic aspects of natural products
VI	18K6CHE LCH2	Electro Chemistry	Understand the inter conversion of chemical and electrical energy
			Students learn the relationship between thermodynamics with electrochemistry
			Students learn about different types of electrodes
			Students learn to apply the concepts of kinetics, catalysis and photochemistry in different chemical process
VI	18K6CHE LCH3	Molecular Spectroscopy	The course prepares the students to understand the complexity carbon skeletons
			Understand the presence of functional groups and their relative positions
			Understand UV, IR, NMR and Mass spectra of organic molecules

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF CHEMISTRY- M.SC CHEMISTRY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1CH01	Inorganic Chemistry- I	To identify the nature of chemical bond in a given inorganic compounds
			To know the nature of metal – ligands bonding in coordination compounds and quantification of the bonding parameters
			To set research goals in the highly topical areas of research in coordination chemistry
			To equip the students for their career in nuclear industries
I	18KP1CH02	Organic Chemistry -I	To understand the mechanism of a chemical reaction
			To understand the techniques involved in the substitution reaction
			To understand and appreciate the importance of hetero cyclic compounds
			To appreciate the concept of substitution reactions
I	18KP1CH03P	Inorganic Chemistry Practical –I	To improve the skill in quantitative estimation of metal ions by colorimetry
			To improve the skill in qualitative analysis of rare metal ions in different groups
			To know the inter and intra groups precipitation and separation of metal ions
			To identify the methodology to analyse a metal ion in the presence of another metal ion
I	18KP1CH04P	Organic Chemistry Practical –I	To enable the students to develop analytical skill in organic qualitative analysis.
			To develop preparative skills in organic preparation involving single stage
			To enable the students to develop skill in chromatography techniques
			To enable the students to pursue higher studies and go for research
I	18KP1CHELCH1	Green Chemistry	Introduction to Green Chemistry
			Students learn the use of safer reagent and solvents.
			Zero waste and optimized use of resource

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2CH05	Organic Chemistry -II	Learn the synthetic route for simple organic compounds with stereo chemistry
			Students understand and appreciate the concept of stereo chemistry and reaction mechanism
			Learn to apply the knowledge of chemical reactions in organic synthesis
			Know the synthetic route potential of natural products
II	18KP2CH06	Physical Chemistry- I	Understand the physical and mathematical aspects of Quantum Mechanics
			Students learn fundamental mathematics to solve quantum mechanical problems
			Understand and appreciate the quantum mechanical approach to the atomic and molecular structure
			Learn to apply the theories and concept of quantum mechanics for homogeneous and heterogeneous catalysed reactions
II	18KP2CH07P	Inorganic Chemistry Practical –II	To improve the skill in quantitative estimation of metal ions by complexometric titration
			To identify the methodology to quantitatively separate and estimate the mixture of metal ions
			To identify the methodology to estimate a metal ion in the presence of another metal ion
			To improve the skill in synthesis of inorganic compounds
II	18KP2CH08P	Organic Chemistry Practical –II	To enable the students to develop analytical Skill in organic quantitative analysis
			To develop preparative skills in organic preparation involving two stages
			Students learn the analysis of oils
			Understand the techniques involved in the preparation of standard solutions, standardization and calculation in the estimation of compounds
II	18KP2CHELCH2	Industrial Chemistry	Understand the basic concepts and laws of various management concepts.
			To know Managerial skill development.
			Develop the capability to manage human resources in industry
			To understand the attitude and stress limit of an employee.

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2SSCH1	Instrumental methods of Chemical Analysis	Understand the techniques involved in the instrumental analysis
			Understand and appreciate the techniques involved in the instrumental analysis particularly in optical methods and electro analytical methods
			Learn the chromatographic techniques in the separation and identification of components
			Learn the operation of instrumentation techniques and data processing
III	18KP3CH09	Organic Chemistry -III	Know the methods of synthetic strategies and application
			Apply the knowledge of chemical reactions in organic synthesis
			Learn the applications of spectroscopy for the study and structural elucidation of molecules
			Interpret given spectra to elucidate the structures of molecules
III	18KP3CH10	Spectroscopic Methods	Know quantization of energy and the interaction of electromagnetic radiation with matter
			Learn the principle and fundamentals of spectroscopy
			Understand the mathematical foundations of different branches of spectroscopy
			Learn the applications of spectroscopy to study the structure of molecules
III	18KP3CH11P	Physical Chemistry Practical-I	Students acquire analytical (both qualitative and quantitative) and psychomotor skills
			Learn the principle behind the experiments in the laboratory
			Learn to plan and perform experiments and interpret experimental results
III	18KP3CHELCH3	Research Methodology and current trends in Chemistry	Learn the various indexes and abstracts in science and technology
			Learn the applications of spectroscopy for the study and structural elucidation of molecules
			Learn the methods of synthetic strategies and applications
			Introduction to the synthesis, structure and reactions of nanoparticles which are very important for biological body

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3CHELCH4	Medicinal Chemistry	Introduced to the correlation between pharmacology of a disease and its mitigation or cure
			To understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
			To know the structural activity relationship of different class of drugs
			To learn the mechanism pathways of different class of medicinal compounds
III	18KP3SSCH2	Chemistry of Nano Science	Learn the importance of nanoscience in modern scientific community
			Learn the application of some specific nano molecules
			Introduction to the synthesis, structure and reactions of nanoparticles which are very important for biological body
IV	18KP4CH12	Inorganic Chemistry-II	Identify the nature of advances in chemical bonding in inorganic compounds
			Learn the importance of inorganic photo sensitizers for solar energy conversion
			Learn the applications of spectroscopy for the study and structural elucidation of molecules
			Identify complexes suitable for application in medicinal inorganic chemistry.
IV	18KP4CH13	Physical Chemistry-II	Learn the use of chemical kinetics in understanding reaction mechanism
			Learn to apply the theories and concepts related to homogeneous and heterogeneous catalysed reactions
			Understand and appreciate the quantum, approach to the atomic and molecular electronic structure mechanical approach to the atomic and molecular electronic structure
			Learn the concepts of statistical thermodynamics for the study of equilibrium reactions and reaction rates

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4CH14P	Physical Chemistry Practical-II	Analyse and estimate quantitative parameters in potentiometric methods and conductometric methods
			Learn the operation of instruments techniques and data processing
	18KP4CHELCH5	Polymer Chemistry	Introduction to the general reaction course and reaction mechanism for step growth polymerization
			Introduction to the principles of bulk, solution and interface polymerization
			Learn to calculate the degree of polymerization
			Learn the measures to control the molecular weight and the rate of polymerization
	18KP4CH15PW	Project	Introduce the purpose and importance of research for future development and sustenance
			Learn the methodology of writing thesis and journal articles
			Facilitate the e students in pursuing higher studies and go for research.

COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF GEOGRAPHY- B.SC GEOGRAPHY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1G01	Fundamentals of Geomorphology	Introduction to the basic knowledge about the geographical land forms, their origin, basic mechanisms.
			Learn about the internal and external processes acting upon the land forms and their associated features
			Learn the skill to interpret each and every mechanism behind the land forms.
			To compete with the outer world in terms of research and development
I	18K1GAG1	Elements of Cartography - I	Introduction to the importance of maps in Geography
			Learn about their types, coordinate system, symbolization, compilation and generalization
			Develop map making skills among the students
			To provide opportunity to seek for jobs at surveying and other map making agencies
II	18K2G02P	Practical - I Scales and Climatic Diagrams	Students gain practical knowledge about scaling techniques in map making and relief representation
			Learn about the scaling techniques in climatic data representation
			Develop the skills in map interpretation
			Learn to solve many practical problems incurred in understanding the maps their application in various fields
II	18K2G03	Introduction to Oceanography	Introduction to the basics in the nature and importance of oceans in Geography
			Learn about the bottom relief, temperature, salinity, ocean dynamics and ocean deposits
			To inculcate the research aptitude to discover known facts under the oceans
			Develop the skill to interpret the oceanic phenomena in the right way

Semester	Subject Code	Title of the Paper	Course Outcome
II	18K2GAG2P	Allied Practical - Cartographic Techniques	Practical knowledge about map making techniques
			Learn about the application of cartographic knowledge at different levels of map making
			Develop the skill of interpretation of various maps by knowing the symbolization
			To seek job opportunities in mapping agencies and to compete at global level
II	18K2GAG3	Elements of Cartography - II	Introduction to the importance of maps in Geography
			Learn about the types, coordinate system, symbolization, compilation and generalization
			Develop map making skills among the students
			To provide an opportunity to seek for jobs at surveying and other map making agencies
III	18K3G04	Settlement Geography	Learn the importance of settlements in Geographical studies.
			Learn the classification of settlement, their function, site and situation, their characteristics, world pattern and land use models
			Develop the skill of giving suggestions in rural - urban planning and development
			Develop competency at global level
III	18K3GEL01	Geography of Resource Utilization	Understand various types of resources
			Identify the factors affecting resources
			Examine the need for resource conservation
			Learn the importance of non-conventional energy sources
IV	18K4G06P	Socio-Economic Diagrams and Weather Interpretation	Learn the line graphical representation of data.
			Learn to represent quantitative data by different circle diagrams
			Learn to generate isopleth maps for various socioeconomic data
			Learn to interpret different weather signs and symbols

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4G07	Basics of Climatology	Understand various weather elements
			Know the distribution of temperature and pressure
			To examine the role of moisture in weather phenomena
			To study different types of cyclones
IV	18K4GEL02	Basics of Remote Sensing	Understand the growth and development of remote sensing
			Analyze Electro Magnetic Radiation and its interaction
			Knowing various types of platforms and resolutions
			Know the application of remote sensing in various fields
V	18K5G08	Principles of Remote Sensing	Study the development of space programmes in India
			Know various types of remote sensing platforms
			Learn to distinguish between aerial and satellite remote sensing
			Understand various image processing techniques
V	18K5G09	Regional Geography of Tamil Nadu	Understand the physiography of Tamil Nadu
			Analyze primary and secondary economic activities of Tamil Nadu
			Know the distribution of different industries in Tamil Nadu
			Know about the population distribution and road networks in Tamil Nadu
V	18K5GELG1	Geography Of Natural Regions Of The World	Know about the significance of regions in Geography
			Know about the influence of climate on the distribution of natural regions
			Develop the skill on world level information on regions
			To get hands-on experience in using surveying tools

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K6G11P	Interpretation of Geospatial Data	Learn to interpret cartographic Interpretation of toposheets
			To do topographic interpretation of hilly and plain region
			To appreciate marginal information of aerial photos and satellite images
			To compare toposheets, aerial photos and satellite images
V	18K6G12	Regional Geography of India	To have a thorough knowledge about the regional aspects of India
			To throw light on physiography, agriculture, mineral and population resources of India
			To succeed in job oriented competitive examinations
			Learn to give suggestions in planning and development and to manage the susceptible conditions
VI	18K6G13	Resource Utilization	To know about the nature of resources and their utilization
			To study agriculture, mineral and power resources
			To know the influence of transport and trade on resource development
VI	18K6GELG2	Introduction To Population Geography	To know about the importance of population in geographical studies
			To study the distribution, density, composition and migration pattern of population
			To handle the population problems and the management of population resources
			The study of population helps in regional planning and development
VI	18K6GELG3	Geography Of Travel And Tourism	To know about geographical significance of travel and tourism
			To analyze the supporting factors promoting tourism
			To study the role of Tourism Development Corporation in the development of tourism sports in India
			Learn to offer suggestions for the development of National parks and sanctuaries in India

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF GEOGRAPHY- M.SC GEOGRAPHY

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1GO1	Advanced Geomorphology	Know about science of earth system and its process
			Learn to differentiate various factors and internal-external forces
			Introduction to various landforms and its genesis
			Gain an insight over economic significance of landforms
I	18KP1GO2	Principles of Climatology	.Understand the nature of earth's atmosphere and its characteristics
			Ability to correlate temperature and other climatic elements
			Know the global spatial pattern and temporal rhythm of climatic elements
			Know the system of weather forecasting and application of climatology
I	18KP1GO3	Principles of Oceanography	Introduction to hydrosphere and its morphology.
			Physical and chemical characterization of major oceans of the Earth.
			Understanding ecological significance and economic importance of oceans
			Introduction to coastal zone management and research.
I	18KP1GELG1	Advanced Cartography	To understand different types of maps
			To create isopleth maps
			To learn the principles of map design and layout
			Learn to prepare maps using GIS
I	18KP1GO4P	Practical – I -Terrain and Climatic Data Analysis	Acquire skill over thematic mapping of relief and climatic data
			. Skill of representing slope and profile generation using various techniques.
			Learn the technique of drainage morphometry and waterbalance.
			Know the idea of graphical correlations and portray of climatic data

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2G05	Development of Geographical Thought	Know about the historical development of Geographical thought
			Know about the recent trends in the in Geography
			Develop multi dimensional skills in the subject and to promote research skills
			To succeed in Competitive exams
II	18KP2G06	Fundamentals of Geoinformatics	To introduce Geoinformatics
			To equip the students with the modern technological skills
			To compete with the latest technology at global level
			To apply this knowledge for further research and development
II	18KP2G07	Social Geography	To know about the social, political and cultural scenario in Geography
			Introduce the basic concepts in social, political and cultural Geography
			The world level knowledge helps the students to compete at global level
			To succeed at State and Central level competitive examinations
II	18KP2G08P	Map Analysis and Weather Map Interpretation	Learn to interpret topo sheets
			Learn to interpret US sheets
			Learn to interpret weather reports and NATMO maps
			Learn to interpret OS sheets
III	18KP3G09	Research Methods in Geography	Understand what is research and its types
			Know the steps involved in research design
			Learn the various data collecting methods
			Learn to prepare research reports

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3G10	Urban Geography	Study the nature of cities in geographical view
			Study urban morphology, expansion and urban functions in a detailed manner
			Introduction to urban land use models.
			To know and solve urban problems urban renewal and planning
III	18KP3G11P	Geospatial Data Analysis	To have practical knowledge of analyzing the geospatial data
			Learn the interpretation technique of satellite images and integration with GIS
			Learn with latest techniques of GNSS survey and integration with GIS
III	18KP3GELG3	Geography Of India	Introduction to the regional aspects of India
			Introduction to physiography, agriculture, mineral and population resources of India
			Examine the suggestions in planning and development and to manage the susceptible conditions
III	18KP3GELG4	Geography Of Economic Activities	Assess the importance of economic activities in geographical studies
			Explain the economic activities like agriculture, industry, transport and trade
			Learn about measurement of agricultural production and efficiency
			Apply the knowledge of economic activities for planning and development
IV	18KP4G12	Regional Planning	State the importance of geographical knowledge in regional planning
			Describes the regional imbalances in resources
			Depicts the knowledge on the multi-level planning in India
			Analyze the functioning of planning commission at different levels

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4G13	Bio Geography	Introduction to bio-geographical features
			Introduction to the evolution of life, Bio-diversity, and world biomes
			Apply the knowledge gained in environmental conservation and management
IV	18KP4G14P	Statistical Analysis In Geography	Learn to use statistical methods in geography
			Learn statistical techniques in analyzing agricultural, industrial and transport data
			Apply hypothesis testing in analysis
			Apply the statistical knowledge in research and development
IV	18KP4GELG5	Geography of Tourism	Learn the geographical significance of travel and tourism
			Analyze the supporting factors promoting tourism
			Study the role of Tourism Development Corporation in the development of tourism sports in India

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF COMPUTER SCIENCE- B.SC COMPUTER SCIENCE

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KICS01	Data Structures and Algorithms	Students learn to apply the concept of Data Structures through ADT including Lists, Stack, Queues.
			Students learn to implement the Linear and Non-Linear Data Structures.
			Students learn to apply the operations of all the type of Data Structures.
			Students learn to understand the concept of designing and Algorithm.
I	18KICS02P:A	Office Automation Lab	Students acquire basic knowledge of computer and its most common software Ms-Office.
			Students learn to construct a document and apply various manipulation techniques.
			Students learn to perform accounting operations in MS-Excel
			Students learn presentation skills in MS-PowerPoint and perform database operations in MS-Access.
I	18K2CS02P:B	C Programming Lab	Students learn to work effectively on C program using operators.
			Students learn the conditional and iterative statements in C.
			Students learn to handle errors during program execution
			Students learn to develop and implement the C programs
II	18K2CS03	Programming in C	Students learn the basic structure of C programming, declaration and usage of variables.
			Students learn the role of design in development of programming problems.
			Students attain ability to work with textual information, character and String.
			Students learn about pointers, memory allocation and file processing

Semester	Subject Code	Title of the Paper	Course Outcome
III	18K3CS04	C++ and Java Programming	Students learn the concept of OOPs
			Students learn to identify classes, objects, members of class and relationship among them needed for a specific problem.
			Students learn to handle the errors using exception handling.
			Students understand the concept of Applet, Threads.
III	18K3CS05P: A	Java Programming La	Students learn to write, debug & document well structured Java Applications.
			Students learn to write program on inheritance, interface and packages.
			Students learn to handle program in API packages and threads.
			Students learn about exception handling mechanism.
III	18K3SSCS1	Quantitative Ability	Students learn to solve the mathematical problems.
			Ability to compete and succeed in examinations
			Students hone the skills to interpret data.
			Students learn about permutations and combinations.
III	18K4CS05P: B	VB.Net LAB	Students learn to design and develop Graphical User Interface
			Students learn to understand and code event-driven procedure.
			Students learn to work effectively on Visual Basic Controls.
			Students learn to access database from VB.Net programs.
IV	18K4CS06	VB.Net	Students learn to understand .Net Framework
			Students learn to operate on Integrated Development Environment(IDE)
			Students learn to create window application programs.
			Students learn to connect to database using ADO.Net

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18K4SSCS2	Reasoning Ability	Students acquire reasoning skills to compete and succeed in competitive examination.
			Students learn to solve the puzzles problem.
			Students learn about logical reasoning.
IV	18K5CS07	Microprocessor Architecture	Students learn Microprocessor 8085 and 8086
			Students learn the interfacing of memory and various addressing modes of 8085
			Students learn the instruction set of 8085
			Students learn to apply microprocessor applications for real world problems.
V	18K5CS08	Digital Design	Students learn to apply number system concepts and conversion in digital design .
			Students learn to construct digital logic and apply it to solve real life problems.
			Students learn to construct K-Map for Boolean expressions.
			Students learn to implement combinational and sequential circuits.
V	18K5CS09P: A	Data Structures using C++ Lab	Students learn to implement operations on stack, Queue and Linked Lists.
			Students learn to perform binary search using C++.
			Students learn to process operations on tree traversal.
			Students learn to perform sorting techniques.
V	18K5CSELC S1:A	Database Systems	Students learn to differentiate database systems from file systems
			Students learn to understands the various models in database
			Students learn to operate SQL Operations
			Students understand the normalization concept.

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K6CS10P	Digital and Microprocessor Lab	Students learn the basic logical operations of Digital Electronics
			Students learn to work on shift registers and counters.
			Students acquire the knowledge of allocating memory
			Students learn to use retrieve data from allocated memory
VI	18K6CS11P	RDBMS Lab	Students learn to create and populate a RDBMS, using SQL.
			Students learn to write queries in SQL to retrieve any type of information from a database.
			Students learn to perform fundamental operations and set operations in SQL.
			Students learn to create view from SQL.
VI	18K6CS12	Data Communications and Networks	Students learn the layers of OSI.
			Students learn the fundamental concept of networking.
			Students learn data transfer schemes
			Students learn inter-connecting networking devices.
VI	18K6CS13PW	Mini Project	Students learn about different software development process.
			Students acquire the ability to plan, analysis, design and implement software project using Programming like JAVA, ASP, PHP, .Net.
			Students become competent to design and implement mini working projects.
			Students learn to apply real life problems in software development projects.
VI	18K6CSELCS 2:A	Software Engineering	Students learn about planning project.
			Students learn to analyze the software project.
			Students understand design and implement software project.
			Students learn about the maintenance of software project.

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF COMPUTER SCIENCE- M.SC COMPUTER SCIENCE

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KPICS01	Advanced Java	Students learn to prepare programs using Remote Method Invocation.
			Students learn programming techniques of Java Beans and Swing.
			Students learn about Java Enterprise Application.
			Students learn to construct Java Servlets and Network Programming.
I	18KPICS02	Open Source Technology	Students learn to implement Interactive web page using HTML, CSS and Java Script.
			Students learn to build application using Perl and MySQL.
			Students learn to recognize Client and Server side Script.
			Students learn to Design web site using PHP Programming.
I	18KPICS03	Operation Research	Students learn to formulate LPP, Transportation problem and assignment problem.
			Students learn the application of OR.
			Students learn the solution to Shortest path problem, game theory and Queuing theory.
			Students learn about the techniques of OR.
I	18KPICS ELCS1:A	Network and Cyber Security	Students identify information security goals.
			Students learn to understand different encryption and decryption techniques.
			Students learn to apply different digital signature algorithms.
			Students learn different cyber security policies and rules.
	18KPICS04P	Programming and Modeling Lab	Students learn to write, debug and document well structured JAVA applications.
			Students learn to create Applet and handle Events based on advanced JAVA concepts.
			Students learn to use programs in java collection API as well as JAVA standard Library.
			Students learn to connect an application with Database.

Semester	Subject Code	Title of the Paper	Course Outcome
	18KP2CS05	Compiler Design	Students learn the rules of compilers in program execution. Students learn about detail program execution using Lexical and Syntax Analysis. Students learn to implement various types of parser. Students learn about code generation and optimization.
II	18KP2CS06	.Net Framework	Students learn about C.Net. Students learn the concept of OOPs. Students learn to work effectively on VB.Net. Students learn to use the tools of ASP.Net.
II	18KP2CS07	Internet of Things	Students learn to separate the IOT hype from the reality. Students learn to evaluate networking technologies for application within IOT projects. Students learn to apply effective techniques to create IOT based projects. Students learn to explore the features of predictive data analytics for IOT application.
II	18KP2SSCS1	Cognitive Ability	Students learn to compete in competitive examinations. Students acquire the cognitive skills to take up competitive Examination. Students hone skills in mathematical and logical reasoning.
II	18KP2CS08P	.Net Programming Lab	Students learn to work on advanced features of VB.Net. Students learn to design a document for GUI applications. Students learn to develop web application in ASP.Net based on user requirements. Students learn to apply general programming structure of C# in developing software solutions.

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2CS ELCS2:A	Grid Computing	Students understand the standards and protocols in Grid Computing
			Students learn to open Grid Services Architecture
			Students learn to explore the concept of resource discovery, application Plug-ins, workflow composition
			Students learn the Grid Middleware System Unicore
III	18KP3CS 09	Cloud Computing	Students learn cloud service and deployment models.
			Students learn importance of virtualization models.
			Students learn to operate different cloud computing service.
			Students learn about the key component of Amazon web services.
III	18KP3CS 10	Soft Computing	Students learn to outline the different process carried out in fuzzy logic, ANN and Genetic Algorithms.
			Students learn the techniques to solve character recognition and pattern classification problem.
			Students learn the concept of meta-cognitive of Soft Computing.
			Students learn to understand Hybrid system for principles of Soft Computing applications
III	18KP3SS CS2	Core Competence	Students learn to improve skills in UGC/CBSE/NTA NET/SET Examinations.
			Students acquire collective knowledge about all computer subjects.
			Students learn to improve knowledge for research work.
III	18KP3CS 11P	RDBMS and PL/SQL Lab	Students learn to create and populate a RDBMS, using SQL.
			Students learn to write queries in SQL to retrieve any type of information from a database.
			Students learn to perform fundamental operations and set operations in SQL.
			Students learn to work effectively on PL/SQL operations.

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3CS ELCS3:A	Image Processing	Students learn to synthesize color IP processing and real world applications.
			Students learn about different Image Enhancement techniques.
			Students learn to understand and review Image Transformations
			Students learn to analyze the algorithm for morphological IP
III	18KP3CS ELCS4:A	Mobile Communications	Students learn to understand digital Cellular Systems such as GSM, GPRS, CDMA 2000, and WAP.
			Students learn to know the various Handoff Strategies.
			Students learn to outline the various Routing Algorithms for Mobile Hosts.
			Students learn to design and develop activity for Android.
III	18KP4CS 12	Embedded System Design	Students learn about the embedded Hardware and Interfacing.
			Students learn about the software development and tools for embedded system.
			Students learn to know the Hardware Design and RTOS for embedded system.
			Students learn to understand the various Registers and Flip-Flops.
IV	18KP4CS 13	Big Data	Students learn to identify main sources of Big Data.
			Students learn to use Hadoop, NoSQL.
			Students learn to apply new algorithm for Clustering and Classification.
			Students learn to implement tasks using reduced paradigm.
IV	18KP4CS 14P	Data Mining Lab	Students learn to implement K-Means clustering.
			Students learn to evaluate apriori algorithm for association rule.
			Students learn to construct decision tree classifier in WEKA.
			Students learn to apply outlier deduction algorithm.

Semester	Subject Code	Title of the Paper	Course Outcome
IV	18KP4CS ELCS5:A	Human-Computer Interaction	Students learn to understand knowledge and linguistics background.
			Students learn about linguistics essentials and grammar as a part of speech parsing.
			Students learn about word Morphology
			Students learn NLP like probability, Bays Theorem.
	18KP4CS 15PW	Project	Students learn about different software development process.
			Students learn to plan, Analysis, Design and implement software project using Programming like JAVA, ASP, PHP, .Net.
			Students learn to design and implement major working projects.
			Students learn to apply real life problems in software development projects.

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF MATHEMATICS-B.SC MATHEMATICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1M01	Basics, Differential Calculus and Trigonometry	Learn to compare and contrast the ideas of continuity and differentiability
			Learn to identify maxima and minima and radius of curvature
			Conceptual understanding of trigonometric functions, techniques,
			Introduction to the basics in trigonometry and calculus
I	18K1M02	Analytical Geometry of 3D and Integral Calculus	Ability to measure the distances between lines, and planes
			Ability to write equations of planes and great circle in the 3-space and to identify lines and planes from their equation
II	18K2M03	Theory of Equations and Linear Algebra	Introduction to Theory of Equations
			Facilitate a better understanding of vector space
II	18K2M04	Vector Analysis and Fourier Series	Introduction to vector differentiation & vector integration
			Learn to solve vector differentiation & integration problems
III	18K3M05	Operations Research	Learn the various techniques of Operations Research
			Learn to solve real life problems in Business and Management
IV	18K4M06	Differential Equations and Transforms	Learn to solve basic application problems described by second order linear differential equations with constant coefficients
			Learn to identify the transforms of derivatives and integrals and a periodic function
IV	18K4M07	Sequence and Series	Learn to identify limit of a wide class of Sequences of real numbers
			Ability to decide the convergence and divergence of series of real numbers
V	18K5M08	Abstract Algebra	Understand the concept of Algebra from the basic set theory and Functions, etc
			Understand the concept of Group theory and Rings
			Gain experience and confidence in proving theorems

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5M09	Real Analysis	Understand the real number system and countable concepts in real number system
			Comprehensive idea about the real number system
			Understand the concepts of Continuity, Differentiation and Riemann Integrals
			To apply the Rolle's theorem concepts
V	18K5M10	Statics	Obtain basic knowledge of equilibrium of a particle
			Develop a working knowledge to handle practical problems
V	18K5MEL M1	Programming in C	Define and manage data structures based on problem subject domain
			Learn to work with textual information, characters and strings
			Learn to work with arrays of complex objects
V	18K5MEL M1S	Probability and Statistics	Learn the importance of probability and statistics in computing and research
			Develop skills in presenting quantitative data using appropriate diagrams, tabulations and summaries
			Use appropriate statistical methods in the analysis of simple datasets
VI	18K6M11	Graph Theory	Identify subgraphs, Hamiltonian and Eulerian graphs
			Solve problems involving vertex and edge connectivity, planarity
			Solve problems involving vertex coloring
			Learn about Model real world problems using graph theory
VI	18K6M12	Complex Analysis	Understand the functions of complex variables, continuity and differentiation of complex variable functions, $C - R$ equations of analytic functions
			Know the elementary transformation concepts in complex variable
			Know about complex Integral functions with Cauchy's Theorem, power series expansions of Taylor's and Laurant's series
			Understand the singularity concepts and residues, solving definite integrals using the residue concepts

Semester	Subject Code	Title of the Paper	Course Outcome
VI	18K6M13	Dynamics	Obtain basic knowledge of the behaviour of objects in motion
			Develop a working knowledge to handle practical problems
VI	18K6MEL M3	Methods in Numerical Analysis	Apply the numerical methods (such as Bisection, False position, Newton-Raphson)) to solve nonlinear equations
			Recognize Iterative methods (Jacobi –Gauss Seidel)
			Apply the Interpolation methods (Newton forward and backward difference interpolation formula- Lagrange interpolation formula) for solving the problems numerically
			Construct numerical methods to solve ordinary differential equations
VI	18K6MEL M3S	Mathematical Logic and Boolean Algebra	To appreciate the basic principles of Boolean algebra, Logic, Set theory
			Learn to construct simple mathematical proofs

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF MATHEMATICS-M.SC MATHEMATICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1M01	Algebra	To combine polynomial by addition or subtraction.
			To solve problems of simple Inequalities
			Interpret basic absolute value expression
			To simplify algebraic expressions, using the commutative, associative and Distributive properties
I	18KP1M02	Real Analysis	Describe fundamental properties of the real numbers that lead to the formal development of real analysis
			Appreciate how abstract ideas and regions methods in mathematical analysis can be applied to important practical problems
			Comprehend regions arguments developing the theory underpinning real analysis
			Demonstrate an understanding of limits and how that are used in sequences, series and differentiation
I	18KP1M03	Ordinary Differential Equations	Ability to predicts the world around us, can describe exponential growth and decay population growth of species or change in investment return over time
			Learn to model the behaviour of complex systems
I	18KP1M04	Graph theory	Identify induced subgraphs, cliques, matchings, covers in graphs
			Solve problems involving vertex and edge connectivity, planarity and crossing numbers
			Solve problems involving vertex and edge coloring
			Model real world problems using graph theory
I	18KP1ME LM1	Differential Geometry	Able to compute quantities of Geometric interest
II	18KP2M05	Complex Analysis	Perform basic algebraic manipulation with complex numbers
			Appreciate the existence of special functions and their use in a range of contexts
			Understand the geometric interpretation of complex numbers
			Compute definite integrals using residue

Semester	Subject Code	Title of the Paper	Course Outcome
II	18KP2M06	Linear Algebra	Use computational techniques and algebraic skills essential for the study of systems of linear equations, matrix algebra, vector spaces, eigenvalues and eigenvectors, orthogonality and diagonalization
			Use visualization, spatial reasoning, as well as geometric properties and strategies to model, solve problems, and view solutions, especially in R2 and R3, as well as conceptually extend these results to higher dimensions
			Work collaboratively with peers and instructors to acquire mathematical understanding and to formulate and solve problems and present solutions
II	18KP2M07	Topology	Analyze complex networks
			To apply Differential Topology to probability to identity multivariate interactions
II	18KP2M08	Probability Theory	Understand the principles of probability Theory
			Derive Probability distributions relevant to function of random variables
III	18KP3M09	Classical Dynamics	Ability to solve the Newton Equations for simple configurations using various methods
III	18KP3M10	Measure and Integration	Understand the fundamentals of measure theory and be acquainted with the proofs of the fundamental theorems underlying the theory of integration
			Develop a perspective on the broader impact of measure theory in ergodic theory and have the ability to pursue further studies in this and related area
			Measure theory random variables, independence, expectations and conditional expectations, product measures
III	18KP3M11	Partial Differential Equations	Understand the difficulty of solving problems
			Solve problems using Partial differential Equations
III	18KP3ME LM3	Stochastic Processes	Analyze continuous and discrete-time random processes
			Apply the theory of stochastic processes to analyze linear systems

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3ME LM4	Operations Research	Learn the strategic importance of operations and supply chain management in a global business environment
			Understand how an operation relates to other business function.
			Develop a skill set for quality and process improvement
			Learn how to manage and control the resource allocation
IV	18KP3M12	Functional Analysis	Understand the fundamental concepts of functional analysis and their role in modern mathematics and applied contexts
			Demonstrate capacity for mathematical reasoning through analysing proving and explaining concepts from functional analysis
			Apply problem-solving using functional analysis technique applied to diverse situations in physics, engineering and other mathematical context
IV	18KP3M13	Integral Equations, Calculus of Variations and Transforms	Understand variation principles
			Develop the skills while doing/solving the various problems by using integral equations in all engineering sciences
IV	18KP3M14	Fuzzy Analysis	Obtain the basic knowledge in Fuzzy Sets and Fuzzy Logic and its Applications
IV	18KP3ME LM5	Discrete Mathematics	Understand the basic principles of sets and operations in sets
			Write an argument using logical notation and determine if the argument is or is not valid
			Know about basic set equalities

KUNTHAVAI NAACCHIYAAR GOVERNMENT ARTS COLLEGE FOR WOMEN(A) THANJAVUR- 7
COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF STATISTICS-B.SC STATISTICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18K1S01	Descriptive Statistics	Learn to identify sample results
			Learn about Inductive approach
			Learn how to represent in graphs and charts without the loss of information
	18K1SAS1	Statistics and Mathematics –I	Learn the importance and value of mathematical and statistical thinking
			Learn about problem solving in a wide range of disciplines
			Recognise the connection between theory and application
II	18K2S03	Probability Theory and Random Variables.	Learn about the mathematical theory and random processes
			Learn the concept of stochastic processes
			Learn about the linear filtering of random processes
		Statistics and Mathematics- II	Ability to independently read mathematical and statistical literature like survey books
			Provide a concise and clear definition of statistical problem
		Statistics and Mathematics III	Ability to independently read mathematical and statistical literature like survey books
			Provide a concise and clear definition of statistical problem
III	18K3S04	Discrete Distributions	Master techniques for descriptive statistical calculation
			Determine the appropriateness of applying probability distribution
III	18K3SAS4	Operation Research – I	Develop linear programming models
			Analyse general nonlinear programming problems
IV	18K4S06	Continuous Distribution	Explores the concepts of Modern probability theory
			Foster understanding through real world statistical application
IV	18K4SAS6	Operation Research –III	Develop linear programming models
			Analyse general nonlinear programming problems
V	18K5S07	Statistical Inference –I	Explain the notion of parametric models and point estimation of the parameters
			Develop estimation and analysis techniques
V	18K5S08	Statistical Inference –II	Explain the use of non-parametric statistical methods
			Demonstrate computation skills to implement various statistical approaches
V	18K5S09	Sampling Techniques	Introduction to design and analysis of sample surveys
			Develop understanding of the principles and methods used to design survey sampling schemes
V	18K5S10	Statistical Quality Control.	Introduce students to Statistics Quality Control
			Understanding the link between SQC and business analysis

Semester	Subject Code	Title of the Paper	Course Outcome
V	18K5SELS1	Numerical Analysis	Demonstrate understanding of common numerical methods
			Analyse and evaluate the accuracy of common numerical methods
V	18K6S11	Design of Experiments.	Ability to contextualise outputs where data are drawn from diverse socio-political and cultural dimensions
			Understanding of applied mathematics and computational tools
VI	18K6S12	Simulation and Inventory Control.	Introduction to the theory of simulation and inventory control
			Learn Monte Carlo technique
VI	18K6SELS2	Vital Statistics.	Learn to make comparison of life expectancy
VI	18K6SELS3	Programming in 'C'	Develop conditional statements to write C programmes
			Inscribe C programmes that use pointers to assess arrays, strings and functions

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COURSE OUTCOME FOR THE SYLLABUS 2018 ONWARDS
DEPARTMENT OF STATISTICS- M.SC STATISTICS

Semester	Subject Code	Title of the Paper	Course Outcome
I	18KP1S01	Distribution Theory.	Develop problem-solving techniques needed to accurately calculate probabilities.
			Apply problem-solving techniques to solving real-world events
I	18KP1S02	Real Analysis & Matrix Theory.	Demonstrate understanding of the concepts of vector space and subspace
			Apply principles of matrix algebra to linear transformations
I	18KP1S03	Measure & Probability Theory.	Understand the axiomatic formulation of modern Probability Theory
			Understand the concept of random processes and determine covariance and spectral density of stationary random processes
I	18KP1SE LS1	Regression Analysis and Time series.	Learn and master the basic concepts and methods of time series analysis
			Understand the fundamental and crucial difference between time series data and traditional independent and identically distributed samples used in basic statistics
II	18KP2S05	Statistics Quality Control.	Demonstrate the ability to use the methods of statistical process control.
			Demonstrate the ability to design, use, and interpret control charts for variables
II	18KP2S06	Linear Model & Design of Experiments.	Understand the principles and theories of designing experiments
			Present and discuss the concept of experimental design
II	18KP2S07	Advanced Operation Research.	Identify and develop operational research models from the verbal description of the real system
			Understand the mathematical tools that are needed to solve optimisation problems
II	18KP2SELS 2	Multivariate Analysis.	Understanding of the link between multivariate techniques and corresponding univariate techniques
			Summarize and interpret multivariate data
III	18KP3S09	Estimation Theory.	Describe the difference between the classical and Bayesian approach to estimation;
			Formulate system models and parameter estimation problems and derive corresponding Cramer-Rao lower bounds and sufficient statistics
III	18KP3S10	Testing of Statistical Hypothesis.	Identify the four steps of hypothesis testing
			Define Type I error and Type II error, and identify the type of error that researchers control.
III	18KP3S11	Sampling Theory.	understand the principles underlying sampling as a means of making inferences about a population
			Understand the difference between randomization theory and model based analysis

Semester	Subject Code	Title of the Paper	Course Outcome
III	18KP3SELS3	Population Studies.	Explain demographic changes in the world and their major determinants
			Apply demographic concepts and population theories to explain past and present population characteristics.
III	18KP3SELS4	Actuarial Science.	Students will demonstrate a solid foundation in mathematics by their ability to solve a variety of basic and advanced mathematical problems.
			Students will learn to apply actuarial mathematics to problems in a variety of fields, including insurance, finance, investment, and other businesses
IV	18KP4S12	Computer Programming with C++	Ability to define and manage data structures based on problem subject domain.
			Ability to work with textual information, characters and strings
IV	18KP4SEL5	Research Methodology	Understand some basic concepts of research and its methodologies
			Write a research report and thesis