DEPARTMENT OF TAMIL

மதுரைக்கல்லூரி (தன்னாட்சி) மதுரை - 625011

(தேசிய தரநிர்ணய மறுமதிப்பீட்டில் 'A' (3வது சுற்று) தகுதிபெற்றது)

முதுகலை - பணிவாய்ப்புத் தமிழ் - பாடத்திட்டம் (2018 ON)

(CBSC Pattern)

2018 – 19 ஆம் கல்வியாண்டு முதல் சேருகின்ற மாணவர்களுக்கு

முதலாமாண்டு - முதற் பருவம்	-	குறியீடு	-	பாடமணி	-	credit
தாள் -1 இக்கால இலக்கியம்	-	18P1TMC1	-	6	-	4
தாள் -2 இலக்கணக் கோட்பாடுகள்(எழுத்து)	-	18P1TMC2	-	6	-	4
தாள் -3 திறனாய்வுக் கோட்பாடுகள்	-	18P1TMC3	-	6	-	4
தாள் -4 தமிழ் மொழி வரலாறு	-	18P1TMC4	-	6	-	4
தாள் -5 இலக்கண வரலாற்றியல்	-	18P1TMC5	-	6	-	4

முதலாமாண்டு - இரண்டாம் பருவம்	-	குறியீடு	-	பாடமணி	-	credit
தாள் -6 சமய இலக்கியம்	-	18P2TMC6	-	6	-	4
தாள் -7 இலக்கணக் கோட்பாடுகள்(சொல்)	-	18P2TMC7	-	6	-	4
தாள் -8 ஆட்சித்துறைத் தமிழும் பொதுநிர்வாகமும்	-	18P2TMC8	-	6	-	4
தாள் -9 அரங்கக்கலை	-	18P2TMC9	-	6	-	4
தாள் -10 படைப்பாக்கமும் ஆளுமைத்திறனும்	-	18P2TMC10	-	6	-	4

இரண்டாமாண்டு - மூன்றாம் பருவம்	-	குறியீடு	-	பாடமணி	-	credit
தாள் -11 காப்பிய இலக்கியம்	-	18P3TMC11	-	5	-	4
தாள் -12 இலக்கணக் கோட்பாடுகள்(பொருள் -I)	-	18P3TMC12	-	6	-	5
தாள் -13 சிற்றிலக்கியங்கள்	-	18P3TMC13	-	5	-	4
தாள் -14 மொழிபெயர்ப்பியல்	-	18P3TMC14	-	5	-	4
தாள் -15 நாட்டுப்புறவியல் (Elective)	-	18P3TMC15	-	5	-	4
தாள் -16 போட்டித்தேர்வு-தமிழ்(Optional - NME)	-	18P3TMNM1	-	4	-	4

இரண்டாமாண்டு - நான்காம் பருவம்	-	குறியீடு	-	பாடமணி	-	credit
தாள் -17 பண்டைய இலக்கியம்	-	18P4TMC16	-	6	-	5
தாள் -18 இலக்கணக் கோட்பாடுகள்(பொருள்-II)	-	18P4TMC17	-	6	-	5
தாள் -19 தொல்லியல்	-	18P4TMC18	-	6	-	5
தாள் -20 ஒப்பிலக்கியம் (Elective)	-	18P4TMC19	-	6	-	5
தாள் -21 விளம்பரக்கலை(Elective)	-	18P4TMC20	-	6	-	5

முதுகலை – பணிவாய்ப்புத்தமிழ் - முதலாமாண்டு - முதற்பருவம் பாடத்திட்டம்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)
Reaccredited (3rd Cycle) with "A" Grade by NAAC

CLASS : M.A., TAMIL **SUB. CODE : 18P1TMC1**

TITLE : இக்கால இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks : 75**

நோக்கம்:

இக்காலத் தமிழ் இலக்கிய வகைகளின் சிந்தனைப் போக்குகளையும் கருத்து மாற்றங்களையும் அறிந்திடச் செய்வது

கூறு:1 மரபுக்கவிதை

பாரதியார் - குயில் பாட்டு
பாரதிதாசன் -புரட்சிக்கவி
கவிமணி தேசிய விநாயகம் பிள்ளை – மருமக்கள் வழி மான்மியம்
மேத்தா - கண்ணீர்ப் பூக்கள்
சிற்பி - ஒரு கிராமத்து நதி

கூறு:2 சிறுகதை

1. கல்கி சிறுகதைகள்
2. யுகசக்தி – ஜெயகாந்தன்

கூறு:3 புதினம்

கரித்துண்டு – மு.வரதராசன்
வானம் வசப்படும் - பிரபஞ்சன்

கூறு:4 நாடகம்

நீதி தேவன் மயக்கம் - அண்ணா
இராமானுஜம் - இந்திரா பார்த்த சாரதி

கூறு:5 உரைநடை

தமிழின்பம் - இரா.பி.சேதுப்பிள்ளை
மின்னல் கீற்று – சிற்பி பாலசுப்ரமணியம்

பாடநூல்கள்:

1. பாரதியார் கவிதைகள்
2. பாரதிதாசன் கவிதைகள்
3. கவிதை நயம் - க.கைலாசபதி, ஜி.முருகையன்
4. புதுக்கவிதை ஒரு புதுப்பார்வை – பாலா
5. பாரதி – பாரதிதாசன் ஒப்பீடு – சி.கனகசபாபதி
6. புதிய உரைநடை – மா.இராமலிங்கம்

7. தமிழ் நாவல் நூற்றாண்டு வரலாறும் வளர்ச்சியும் - கோ.சுந்தரராஜன், பெ.கோ.சிவபாத சுந்தரம்
8. சிறுகதையின் தோற்றமும் வளர்ச்சியும் - கா.சிவத்தம்பி
9. தமிழ் நாடகம் - ஓர் ஆய்வு – ஏ.என்.பெருமாள்
10. நாடகக் கலையின் வரலாறு – எஸ்.வி.சகஸ்ரநாமம்

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Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P1TMC2**

TITLE : இலக்கணக் கோட்பாடுகள் (எழுத்து) **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பழந்தமிழ் இலக்கண நூலான தொல்காப்பியத்தின் வழி அறியலாகும் தமிழ் எழுத்துக்களின் வகைப்பாடு, அவற்றின் பிறப்பு, புணர்ச்சி, முதலான இலக்கண வரையறைகளை மாணவர்கள் அறியச் செய்வது.

கூறு:1

நூன் மரபு - எழுத்துக்களின் வகை - வடிவம் - மயக்கம் (மெய் மயங்குமாறு) மொழி மரபு - ஈரொற்றுடனிலை - போலி - மொழி முதல், இறுதி எழுத்துக்கள்.

கூறு:2

பிறப்பியல் - எழுத்துக்களின் பொதுவான பிறப்பு முறை - உயிரெழுத்துக்கள் மெய்யெழுத்துக்கள் பிறக்கும் முறை - புணரியல் - உருபு புணர்ச்சி, சாரியைப் புணர்ச்சி, எழுத்துச் சாரியை, உயிரெழுத்துக்களின் புணர்ச்சி இயல்புகள்

கூறு:3

தொகை மரபு - உயிரீரு, மெய்யீறுகளின் பொதுப்புணர்ச்சியும், சிறப்புப் புணர்ச்சியும், உருபியல் - உயிரீருகள் - மெய்யீறுகள் - முற்று கர, குற்றுகர ஈறுகள்.

கூறு:4

உயிர் மயங்கியல் - உயிரீறு வண்கணத்தோடும் பிற கணத்தோடும் மயங்கிப் புணருமாறு

கூறு:5

புள்ளி மயங்கியல் - மெய்யீறுகளின் புணர்ச்சி இலக்கணம் - மெல்லொற்றீறுகள், இடையொற்றீறுகள். குற்றியலுகரப் புணரியல் - குற்றியலுகரம், குற்றியலிகரம், பொதுப்புணர்ச்சியும் சிறப்புப் புணர்ச்சியும், குற்றியலுகர எண்ணுப் புணர்ச்சி

பாடநூல்:

தொல்காப்பியம் - எழுத்து - இளம்பூரணர்

பார்வை நூல்கள்:

1. தொல்காப்பியம் - எழுத்து - தமிழண்ணல்
2. தொல்காப்பியம் - ச.வே.சுப்ரமணியம்

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Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P1TMC3**

TITLE : jpwdha;Tக் கோட்பாடுகள் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

இலக்கியங்களை கோட்பாடுப் பின்புலத்தில் வாசிக்கும் முறைகளைக் கற்றுத்தருதல். மேற்கின் திறனாய்வுக் கோட்பாடுகளை தமிழ்த்திறனாய்வு மரபுகளுடன் இணைத்து அறிமுகம் செய்தல். தற்சார்பற்றும் உணர்ச்சிநிலையற்றும் அறிவுத்தளத்தில் இலக்கியத்தை வாசிக்கப் பயன்படும். மாணவர்கள் சமகால உலக இலக்கியப் போக்குகளை அறியச் செய்வது..

கூறு:1 திறனாய்வு அறிமுகம்

மரபுவழித் தமிழ்த்திறனாய்வு முறைகள் நூல் அரங்கேற்றம், புலவர் விவாத மரபு - பண்டை தமிழிலக்கியத்தில் திறனாய்வு வரலாறு - உரைமரபுத் திறனாய்வு - மதிப்புரை - திறனாய்வு - ஆராய்ச்சி

கூறு:2 திறனாய்வு வகைகள்

இலக்கியத் திறனாய்வின் தோற்றம்,வளர்ச்சி - திறனாய்வாளன் தகுதிகள் - மூலபாடத் திறனாய்வு - விளக்கமுறைத் திறனாய்வு - பகுப்புமுறைத் திறனாய்வு.

கூறு:3 திறனாய்வுப் பள்ளிகள்

மூன்று வகைத் திறனாய்வுப் புலங்கள், 1.கல்வியாளர் திறனாய்வுக் குழு - எஸ்.வையாபுரிப்பிள்ளை, தெ.பொ.மீ, மயிலை சீனிவேங்கடசாமி 2.இலக்கியவாதிகள் குழு - பாரதியார், க.நா.சு, வேங்கடசாமிநாதன், 3.மார்க்சியத் திறனாய்வுக் குழு - கைலாசபதி, கா.சிவத்தம்பி, கோ.கேசவன் ஆய்வுகள் அறிமுகம்.

கூறு:4 திறனாய்வு அணுகுமுறைகள்

உளவியல் திறனாய்வு, பெண்ணியத் திறனாய்வு, தலித்தியத் திறனாய்வு, சூழலியல் திறனாய்வு, புலம்பெயர்த் திறனாய்வு ஆகியவற்றின் அடிப்படைகளும் பயன்பாடும்

கூறு:5 புதிய திறனாய்வு அணுகுமுறைகள்

நவீனத்துவம், பின்நவீனத்துவம், இனவரைவியல், பின் காலனியம் - அறிமுகநிலை

பாட நூல்கள்:

1. க.பஞ்சாங்கம், தமிழ்த்திறனாய்வு வரலாறு, அகரம் பதிப்பகம், தஞ்சாவூர்
2. தி.சு.நடராசன், திறனாய்வுக்கலை, என்.சி.பி.ஹெச், சென்னை.
3. க.பஞ்சாங்கம், இலக்கியமும் திறனாய்வுக் கோட்பாடுகளும், அகரம் தஞ்சாவூர்
4. க.பூரணச்சந்திரன் தமிழ் இலக்கியத்தில் மேற்கத்தியக் கொள்கைகளின் தாக்கம், காவ்யா,சென்னை

பார்வை நூல்கள்:

1. க.பூரணச்சந்திரன், தமிழ் இலக்கியத் திறனாய்வு வரலாறு பதிப்புத்துறை, தமிழ்ப்பல்கலைக்கழகம், தஞ்சாவூர்
2. அரங்க சுப்பையா இலக்கியத் திறனாய்வு இசங்கள், கொள்கைகள் பாவை பதிப்பகம், சென்னை
3. ந.பிச்சமுத்து, திறனாய்வும் தமிழ் இலக்கியக் கொள்கைகளும் சக்திவெளியீடு, சென்னை
4. வை.சச்சிதானந்தன், மேலை இலக்கியத் திறனாய்வு வரலாறு, பதிப்புத்துறை, மதுரை காமராசர் பல்கலைக்கழகம், மதுரை
5. ஆ.சிவசுப்பிரமணியன் இனவரைவியலும் நாவலும் என்.சி.பி.ஹெச் சென்னை
6. இ.எஸ்.டி.இலக்கிய இசங்கள், அகரம், தஞ்சாவூர்
7. எம்.ஜி.சுரேஸ் இசங்கள் ஆயிரம் மருதா பதிப்பகம், சென்னை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : M.A. TAMIL **SUB. CODE: 18P1TMC4**

TITLE : தமிழ்மொழி வரலாறு **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தொன்மைச் சிறப்பு மிக்க தமிழ்மொழியின் பன்னெடுங்கால வரலாற்றினையும் காலம்தோறும் ஏற்படுகின்ற மொழிநடை மாற்றங்களையும் மாணவர்கள் அறிந்துகொள்ளச் செய்வது

கூறு:1 **மொழி வரலாற்றுச் சான்றுகள்**

இலக்கியங்கள் - இலக்கணங்கள் - உரையாசிரியர்கள் - வெளிநாட்டார் எழுதிய இலக்கணங்கள் - அகராதிகள் - கல்வெட்டுகள் - பிறமொழி கல்வெட்டுகள் - அயல் நாட்டார் குறிப்புகள் - கிளைமொழிகள் - தமிழ்ப் பிராமிக் கல்வெட்டுகளின் மொழியமைப்பு - அரிட்டாப்பட்டி - மருகாந்தமலை - அரிக்கமேடு - திருப்பரங்குன்றம், கழுகுமலை - சித்தன்னவாசல் - ஆண்டிபட்டி முதலிய கல்வெட்டுகளின் மொழியமைப்பு

கூறு:2 **சங்ககாலத் தமிழ்**

தொல்காப்பிய அமைப்பிலிருந்து மாறுபடுதல் - எகரம் அகரமாதல், தன்மைப் பன்மை, ஊகாரம் ஆகாரமாதல், மூக்கொலி மறைவு, இறந்தகாலம் காட்டும் இடைநிலைகள், இறப்பல்லா காலம் காட்டும் இடைநிலைகள் - தன்மை ஒருமை தன்மைப் பன்மை , முன்னிலைப் பன்மை, படர்க்கை, பால் காட்டும் விகுதிகள்

கூறு:3 **சங்க மருவிய காலத் தமிழ்**

இலக்கியங்களில் யகர மெய் கெடல், நகரமெய் கெடல், குறில் நெடில் மாறுதல்கள் - தனிக்குறில் ரகர, ழகரம், சகரம் மொழி முதல், ரகரத்தின் முன் இகரம் வரல், யகரவொற்று, லகரம் மொழி முதல் ழகர நகர புணர்ச்சி, பால் காட்டும் விகுதி, கள் விகுதி, இரட்டைப் பன்மை, உயர்வு ஒருமைப் பெயர்கள், பெயர்ப்பதிலி, சுட்டுப் பெயரடைகள், வேற்றுமை உருபுகள், எண்ணுப்பெயர்கள், காலம் காட்டும் கிழவிகள், உண்டு என்ற குறிப்பு வினை, வினையாலணையும் பெயர் விகுதிகள்.

கூறு:4 **பல்லவர், சோழர், நாயக்கர் காலத் தமிழ்**

ஒலியன்கள், ஒலி மாற்றங்கள், கள் விகுதிகள், வடமொழிச் செல்வாக்கு, வடசொற்கள் தமிழாதல், ஒலி மாற்றங்கள், பெயர்ப்பதிலிகள், திசை காட்டும் சொற்கள், கள் விகுதிகள், வேற்றுமை, ஏவல் வினைகள், எச்சங்கள், நிபந்தனை எச்சம்.

கூறு:**5 தற்காலத் தமிழ்**

பேச்சுத்தமிழ் ஒலியன்களும், ஒலி மாற்றங்களும், உயர்வு ஒருமைப் பெயர்கள், முன்னிலைப் பன்மை வடிவங்கள், பெயர்ப் பாகுபாடுகள், வினை வடிவங்கள், அறிவியல், வானொலி, பத்திரிக்கை தொலைக்காட்சி, மேடை, பண்பலை ஆகியவற்றில் தமிழ், தமிழில் பிறமொழி கலப்பு, தமிழ்ச் சொற்களில் ஏற்பட்டுள்ள மாற்றங்கள்

பாடநூல்

தமிழ்மொழி வரலாறு - சு.சக்திவேல், மணிவாசகர்பதிப்பகம்,31,சிங்கர்தெரு,பாரிமுனை, சென்னை.

பார்வைநூல்கள்:

1. மொழி வரலாறு - டாக்டர் மு.வரதராசனார்
2. மொழிநூல் - டாக்டர் மு.வரதராசனார்
3. தமிழ் மொழி வரலாறு - தெ.பொ.மீனாட்சி சுந்தரம்
4. மொழியியல் - ரா.சீனிவாசன்
5. இக்காலத் தமிழ் - சண்முகம் பிள்ளை
6. சங்ககாலப் பிராமிக் கல்வெட்டுகள் - மயிலை சீனி வேங்கடசாமி
7. தமிழ்மொழி வரலாறும் ஒப்பிலக்கணமும் - இரா.அரங்கசாமி
8. கல்வெட்டுக்கலை - முனைவர் சொ.சாந்தலிங்கம், பாண்டியநாட்டு வரலாற்றுப் பேரவை, மதுரை

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : M.A. TAMIL **SUB. CODE: 18P1TMC5**

TITLE : இலக்கண வரலாற்றியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

இலக்கண நூல்களை அறிமுகப்படுத்தி அந்நூல்களின் வரலாற்றினையும் தமிழ் இலக்கணத்தின் பரப்பினையும் தெரிந்து கொள்ளச் செய்வது

கூறு:1

இலக்கண வரலாற்றின் தேவை - எழுத்து, சொல், இலக்கண நூல்களின் வரலாறு - நன்னூல், நேமிநாதம் - சொல் இலக்கண நூல்களின் வரலாறு - பிரயோக விவேகம் - இலக்கணக் கொத்து

கூறு:2

பொருள் இலக்கண நூல்களின் வரலாறு

அ. அகப்பொருள் இலக்கண நூல்கள்

இறையனார் அகப்பொருள் - தமிழ்நெறி விளக்கம் - நம்பியகப்பொருள் - களவியல் காரிகை - மாறன் அகப்பொருள்

ஆ. புறப்பொருள் இலக்கண நூல்கள்

பன்னிருபடலம் - புறப்பொருள் வெண்பாமாலை

கூறு:3

யாப்பு, அணி இலக்கண நூல்களின் வரலாறு

அ. யாப்பிலக்கண நூல்கள்

அவிநயம், காக்கைப்பாடினியம், சிறுகாக்கைப்பாடினியம், பல்காயம்

ஆ. அணியிலக்கண நூல்கள்

தண்டியலங்காரம், மாறனலங்காரம், குவலயானந்தம், சந்திரலோகம்

கூறு:4

ஐந்திலக்கண நூல்களின் வரலாறு

வீரசோழியம் - இலக்கண விளக்கம் - தொன்னூல் விளக்கம் - சுவாமிநாதம் - முத்துவீரியம்

கூறு:5

பாட்டியல் இலக்கண நூல்களின் வரலாறு

பன்னிரு பாட்டியல் - நவநீதப்பாட்டியல் - சிதம்பரப் பாட்டியல் - வெண்பாப் பாட்டியல் - பிரபந்த தீபம் - பிரபந்தத் திரட்டு

பாடநூல்:

இரா.இளங்குமரன் - இலக்கண வரலாறு

பார்வை நூல்கள்:

1. ச.வே.சுப்பிரமணியன் - தமிழ் இலக்கண நூல்கள்
2. பொற்கோ - இலக்கண உலகில் புதிய பார்வை
3. பொற்கோ - தமிழ் இலக்கணக் கோட்பாடுகள்
4. மு.வை.அரவிந்தன் - உரையாசிரியர்கள்
5. க.ப.அறவாணன் - தமிழ் இலக்கண நன்கொடை

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : M.A. TAMIL **SUB. CODE: 18P2TMC6**

TITLE : சமய இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சமயங்களின் தத்துவக் கருத்துக்களையும் அருளாளர்களின் அருளியல் அனுபவங்களையும் எடுத்துக்கூறி இவ்விலக்கியத் திறன்களை எடுத்துரைப்பது

கூறு:1 சைவ இலக்கியம்

அ. திருஞான சம்பந்தர் - திருமறைக்காடு பதிகம் - (வேயுறுதோளிபங்கன்...) 11பாடல்கள்
ஆ. மாணிக்கவாசகர் - திருவாசகம் - திருப்பூவல்லி (இணைஆர் திருவடி....) 20பாடல்கள்
இ. வேணாட்டடிகள் - திருவிசைப்பா - துச்சான.... 10பாடல்கள்

கூறு:2 வைணவ இலக்கியம்

அ. குலசேகர ஆழ்வார் - நான்காம் திருமொழி - (ஊனேறு செல்வத்து...) 10பாடல்கள்

ஆ. திருமங்கையாழ்வார் - பெரிய திருமொழி - மூன்றாம்பத்து (இருந்தண் மாநிலம்..)10பாடல்கள்
இ.தொண்டரடிப் பொடியாழ்வார் - திருமாலை - (காவலில் புலனை வைத்து...) 10பாடல்கள்

கூறு:3 பிற்காலச் சமய இலக்கியம்

அ. தாயுமானவர் - (ஆகார புவனம்...) முதல் 10 பாடல்கள்

ஆ. இராமலிங்க வள்ளலார் - மரணமிலாப் பெருவாழ்வு... (நினைத்து நினைத்து...)முதல் 10

பாடல்கள்

இ. அருணகிரிநாதர் - (கந்தர் அநுபூதி....) முதல் 10பாடல்கள்

கூறு: கிறித்தவ இலக்கியம்

அ. வேதநாயக சாஸ்திரியார் - பெத்லகேம் குறவஞ்சி - தோத்திரத்தரு, பிரசங்கத்தரு,

கிறிஸ்தவரின் மகிமை

ஆ. எச்.ஏ.கிருட்டிணப்பிள்ளை - இரட்சணிய மனோகரம்..., சுவிசேடமாட்சி, வேதியர் ஒழுக்கம்

இ. திரு.வி.க - கிறிஸ்துவின் அருள் வேட்டல்..,அறத்தின் இயல்

கூறு:5 இஸ்லாமிய இலக்கியம்

குணங்குடி மஸ்தான் சாகிபு - பராபரக்கண்ணி முழுவதும்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : M.A. TAMIL **SUB. CODE: 18P2TMC7**

TITLE : இலக்கணக் கோட்பாடுகள் (சொல்) **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தொல்காப்பிய சொல் இலக்கணத்தின் வழி தமிழ்ச் சொற்களின் வகை, சொல்லாக்கம், மொழிக்கட்டமைப்பு, கருத்துப் பரிமாற்றம் ஆகியவற்றை மாணவர்கள் அறியச் செய்வதுடன் மொழியைச் சிறப்பாகப் பயன்படுத்தச் செய்வதுமாகும்

கூறு:1

கிளவியாக்கம் - முழுவதும்

வேற்றுமையியல் - முழுவதும்

கூறு:2

வேற்றுமை மயங்கியல் - முழுவதும்

விளிமரபு - முழுவதும்

கூறு:3

பெயரியல் - முழுவதும்

வினையியல் - முழுவதும்

கூறு:4

இடையியல் - முழுவதும்

உயிரியல் - முழுவதும்

கூறு:5

எச்சவியல் - முழுவதும்

பாடநூல்:

1. தொல்காப்பியம் சொல்லதிகாரம் - சேனாவரையர்உரை

பார்வை நூல்கள்:

1. தொல்காப்பியம் சொல்லதிகாரம் - தெய்வச்சிலையார்
2. தொல்காப்பியம் சொல்லதிகாரம் - தமிழண்ணல்
3. தொல்காப்பியம் சொல்லதிகாரம் - செ.வை.சண்முகம்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P2TMC8**

TITLE : ஆட்சித்துறைத் தமிழும் பொதுநிர்வாகமும் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

அரசு நிறுவனங்களில் தமிழ் மொழிப் பயன்பாட்டினையும் அரசியல் அமைப்பினையும் அரசின் உறுப்புக்களையும் பொது நிர்வாகத்தின் செயற்பாடுகளையும் ஆட்சித்துறைத் தமிழ்வழி அறியச் செய்வது.

கூறு:1 **அரசியல் அமைப்பு:**

இந்திய அரசமைப்பு – அரசமைப்பு முகவுரை – ஒன்றியத்தின் மொழி, வட்டார மொழிகள், வட்டார மொழிகள், உயர்நீதி மன்ற மொழி, சிறப்பு நெறிமுறைகள், எட்டாவது பிரிவில் உட்பிரிவு 344 மற்றும் 351-ல் ஏற்கப்பட்ட இந்திய மொழிகள்

ஆட்சித்துறைத் தமிழின் வரலாற்று அடிப்படைப் பின்னணி:

தமிழ் ஆட்சிமொழி – வடமொழித் தொடர்பு மொழி – பார்சி, உருது, தெலுங்கு, மராட்டி மொழிகளின் ஆட்சி, ஆங்கிலம் ஆட்சி மொழி – விடுதலை இயக்கமும் மொழி உணர்வும் - விடுதலைக்குப் பின் மொழிவழி மாநிலங்கள் - தமிழ் ஆட்சி மொழி – தமிழ் ஆட்சி மொழி வளர்ச்சி ஆயத்தங்கள்

கூறு:2 **அரசமைப்பு:**

மைய அரசும் அதன் உறுப்புகளும்:

இந்திய அரசமைப்பு 251 –ம் பிரிவு – குடியரசுத் தலைவர் செயலகம் - அமைச்சரவைச் செயலகம் - பிரதமர் அலுவலகம் - அமைச்சகம் - அனைத்திந்தியப் பணித் தொகுதி.

ஒன்றிய நிர்வாகம் - குடியரசுத் தலைவர் – அமைச்சரவை - அமைச்சரவைக் குழு – அலுவலர் அரசுத் துறைகள்.

மாநில அரசாட்சி:

சட்டப் பேரவையும் மன்றமும் - ஆளுநர் (உரிமைகள், கடமைகள்) அமைச்சரவை – அலுவலர் மாவட்ட நிர்வாகம் - மாவட்ட நிர்வாகம் - மாவட்ட ஆட்சியர் கடமைகள்.

நிதி ஒதுக்கீடு:

தொகுதி – நிதி ஆணையம் - ஆண்டு நிதி நிலை அறிக்கை – நிதி ஒதுக்கீட்டுச் சட்ட வரைவு – துணை மானியம் - மைய அரசு கணக்குத் தணிக்கைத் தலைவர்.

சில தலையாய அனைத்திந்திய அமைப்புக்கள்:

1. திட்டக்குழு, 2. தேர்தல் ஆணையம் 3. தேசிய வளர்ச்சிக் குழு 4. தாழ்த்தப்பட்டோர் நல ஆணையம் 5. பொதுப் பணியாளர் தேர்வு ஆணையம் - தேர்வுகள் பயிற்சி முறை.

கூறு:3 **அலுவலக நடைமுறை:**

ஆட்சித்துறைக் கடிதப் போக்குவரத்து (கடிதத் தொடர்பு)

1. ஆட்சித்துறைக் கடிதங்கள் பற்றிய முன்னுரை விளக்கம்
2. ஆட்சிக் கடிதப் போக்குவரத்து நடைபெறும் முறை
3. அலுவலக நடவடிக்கை
4. ஆணை பிறப்பித்தல்
5. ஏற்பு மற்றும் பதிவேடு
6. ஏற்புப் பதிவேட்டிற்கான மாதிரி – அனுப்புகை ஏடு மாதிரி – விடுப்பு விண்ணப்பப் படிவ மாதிரி
7. விடுப்பு விண்ணப்பம் எழுதுதல் (தற்செயல்,ஈட்டிய, விடுப்பு)
8. கோப்பு – கோப்பு மாதிரி

கூறு:4குறிப்பு:

குறிப்பு எழுதும் முறை – குறிப்பு எழுதுதல் தொடர்பாகக் கருத்தில் கொள்ள வேண்டியவை – குறிப்பின் நோக்கமும் பயனும் - குறிப்பு பயன்படும் சில தொடர்களும் வாக்கியங்களும் - அஞ்சல் ஏற்பு, பதிவு, பிரித்தனுப்பல் - கடிதங்களின் பதிவு – கடிதங்களை வகை செய்தல்.

முன்னுரை – வரைவு என்பது யாது – வரைவின் சீர்மை (சீர்மை, கருத்து, மொழி, வடிவமைப்புப் பிழைகள் இன்மை), முழுமை, தெளிவு, எளிமை, சுருக்கம், பண்பு, அடக்கம், மிகுந்த வாக்கியங்கள் நல்ல நடை – வரைவின் வடிவங்கள்.

கூறு:5 **அ. பொது நிர்வாகம்:**

பொது நிர்வாகத்தின் தன்மை – பொது நிர்வாகத்தில் பணியாளர்கள் - பணியாளர்களுக்கான பயிற்சி – அரசுப் பணியின் முக்கியத்துவம் - ஒழுங்குமுறை, விதிகள் - பதவி வகைப்படுத்தல் - ஊதியத் திட்டம் - ஆட்சேர்ப்பு – பதவி உயர்வின் முக்கியத்துவம் - பதவி உயர்வு – தூண்டுதலின் நோக்கம்,தூண்டுதலின் வகைகள் - ஊக்குவித்தல்.

ஆ. உள்ளாட்சி அரசாங்கம்

உள்ளாட்சி அமைப்புகளின் வகைகள் - நகர்புறம் - கிராமப்புறம் - மாநகராட்சி – நகராட்சி நிர்வாகம் - பணி – ஊராட்சி அதிகாரம் - பணிகள் உள்ளாட்சியில் மாவட்ட ஆட்சித் தலைவரின் பங்கு.

பாட நூல்கள்:

1. ஆட்சிச் சொற்கள் - இராமலிங்கனார், மீனாட்சி புத்தக நிலையம், மதுரை.
2. ஆட்சித் துறைத் தமிழ் - இராமலிங்கனார், சைவ சித்தாந்த நூற்பதிப்புப் கழகம், சென்னை.

பார்வை நூல்கள்:

1. இந்திய அரசமைப்பு
2. ஆட்சிச் சொல்லகராதி – தமிழ் வளர்ச்சித் துறை, தமிழ்நாடு அரசு
3. அலுவலக முறைகள் - மதுரை காமராசர் பல்கலைக் கழகம், வெளியீடு
4. ஆட்சிச் சொற்கள் அகராதி – புலமை வெங்கடாசலம், தாமரை பப்ளிக்கேசன்ஸ், சென்னை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P2TMC9**

TITLE : அரங்கக்கலை **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பழந்தமிழ் நாடகங்களையும், நாடகக்கூறுகளையும், நாடகச்சிந்தனைகளையும் அறிவதுடன், இருபதாம் நூற்றாண்டு நாடகங்கள், சபாக்கள், கம்பெனிகள் மற்றும் நவீன நாடகங்களையும் மாணவர்களுக்கு அறிமுகம் செய்வது.

பயன்:

தொன்மையான நாடகங்களையும், தொடர்ச்சியான நாடகப் போக்குகளையும் அறிந்து கொள்ளச் செய்வதும் ஆகும்.

கூறு:1 **தமிழ்நாடகத் தோற்றுவாயும், வரலாறும்**

பழந்தமிழ் இலக்கண, இலக்கியங்களில் நாடகப்பதிவுகள் - தொல்காப்பியம், எட்டுத்தொகை, பத்துப்பாட்டில் நாடகக்கூறுகள் - பரதநாட்டியம், தோற்றம், இலக்கணம், உத்திகள், கைமுத்திரைகள், கால் அடவுகள், நகர்வுகள்

கூறு:2 **காப்பியங்களில் நாடகச் செய்திகள்**

சிலப்பதிகாரம், மணிமேகலை, சீவகசிந்தாமணி மூலங்களிலும் உரைகளிலும் காணலாகும் நாடகச் செய்திகள்

கூறு:3 **பத்தொன்பது, இருபதாம் நூற்றாண்டு மேடை நாடகங்களும் கம்பெனி நாடகங்களும்**

சங்கரதாஸ் சுவாமிகள், பம்மல் சம்பந்த முதலியார், தி.க.சண்முகம், நவாப் இராஜமாணிக்கம், கந்தசாமி, தெ.பொ.கிருஸ்ணசாமி பாவலர், நாடகங்களும், நாடகப்பணிகளும், கம்பெனிகளும்.

கூறு:4 **தமிழ் நாடக வகைகள்**

கவிதை நாடகம் - மனோன்மணீயம் - பேராசிரியர் சுந்தரம்பிள்ளை

சிறுவர் நாடகம் - உப்பில்லா பண்டம் - பூவண்ணன்

மொழிபெயர்ப்பு நாடகம் - ஹாம்லெட் - எஸ்.மகாராசன்

சமூக நாடகம் - மனம் ஒரு குரங்கு - சோ.ராமசாமி

மேற்கண்ட நாடகங்களின் அறிமுகம், கதைக்கரு, தொடக்கம், முடிவு, வளர்ச்சி, வேறுபாடுகளைக் காணுதல்.

கூறு:**5 நவீன நாடகம், தோற்றம், வரலாறு, அறிமுகம்**

நவீனநாடகம் - தோற்றம் - வரலாறு - நவீன நாடக முன்னோடிகள் - தமிழில் நவீன நாடகம் - நாடகக்கூறுகள் - ஸ்தானிஸ்லாவஸ்கியின் நடிப்புக் கோட்பாடுகள்

பார்வை நூல்கள்:

1. தமிழ் நாடக வரலாறு – சக்திப் பெருமாள், வஞ்சிக்கோ பதிப்பகம், மதுரை – 18
2. தமிழ் நாடகச் சரித்திரம் மரபிலிருந்து நவீனத்திற்கு – சு.சண்முகசுந்தரம், காவியா பதிப்பகம்.
3. சிலப்பதிகாரம் மூலமும் அரும்பதவுரையும் அடியார்க்கு நல்லாருரையும், கழக வெளியீடு
4. மணிமேகலை அரும்பதவுரை, கழக வெளியீடு
5. பரதநாட்டிய சாஸ்திரம் - எஸ்.என்.ஸ்ரீராமதேசிகன், உலகத்தமிழாராய்ச்சி நிறுவனம் சென்னை.
6. தமிழில் பாலர்சபை நாடகங்கள் - க.இரவீந்திரன், தமிழ்ப்பல்கலைக் கழகம்,, தஞ்சாவூர், இரண்டாம் பதிப்பு – 2002
7. சாபவிமோசனம், மு.இராமசுவாமி வெளியீடு
8. தமிழ் மேடை நாடக வரலாறு – கு.பகவதி(ப.ஆ) உலகத்தமிழாராய்ச்சி நிறுவனம் சென்னை.
9. ஒரு கதாபாத்திரத்தை உருவாக்குதல், கான்ஸ்தந்தீன் ஸ்தனிஸ்லாவஸ்கி, கண்ணதாசன் பதிப்பகம், சென்னை, 2012.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P2TMC10**

TITLE : படைப்பாக்கமும் ஆளுமைத்திறனும் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்: மாணவர்களின் படைப்பாற்றல் திறன்களையும் ஆளுமைப் பண்புகளையும் வளர்த்தல்

கூறு:1

படைப்பிலக்கிய விதிகள் - படைப்பாளியை உருவாக்கும் பின்புலங்கள் - படைப்பாளியின் உளவியல் - கோட்பாடுகளும் படைப்பாக்கமும்

கூறு:2

நாடகம் - புதுக்கவிதை - சிறுகதை - நாவல் - ஆய்வுக்கட்டுரை அடிப்படைகளும் விதிகளும்

கூறு:3

ஆளுமைப்பண்பு - ஆளுமைப்பண்பு பற்றிய கோட்பாடுகள் - வெவ்வேறு பருவங்களில் ஆளுமைப்பண்பின் வளர்ச்சி - ஆளுமைப்பண்பை நிர்ணயிக்கும் உடலியல் காரணிகள் - ஆளுமைப்பண்பின் கூறுகள்

கூறு:4

ஆளுமைப்பண்பை பாதிக்கும் காரணிகள் - ஆளுமைப்பண்பை மேம்படுத்தும் உளவியல் அறவழிகள்

கூறு:5

மகத்தான ஆளுமைகள் - மகாத்மா காந்தி, அம்பேத்கர், பாரதி - படைப்பாக்க பயிற்சிகள் புதுக்கவிதை - சிறுகதை - ஓரங்க நாடகம் - ஆய்வுக்கட்டுரை படைக்கப் பயிற்றுவித்தல்

பாடநூல்கள்:

1. படைப்புக்கலை, சுதந்திரமுத்து பாவைப் பதிப்பகம், சென்னை - 14
2. எழுதும் கலை, ஜெயமோகன் தமிழினி, சென்னை -14
3. ஆளுமை மேம்பாடு, எஸ்.சுந்தரசீனிவாசன், தாமரை பப்ளிகேசன்ஸ், சென்னை.

பார்வைநூல்கள்:

1. கதையியல் அடையாளம், க.பூரணச்சந்திரன், புத்தாநத்தம், திருச்சி
2. கவிதையெனும் மொழி, தி.சு.நடராசன், நியூசெஞ்சுரி புக் ஹவுஸ், சென்னை.
3. எழுதுவது எப்படி?, மகரந்தன் பழனியப்பா பிரதர்ஸ், சென்னை.
4. நவீனத் தமிழிலக்கிய அறிமுகம், ஜெயமோகன் தமிழினி, சென்னை.
5. இலக்கியமும் உளவியலும், டாக்டர் செ.சாரதாம்பாள்
6. உடல்மொழி, ஆலன்ரூ பார்பராபீஸ்
7. சுப்பிரமணிய பாரதி, வ.ரா.சுதர்சன் புக்ஸ், நாகர்கோயில்
8. நூறு பேர், மைக்கேல் ஹார்ட் (மொ.பெ.மணவை முஸ்தபா), மீரா பதிப்பகம், சென்னை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P3TMC11**

TITLE : காப்பிய இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பழந்தமிழ்க் காப்பியங்கள் வழி அறியலாகும் பாத்திரப்படைப்பு, கதை அமைப்பு, பா அமைப்புகளைக் காணுதல்.

பயன்:

காப்பியங்கள் வழி அக்கால மக்களின் வாழ்வியலைப் புரிதலுடன், மொழி அமைப்புகளையும், நல்லறங்களையும் பெறுதலே பயன்பாடாகும்.

கூறு:1 **சிலப்பதிகாரம்** - மதுரைக் காண்டம்

காடுகாண் காதை, வேட்டுவ வரி, புறஞ்சேரி இறுத்த காதை, ஊர்காண் காதை, அடைக்காலக் காதை (5காதை மட்டும்)

கூறு:2 **மணிமேகலை** - விழாவறை காதை, ஊரலர் உரைத்த காதை, மலர்

வனம்புக்க காதை, பளிக்கறை புக்க காதை, மணிமேகலா தெய்வம் வந்து தோன்றின காதை (முதற் 5 காதை மட்டும்)

கூறு:3 **சீவகசிந்தாமணி** - காந்தருவதத்தை யார் இலம்பகம், சுரமஞ்சரி இலம்பகம்

கூறு:4 **கம்பராமாயணம்** - அயோத்தியா காண்டம் - குகப்படலம்

கூறு:5 **பெரியபுராணம்** - இளையான்குடி மாற நாயனார், திருநாளைப் போவார் நாயனார், நின்றசீர் நெடுமாறர், பூசலார் நாயனார், மங்கையர்க்கரசியார் - புராணங்கள்

பாட நூல்:

1. சிலப்பதிகாரம் மூலமும் அரும்பதவுரையும் அடியார்க்கு நல்லாருரையும்
2. மணிமேகலை அரும்பதவுரை, கழக வெளியீடு
3. பெரியபுராணம் - அ.ச.ஞானசம்பந்தன் உரையும் குறிப்பும்
4. சீவகசிந்தாமணி மூலமும் நச்சினார்க்கினியருரையும், கழக வெளியீடு.

பார்வை நூல்கள்:

1. காவிய காலம் - ச.வையாபுரிப்பிள்ளை
2. இரட்டைக் காப்பியம் - வ.சு.ப.மாணிக்கம்
3. புதிய நோக்கில் கம்பராமாயணம் - அ.ச.ஞானசம்பந்தன்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P3TMC12**

TITLE : இலக்கணக் கோட்பாடுகள் (பொருள் - I) **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பண்டைத் தமிழ் இலக்கணமான தொல்காப்பியத்தில் கூறப்பட்டுள்ள தமிழர் தம் காதல், வீரம் மற்றும் வாழ்வியல் செய்திகளின் வழி பண்டைத் தமிழரின் நாகரிகம்,பண்பாட்டினையும் இலக்கியக் கோட்பாடுகளையும் மாணவர் அறியச் செய்வதாகும்.

கூறு:1 - தொல்காப்பியம் - அகத்திணையியல்

கூறு:2 - தொல்காப்பியம் - புறத்திணையியல்

கூறு:3- தொல்காப்பியம் - களவியல்

கூறு:4 - தொல்காப்பியம் - கற்பியல்

கூறு:5 - தொல்காப்பியம் - பொருளியல்

பாடநூல்:

தொல்காப்பியம் - பொருளதிகாரம் - இளம்பூரணர் உரை

பார்வை நூல்கள்:

1. பண்டைத்தமிழ் இலக்கியக் கொள்கைகள் - டாக்டர்.கு.சுந்தரமூர்த்தி
2. தமிழ்க் காதல் - டாக்டர்.வ.சு.ப.மாணிக்கம்
3. தொல்காப்பியப் பொருளதிகார ஆராய்ச்சி - மு.ராகவையங்கார்
4. அகத்திணைக் கொள்கை - ந.சுப்புரெட்டியார்
5. தொல்காப்பியர் காட்டும் வாழ்க்கை - ந.சுப்புரெட்டியார்
6. பண்டைத் தமிழர் வாழ்வும் வழிபாடும் - சாமி.சிதம்பரனார்
7. பொருள்கோள் - மருதூர் அரங்கராஜன்
8. தொல்காப்பியம் - பொருளதிகாரம் - தமிழண்ணல் உரை

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P3TMC13**

TITLE : சிற்றிலக்கியங்கள் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சிற்றிலக்கியங்களின் வகைகள், வடிவங்களை வகைப்படுத்தி, அவற்றின் இயல்புகளை விளக்கி அதன் மூலம் காணலாகும் அழகியல் கூறுகளை எடுத்துக் கூறுவதாகும்.

கூறு:1

குறவஞ்சி இலக்கியம் - மீனாட்சியம்மைக்குறம் - குமரகுருபரர்

கூறு:2

மதுரைக்கலம்பகம் - கலம்பக இலக்கியம் (முழுவதும்)

கூறு:3

பரணி இலக்கியம்

கலிங்கத்துப்பரணி - செயங்கொண்டார்

(12) போர் பாடியது - (14) கூழ்அடுதல்

கூறு:4

பிள்ளைத் தமிழ் - பள்ளு இலக்கியம்

1. முத்துக்குமார சுவாமி பிள்ளைத்தமிழ் - குமரகுருபரர் வருகைப்பருவம் முழுவதும் - (10பாடல்கள்)
2. முக்கூடற்பள்ளு - நாட்டு வளம் குறித்த பாடல்கள் 5(25 முதல் 30 பாடல்கள் வரை)
   மழைக்குறி பாடல்கள் 5 (34 முதல் 38 பாடல்கள் வரை)

கூறு:5

உலா - தூது இலக்கியம்

1. மூவர் உலா : சேரர் -2, சோழர் -2, பாண்டியர் -2 பாடல்கள் (6 பாடல்கள்)
2. அழகர் கிள்ளை விடு தூது - 67 முதல் 99 வரை 29 கண்ணிகள் (அரிவடிவுமாய்ப்....

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : M.A. TAMIL **SUB. CODE: 18P3TMC14**

TITLE : மொழிப்பெயர்ப்பியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

மொழிபெயர்ப்பின் நுட்பங்கள், அதன் வகைகள் போன்றவற்றை அறிமுகப்படுத்துவதோடு மொழி பெயர்க்கக் கற்றுத்தருதல், இலக்கியத் துறைக்கு மொழிபெயர்ப்புக் கலையின் பங்களிப்புக் குறித்துக் கற்பித்தல்

கூறு:1

மொழிபெயர்ப்பு - அறிஞர்களின் விளக்கங்கள் - மொழிப்பெயர்ப்பின் தோற்றமும் வளர்ச்சியும் - தமிழில் மொழிபெயர்ப்புகள் - நோக்கமும் பயனும் - மொழிபெயர்ப்பாளர் தகுதிகள்

கூறு:2

மொழிபெயர்ப்பு வகைகள்: இலக்கிய மொழிபெயர்ப்பு, கவிதை மொழிபெயர்ப்பு, அறிவியல், பத்திரிக்கை மற்றும் கணினி மொழிபெயர்ப்பு, இயந்திர மொழிபெயர்ப்பு

கூறு:3

கலைச்சொல்லாக்கம் - ஒலிபெயர்ப்பு - மொழிபெயர்ப்புச் சிக்கல்கள் - இலக்கணத்தைத் தகவுறஅமைத்தல் - பொருளைப் பொருந்த அமைத்தல்

கூறு:4

மொழிபெயர்ப்பின் நிகரன்கள் - மொழிபெயர்ப்பின் மூன்று படிநிலைகள் - மொழி வழக்குகளும் மொழி பெயர்ப்பும் - தமிழிலிருந்து ஆங்கிலத்தில் மொழிபெயர்த்தல் - ஆங்கிலத்தில் இருந்து தமிழில் மொழி பெயர்த்தல்

கூறு:5

மொழிபெயர்ப்பாளர்கள் அடையும் சிக்கல்கள் - தமிழில் விரிவான மொழிபெயர்ப்பு - மொழிபெயர்ப்புப் பயிற்சிகள் - ஆங்கிலப் பழமொழிகள் மற்றும் ஆங்கிலப் பத்திகளை மொழிபெயர்த்தல்

பாடநூல்கள்:

1. மொழிபெயர்ப்பியல் கோட்பாடுகளும் உத்திகளும் - சேதுமணிமணியன், செண்பகம் வெளியீடு,
2. மொழிபெயர்ப்பியல் - க.சண்முகவேலாயுதம், உலக தமிழாராய்ச்சி நிறுவனம், சென்னை - 13
3. மொழிபெயர்ப்புக்கலை - மு.வளர்மதி, திருமகள் நிலையம், சென்னை -17

பார்வை நூல்கள்:

1. மொழிபெயர்ப்புக்கலை - கா.பட்டாபிராமன், நியூசெஞ்சுரி புக்ஹவுஸ், சென்னை -28
2. மொழிபெயர்ப்புக்கலை - ந.முருகேசபாண்டியன், உயிர் எழுத்து, திருச்சி -01
3. மொழிபெயர்ப்புக்கலை - ச.ஈஸ்வரன், பாவை பதிப்பகம், சென்னை -14
4. நவீன மொழிபெயர்ப்புக் கொள்கைகள் - க.பூரணச்சந்திரன், அகரம், தஞ்சாவூர்-07

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : M.A. TAMIL **SUB. CODE: 18P3TMC15**

TITLE : நாட்டுப்புறவியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்

தமிழகத்திலுள்ள நாட்டுப்புற மக்கள் தலைமுறையாகப் பின்பற்றும் பண்பாட்டை விளக்குவதாகும். பிறப்பு முதல் இறப்பு வரையிலான பழக்கவழக்கங்களை, நாகரிகத்தை வரலாற்றை மாணவர்கள் அறிந்து கொள்ளச் செய்வதாகும்

கூறு:1 **நாட்டுப்புறவியல் விளக்கமும் வரலாறும்**

நாட்டுப்புறவியல் விளக்கம் - நாட்டுப்புற இயலின் வரலாறு - இந்திய நாட்டுப்புறவியலின் வரலாறு - தமிழக நாட்டுப்புறவியலின் வரலாறு- நாட்டுப்புற இலக்கியமும் எழுத்திலக்கியமும் - களஆய்வு முறைகள் - நாட்டுப்புறக் கதைகள் - நாட்டுப்புறக் கதைப்பாடல்கள் - பழமொழிகள், விடுகதைகள் - புராணக்கதைகள், மக்கள் பெயராய்வு - ஊர்ப் பெயராய்வு

கூறு:2 **நாட்டுப்புறவியல் - கோட்பாடுகள்**

வாய்மொழி வாய்ப்பாட்டு கோட்பாடு - வரலாற்று நிலவியல் கோட்பாடு - செயல்பாட்டியல் கோட்பாடு - சூழல் கோட்பாடு

கூறு:3 **நாட்டுப்புற பாடல்கள்**

நாட்டுப்புறப் பாடல் வகைகள் - நாட்டுப்புறப்பாடல்கள் அறிமுகம் - தாலாட்டுப் பாடல்கள் - குழந்தைப் பாடல்கள் - காதல் பாடல்கள் - தொழில் பாடல்கள் - கொண்டாட்டப் பாடல்கள் - பக்திப்பாடல்கள் - ஒப்பாரிப்பாடல்கள்

கூறு:4 **நாட்டுப்புறக் கலைகளும் கைவினைப் பொருட்களும்**

நாட்டுப்புறக் கலைகள் வகைப்பாடு - சிலம்பாட்டம் - காவடியாட்டம் - கரகாட்டம் - மயிலாட்டம் - ஒயிலாட்டம் - பொய்க்கால் குதிரையாட்டம் - புரவியாட்டம் - புலி வேடம் - கணியான் ஆட்டம் - கூத்து வகைகள் - நாட்டுப்புறக் கைவினைப் பொருட்கள் - நாட்டுப்புறக் கட்டடக் கலைகள்

கூறு:5 **நாட்டுப்புறவியல் வாழ்வியற் கூறுகள்**

நாட்டுப்புற நம்பிக்கைகள் - நாட்டுப்புறத் தெய்வங்கள் - நாட்டுப்புறத் திருவிழாக்கள் - நாட்டுப்புற மருத்துவம் - நாட்டுப்புறவியல் தொழில்நுட்பம் - நாட்டுப்புற விளையாட்டுகள்

பாடநூல்:

நாட்டுப்புற இயல் ஆய்வு - சு.சக்திவேல் மணிவாசகர் பதிப்பகம் பாரிமுனை, சென்னை

பார்வை நூல்கள்:

1. நாட்டுப்புறவியல் - சு.சண்முகசுந்தரம் மணிவாசகர் பதிப்பகம், சென்னை
2. நாட்டுப்புறவியல் ஆய்வுகள் - ஆறு.இராமநாதன்
3. நாட்டார் வழக்காற்றியல் சில அடிப்படைகள் - தே.லூர்
4. கோட்பாட்டுப் பார்வைகள், என்.பக்தவத்சல ரெட்டி, தென்னிந்திய மொழிகளின் நாட்டுப்புறவியல்
5. தமிழக நாட்டுப்புறவியல் - சரசுவதி வேணுகோபால், தாமரை வெளியீடு

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : M.A. TAMIL **SUB. CODE: 18P3TNM1**

TITLE : போட்டித் தேர்வு **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சங்க காலம் தொட்டு இக்காலம் வரையிலான இலக்கியக் கருத்துக்களை மாணவர்களுக்கு அறிமுகம் செய்து, அவர்களைப் போட்டித் தேர்விற்குத் தயார் செய்வது.

கூறு – 1 சங்கத்தமிழ்

அ.குறுந்தொகை– 2 பாடல்கள்

பா.எண் 23 –"அகவன் மகளே, அகவன் மகளே...."

பா.எண் 92 –"ஞாயிறுபட்ட அகவல் வாய் வானத்..."

ஆ. நற்றிணை– 1 பாடல்

பா.எண் 216 –"புணரின் புணராது பொருளே பொருள் வயிற்"

இ. கலித்தொகை – 1பாடல் (குறிஞ்சிக்கலி)

பா.எண் - 51 "சுடர்கொடி கேளாய்"

ஈ. புறநானூறு– 1 பாடல்

பா.எண் - 92 "யாழொடும் கொள்ளா பொழுதொடும் புணரா"

கூறு – 2 நீதித் தமிழ்

திருக்குறள் 3 அதிகாரங்கள்

அறம் - நடுவுநிலையாமை

பொருள் - சொல்வன்மை

இன்பம் - கனவுநிலை உரைத்தல்

கூறு – 3 காப்பியத் தமிழ்

சிலப்பதிகாரம்: இந்திரவிழவு ஊர் எடுத்த காதை

மணிமேகலை: உவவனம் புக்க காதை

கூறு – 4 பக்தித் தமிழ்

தேவாரம் - 3 பாடல்கள்

1. அப்பர் –"அப்பன் நீ அம்மை நீ ஐயனும் நீ"
2. சம்பந்தர் –"செய்யருகே புனல்பாய ஓங்கி"
3. சுந்தரர் –"கோத்திட்டையும் கோவலும்"

திருவாசகம் - 1 பாடல்

பிடித்தபத்து – முளைக்குடம் தூபம் நல் தீபம் வைம்மின்...."

ஆழ்வார் பாடல்கள் - 3பாடல்கள்

1. ஆண்டாள்: ‘‘கூடாரை வெல்லும் சீர் கோவிந்தா உன் தன்னைப்...’’ – பாடல்: 27
2. திருமங்கையாழ்வார் - ‘‘குலம் தரும் செல்வம் தந்திடும் அடியார் படுதுயர்..’’
3. நம்மாழ்வார் - திருவாய் மொழி 8ம் பத்து – 4ம் பதிகம் - ‘‘உயிர்கள் அனைத்தும் அவனே’’

கூறு – 5 புதுமைத் தமிழ்

1. பாரதியார் பாடல் - ‘‘போற்றி போற்றி ஓராயிரம் போற்றி’’
2. பாரதிதாசன் - ‘‘உறுதி உறுதி உறுதி ஒன்றே சமூகம் என்றெண்ணார்க்கு இறுதி’’
3. பட்டுக்கோட்டையார் - ‘‘செய்யும் தொழிலே தெய்வம் திறமை தான் நமது செல்வம்’’

பார்வை நூல்கள்

1. தமிழ் இலக்கிய வரலாறு – தமிழண்ணல்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : M.A. TAMIL **SUB. CODE: 18P4TMC16**

TITLE : பண்டைய இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பண்டைத் தமிழ் இலக்கியத்தின் வடிவ உள்ளடகத்தை அறியச் செய்வதோடு தமிழரின் தொன்மைக் கால உலக அறிவையும் பண்பாட்டு மரபினையும் தத்துவங்களையும் வாழ்க்கை நெறிமுறைகளையும் மாணவர் அறியச் செய்வது

கூறு:1

1. நற்றிணை - 5 பாடல்கள்
   - அ. குறிஞ்சித்திணை (158) - அம்மவாழி தோழி! நம்வயின் யானோ காணேன்…..
   - ஆ. முல்லைத்திணை (238) - வறங்கொல வீந்த கானத்தும்….
   - இ. மருதத்திணை (100) - 'உள்ளுதொறும் நகுவேன் தோழி….
   - ஈ. நெய்தற் திணை (172) - 'விளையாடு ஆயமொடு….
   - உ. பாலைத்திணை (48) - 'அன்றைய அனைய ஆகி இன்றும் எம்…

2. குறுந்தொகை

அ. தலைவன் கூற்றில் அமைந்த பாடல்கள் : (3)

பாடல் எண் : 71 - மருந்தெனின் மருந்தே….
95 - மால்வரை இழிதரும் தூவெள்ளருவி…..
120 - இல்லோன் இன்பங் காமுற்றாங்கு….

ஆ. தோழி கூற்றில் அமைந்த பாடல்கள் : (3)

பாடல் எண் : 9 - யாயாகியளே மாஅயோளே….
23 - அகவன் மகளே… அகவன் மகளே…
61 - தச்சன் செய்த சிறுமா வையம்….

இ. தலைவி கூற்றில் அமைந்த பாடல்கள் : (3)

பாடல் எண் : 31 - மள்ளர் குழீஇய விழவினானும்
126 - இளமை பாரார் வளநசைஇச் சென்றோர்
183 - சென்ற நாட்ட கொன்றையம் பசுவீ

ஈ. செவிலி கூற்றில் அமைந்த பாடல்கள் : (3)

பாடல் எண் : 44 - காலே பரிதப்பினவே கண்ணே….
144 - கழீய காவி குற்றும் கடல…
167 - முளிதயிர் பிசைந்த காந்தள் மெல்விரல்….

கூறு: 2

1. ஐங்குறுநூறு - இடைச்சுரப்பத்து - 10 பாடல்கள்
2. கலித்தொகை - 5 பாடல்கள்
   அ. குறிஞ்சிக்கலி (47) - 'ஒன்று இரப்பான் போல் எளி வந்தும்.....
   ஆ. முல்லைக்கலி (109) - 'காராப் பெய்த கடிகொள் வியன்புலத்து....
   இ. மருதக்கலி (78) - 'பன்மலர்ப் பழனத்த பாசடைத் தாமரை....
   ஈ. நெய்தற் கலி (139) - 'சான்றவிர் வாழியோ சான்றவிர் என்றும்....
   உ. பாலைக்கலி (15) - 'அரிமானிடத்தன்ன அஞ்சிலை வல்வில்...
3. அகநானூறு - 5 பாடல்கள்
   அ. குறிஞ்சித்திணை (12) - யாயே கண்ணினும் கடும் காதலனே.....
   ஆ. முல்லைத்திணை (164) - கதிர் கையாக வாங்கி ஞாயிறு....
   இ. மருதத்திணை (346) - நகைநன்று அம்மதானே....
   ஈ. நெய்தற் திணை (170) - கானலும் கழறாது கழியும் கூறாது....
   உ. பாலைத்திணை (61) - நோற்றோர் மன்றதானே கூற்றம்...

கூறு:3

1. புறநானூறு - 6 பாடல்கள்

   (அ) வெட்சித்திணை (256) - முட்கால் காரை முதுபழன் ஏய்ப்ப.....
   (ஆ) வஞ்சித் திணை (36) - ஆடுறையாயினும் விடுறையாயினும்....
   (இ) தும்பைத்திணை (301) - 'பல்சான்றீரே! பல்சான்றீரே குமரி மகளிர் கூந்தல் புரைய....
   (ஈ) வாகைத் திணை (20) - 'இருமுந்நீர்க் குட்டமும்....
   (உ) பொதுவியல் (120) - 'வெப்புள் விளைந்த வேங்கைச் செஞ்சுவல்...
2. பதிற்றுப்பத்து : நான்காம் பத்து - முதல் 5 பாடல்கள்

   (களங்காய்க்கண்ணி நார்முடிச் சோலைக் காப்பியாற்றுக் காப்பியனார் பாடியது)

3.பரிபாடல்

   (அ) திருமால் (3)
   (ஆ) வையை (7)
   (இ) செவ்வேள் (8)

கூறு:4

பொருநராற்றுப்படை முழுவதும்

கூறு:5

1. திருக்குறள் (அ) செய்நன்றி அறிதல் (அதி:11)
   (ஆ) கூடா ஒழுக்கம் (அதி:28)
   (இ) பொழுது கண்டு இரங்கல் (அதி:123)
2. நாலடியார் (அ) ஈகை - 10 பாடல்கள்
   (ஆ) பெரியாரைப் பிழையாமை : 10 பாடல்கள்

பாடநூல்:

சங்க இலக்கிய வரிசை, சைவ சித்தாந்த நூற் பதிப்புக்கழகம், திருநெல்வேலி, வெளியீடு

பார்வை நூல்கள்:

1. தமிழ் இலக்கிய வரலாறு - டாக்டர் மு.வரதராசனார்
2. புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு - டாக்டர் தமிழண்ணல்
3. தமிழ்க்காதல் - டாக்டர் வ.சு.ப.மாணிக்கம

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : M.A. TAMIL **SUB. CODE: 18P4TMC16**

TITLE : இலக்கணக் கோட்பாடுகள் (பொருள் - II) **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தொல்காப்பியர் கூறும் இலக்கிய இலக்கணக் கோட்பாடுகளையும் தமிழரின் சொல் வழக்காறுகளையும் பண்பாட்டு மரபினையும் மாணவர் அறியச் செய்வதாகும்.

கூறு:1 - தொல்காப்பியம் - மெய்ப்பாட்டியல் (36) - (நூற்பா)

உவமையியல் (27)

கூறு:2 - தொல்காப்பியம் - செய்யுளியல் - (310 - 386) - (நூற்பா)

கூறு:3- தொல்காப்பியம் - செய்யுளியல் - (387 - 463) - (நூற்பா)

கூறு:4 - தொல்காப்பியம் - செய்யுளியல் - (464 – 544) - (நூற்பா)

கூறு:5 - தொல்காப்பியம் - மரபியல் - 111 (நூற்பா)

பாடநூல்:

தொல்காப்பியம் - பொருளதிகாரம் - இளம்பூரணர் உரை

பார்வை நூல்கள்:

1. தொல்காப்பியர் காட்டும் வாழ்க்கை - ந.சுப்புரெட்டியார்
2. அகத்திணையியல் - ந.சுப்புரெட்டியார்
3. தொல்காப்பிய நெறி - மொ.அ.துரை அரங்கனார்
4. தொல்காப்பியம் - பொருளதிகாரம் - தமிழண்ணல் உரை
5. தொல்காப்பியம் இலக்கியமும் கருத்தியலும் - துரை.சீனிச்சாமி

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : M.A. TAMIL **SUB. CODE: 18P4TMC18**

TITLE : தொல்லியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தொல்லியல் கலையை அறிமுகம் செய்தல், இலக்கியத்தை தொல்லியல் பின்புலத்தில் படிக்கத் தூண்டல், தமிழக வரலாற்றை ஆதாரங்களுடன் வாசித்துப் புரிந்து கொள்தல். தொல்லியல் துறையில் பணிக்குச் செல்ல வாய்ப்பை உருவாக்குதல் தங்கள் பகுதிகளில் உள்ள தொல்லியல் எச்சங்களை ஆவணப்படுத்த விளைதல்

கூறு:1

தொல்லியலின் தோற்றம் வளர்ச்சி - ஆங்கிலேய அறிஞர்களின் பங்கு - தமிழ்த் தொல்லியல் அறிஞர்கள் - தொல்லியலின் பல்வேறு முறைகள் - தொல்லியலாளரின் தகுதிகள்

கூறு:2 கல்வெட்டுக்கள்

தமிழ் எழுத்துக்களின் வளர்ச்சி - கல்வெட்டுக்கள் அறிமுகம் - தமிழ்ப்பிராமியும் வடஇந்திய பிராமியும் - கிரந்த எழுத்து - வட்டெழுத்து - பிற்கால எழுத்துக்களின் மாற்றமும் வளர்ச்சியும்

கூறு:3

நதிக்கரை நாகரிகங்கள் (வைகைகரைப் பண்பாடு) - பண்டைய நகரங்களும் துறைமுகங்களும் (புகார், தொண்டி, முசிறி) - பண்டை வாணிக முறைகளும் கடற் பயணங்களும் - பண்டையப் பெருவழிப்பாதைகள் (கண்ணகி நடந்தபாதை) - எண்பெருங்குன்றங்கள்

கூறு:4

நடுகல் (புள்ளிமான் கோம்பை, தாதப்பட்டி) கோவில்கலை - குடைவரைக் கோயில் (தென்பரங்குன்றம்) பாண்டியர்காலக் கோயில்கள் - மீனாட்சியம்மன் கோவில் - நாணயவியல் (அயல் நாட்டு நாணயங்கள்) - செப்பேடுகள் (பாண்டியர் காலச்செப்பேடுகள்) - சுவடிகள் அறிமுகம் - ஓவியங்கள் (பாறை ஓவியங்கள், அரண்மனை ஓவியங்கள்)

கூறு:5

அகழ்வாய்வுகள் அறிமுகம் - சிந்து சமவெளி, பூம்புகார், ஆதிச்சநல்லூர், பொருந்தல், கீழடி ஆய்வு முறைகள், கிடைத்த பொருட்கள் - விளக்கங்கள்

பாடநூல்கள்:

1. தொல்லியல் ஓர் அறிமுகம் - சாந்தலிங்கம்
2. தொல்லியல் சிந்துவெளி முதல் கீழடிவரை - சேரலாதன்
3. சிறுபாணன் சென்ற பெருவழி - மயிலை சீனி வேங்கடசாமி
4. பண்டைய வணிகமுறை - மயிலை சீனி வேங்கடசாமி
5. எண்பெருங்குன்றம் - வேதாச்சலம்
6. கல்வெட்டுக்கலை - சாந்தலிங்கம், இராசேந்திரன்

பார்வை நூல்கள்:

1. தொல்லியல் - கே.வி.ராமன்
2. தொல்லியல் சுவடுகள் - இராசு
3. பாண்டியர்காலச் செப்பேடுகள் - இராசேந்திரன்
4. தொல்லியல் நோக்கில் சங்ககாலம் - க.ராஜன்
5. கண்ணகி சென்ற பெருவழிப்பாதை - மோகன் குமாரமங்கலம்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : M.A. TAMIL **SUB. CODE: 18P4TMC19**

TITLE : ஒப்பிலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்

ஒரு மொழியின் இலக்கியச் சிந்தனையைப் பிறமொழி இலக்கியச் சிந்தனையோடு ஒப்பிட்டு அறியும் போது தான் அதன் அகன்ற ஆழ்ந்த புலமையும் சிறப்பும் வெளிப்படும். பல்வேறு நாட்டு மனிதர்களின் அறிவும் எதிர்ப்பார்ப்பும் இலககிய நெறிகளும் இதனால் பெறப்படும். எனவே ஒப்பிலக்கியச் சிந்தனையைக் கற்பிப்பதன் வழி மாணவர் பிற நாட்டுப் படைப்புகளின் அறிவைப் பெறச் செய்வது நோக்கம்.

கூறு:1 **ஒப்பிலக்கிய அறிமுகம்**

ஒப்பிலக்கியம் என்பதன் வரைவிலக்கணம் - ஒப்பிலக்கியத்தின் பண்பும், பயனும் - தேசிய இலக்கியம் - உலக இலக்கியம், பொது இலக்கியம், ஒப்பிலக்கியம் என்னும் நான்கு வகைப் பார்வைகள் - ஒப்பிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் - தமிழில் ஒப்பிலக்கிய வளர்ச்சி நிலை - பண்டைத் தமிழ் புலவர் உரையாசிரியர்களின் ஒப்பியல் நோக்கு - இருபதாம் நூற்றாண்டுத் தமிழ் அறிஞர்களின் ஒப்பியல் சிந்தனைகள் - வ.வே.சு.ஐயர், வையாபுரிப்பிள்ளை, தனிநாயக அடிகள் முதலியோரின் ஒப்பியல் இலக்கியத் தொண்டு

கூறு:2 **ஒப்பிலக்கியக் கோட்பாடுகள்**

பிரெஞ்சுக் கோட்பாடு - அமெரிக்கக் கோட்பாடு - தாக்கக் கொள்கை - ஏற்றல் கொள்கை - ஒப்பீட்டுத்துறையும் மொழிபெயர்ப்புக் கலையும் - இலக்கியமும் உளவியலும் - இலக்கியமும் சமூகவியலும் - இலக்கியமும் நுண்கலைகளும்

கூறு:3 **தமிழ் - வடமொழி இலக்கிய ஒப்பீடு**

தொல்காப்பியரின் மெய்ப்பாட்டியலும், வடமொழி ரசக்கோட்பாடும் தொல்காப்பியரின் உள்ளுறை, இறைச்சிக் கோட்பாடும், தொனிக் கோட்பாடும் - கம்பராமாயணமும், வால்மீகி இராமாயணமும்.

கூறு:4 **தமிழ் -மேனாட்டு இலக்கிய ஒப்பீடு**

பாரதியும் ஷெல்லியும் - கம்பனும் மில்டனும் - தமிழ் வீரயுகப் பாடல்களும் - கிரேக்க வீரயுகப்பாடல்களும் - அரிஸ்டாட்டிலும் இளங்கோவும்

கூறு:5 **தமிழ்க் கவிஞர்களும் பிறஇந்திய மொழிக் கவிஞர்களும்**

பாரதியும், குரஜாட வேங்கட அப்பாராவும் - திருவள்ளுவரும் - கபீரும் பாரதிதாசனும் - குமாரன் ஆசானும் - பாரதிதாசனும் - கிருஷ்ண சாஸ்திரியும் பாரதியும் - வள்ளத்தோளும்.

பாடநூல்

1. ஒப்பிலக்கிய அறிமுகம், தமிழண்ணல்
2. சங்க இலக்கிய ஒப்பீடு (இலக்கியக் கொள்கை), தமிழண்ணல் மீனாட்சி புத்தக நிலையம்

பார்வை நூல்கள்

1. ஒப்பியல் சிந்தனைகள், இரா.மோகன், மெய்யப்பன் பதிப்பகம்
2. இந்திய ஒப்பிலக்கியம், பா.ஆனந்தகுமார், மீனாட்சி புத்தக நிலையம்
3. அரிஸ்டாட்டிலும் இளங்கோவும், இரா.மனோகரன், காவ்யா வெளியீடு
4. கம்பனும் மில்டனும், இராமகிருஷ்ணன்
5. கம்பனும் வால்மீகியும் கண்ட சமூகங்கள், வேங்கடராஜீலு செட்டியர்
6. ஒப்பியல் இலக்கியம், க.கைலாசபதி
7. ஒப்பியல் நோக்கு, வ.சுப.மாணிக்கம், மணிவாசகர் பதிப்பகம்
8. ஒப்பியலக்கியக் கொள்கைகளும் பயல்முறைகளும், ம.திருமலை
9. ஒப்பியல் நோக்கில் பாரதியும் பக்தி இலக்கியமும், பா.ஆனந்தகுமார்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : M.A. TAMIL **SUB. CODE: 18P4TMC20**

TITLE : விளம்பரக்கலை **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

விளம்பரங்கள் மனித வாழ்வியலோடு தொடர்பு கொண்டுள்ள பான்மையினை விளக்கிக் கூறி அவற்றின் அடிப்படைத் தன்மைகளை எடுத்துரைப்பது

கூறு:1

விளம்பரம் குறித்த விளக்கங்கள் - விளம்பரங்கள் செய்யக்கூடிய மூலங்களும் இடங்களும் - விளம்பரத்தின் வரலாறு - இந்திய விளம்பர வரலாறு

கூறு:2

விளம்பரத்தின் தேவைகள் - நோக்கங்கள் - வகைகள் - துறை விளம்பரங்கள் - விளம்பரச் சாதனங்கள் - கூப்பன்கள் - சாதனத்தைத் தேர்ந்தெடுக்கும் முறை - வாடிக்கையாளர்

கூறு:3

விளம்பர நிறுவனங்கள் - பாகுபாடு - ஒழுக்கநெறி - விளம்பரநகல் - உத்திகள் - மாதிரி விளம்பரத்திட்டங்கள் - விளம்பரம் - உருவாக்குதல்

கூறு:4

விளம்பரத்தின் மையக்கரு - விளம்பரத்தயாரிப்பு - மொழிநடை - புகைப்படம் - ஓவியம் - விளம்பரங்களும் சடடங்களும் - விளம்பரத்தின் விளைவுகள்

கூறு:5

விளம்பர ஆராய்ச்சி - விளம்பர பட்ஜெட் தயாரித்தல் - விளம்பரத்தில் சுயதொழில் வாய்ப்புக்கள் - விளம்பரமும் முகவர்களும்

பாடநூல்கள்:

1. விளம்பரக்கலை - டாக்டர்.அ.விநாயகமூர்த்தி
2. விளம்பரத்தொழில் - எஸ்.கிருஸ்ணன்

பார்வை நூல்கள்:

1. விளம்பரம் - இராம.முத்தையன் - தமிழ்நாட்டுப் பாடநூல் நிறுவனம்
2. விளம்பரம் செய்வது எப்படி? - எஸ்.ரவிராஜ்
3. விளம்பர யுத்திகள் - விமல்நாத் கண்ணதாசன் பதிப்பகம்
4. விளம்பர மாயாஜாலம் - சதீஸ் கிருஸ்ணமூர்த்தி

M.A பணிவாய்ப்புத் தமிழ் - முதல் நான்குபருவங்கள்

part – A: ஒரிருசொற்களில் விடையளித்தல் (10 x 1 = 10)

ஒவ்வொரு கூறிலிருந்தும் இரண்டுவினாக்கள் வீதம் 10 வினாக்கள் கேட்கப்படுதல் வேண்டும்.

part – B: இருபக்கஅளவில் விடையளித்தல் (5 x 7 = 35)

ஒவ்வொரு கூறிலிருந்தும் மாற்றுவினாஅமைப்புடன் Either / or ஐந்துவினாக்கள் கேட்கப்படுதல் வேண்டும்.

part – C: கட்டுரைவடிவில் விடையளித்தல் (3 x 10 = 30)

ஒவ்வொரு கூறிலிருந்தும் ஒருவினாகேட்கப்படுதல் வேண்டும். ஐந்துவினாக்களுள் மூன்றுவினாக்களுக்குவிடைஎழுதுதல் வேண்டும்

மதிப்பெண் பங்கீடு

அகமதிப்பீடு: 25:

தேர்வு	:15
கட்டுரை	: 5
வருகைப் பதிவேடு	: 5

	25

புறமதிப்பீடு: 75

தேர்வுநேரம்: 3மணி

தமிழ்த்துறை

பாடத்திட்டம் (2018ON)

பகுதி – I – தமிழ் - இளங்கலை / இளமறிவியல்

தாள்	பாடம்	குறியீடு	பாடமணி	ஊசயனவை
தாள் - 1	இக்கால இலக்கியம்	18U1TLA1	6	4
தாள் - 2	இடைக்கால இலக்கியம்	18U1TLA2	6	4
தாள் - 3	காப்பிய இலக்கியம்	18U2TLA3	6	4
தாள் - 4	பண்டைய இலக்கியம்	18U2TLA4	6	4

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE:**

TITLE : தாள் - 1 இக்கால இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தற்கால இலக்கியத்தின் சிறப்புக்களை எடுத்துரைத்தல் நவீன இலக்கியத்தின் அழகியல் உணர்வுகளை கருத்தியல் மற்றும் வடிவச் சிறப்பை இயம்புதல். மாணவர்களின் படைப்பூக்கத்தை வளர்த்தல் எழுத்திலக்கணத்தை அறிமுகப்படுத்தி மொழியின் பயன்பாட்டைக் கற்பித்தல் பிழை நீக்கி எழுதப் பழகுதல்

கூறு:1 மரபுக்கவிதை

1. பாரதியார் - அ. தீராத விளையாட்டுப் பிள்ளை
   ஆ. வீணையடி நீ எனக்கு
   இ. விடுதலைக் கும்மி
2. பாரதிதாசன் - அ. தமிழின் இனிமை
   ஆ. பெண்ணுக்கு நீதி
   இ. எந்நாளோ....
3. நாமக்கல் கவிஞர் - தமிழன் இதயம்....
4. கவிமணி தேசிய விநாயகம் - உடல்நலம் பேணல்....

கூறு:2 புதுக்கவிதை

1. பிரமிள் - முதுமை
2. நா.காமராசன் - சகாராவைத் தாண்டாத ஒட்டகங்கள்
3. மு.மேத்தா - தேசப்பிதாவிற்கு ஒரு தெருப்பாடகனின் அஞ்சலி
4. அப்துல் இரகுமான் - கதவு
5. வைரமுத்து - இறக்கமுடியாத சிலுவைகள்
6. கலாப்ரியா - சினேகிதனின் தாழ்வான வீடு
7. தூர் - நா.முத்துக்குமார்
8. சேரன் - மூன்று தெருக்கள்
9. மு.சுயம்புலிங்கம் - பூ அழிந்த சேலைகள்
10. இளம்பிறை - அம்மா
11. தமிழச்சி - வனப்பேச்சி
12. ஹைக்கூ கவிதைகள் - (10)

நாட்டுப்புறப்பாடலும் திரைப்படப்பாடலும்

1. ஆத்தா உன் சேலை - ஏகாதசி
2. மணப்பாறை மாடு கட்டி மாயவரம் ஏறுபூட்டி

கூறு:3 சிறுகதை

தேர்ந்தெடுத்த கதைகள்(10) - 1.புதுமைப்பித்தன் - தெருவிளக்கு 2.கிரா - கோமதி 3.கு.அழகிரிசாமி - இருவர் கண்ட ஒரே கனவு 4.அசோகமித்திரன் - புலிக்கலைஞன் 5.ச.கந்தசாமி - தக்கையின்மீது நான்கு கண்கள் 6.அண்ணா - செவ்வாழை 7.சுஜாதா - நகரம் 8.சுரேஸ்குமார் இந்திரஜித் - மறைந்து திரியும் கிழவன் 9. சா.தமிழ்ச்செல்வன் - வெயிலோடு போய் - 10.சு.வேணுகோபால் - வெண்ணிலை

கூறு:4 இலக்கிய வரலாறு

1. மரபுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
3. சிறுகதையின் தோற்றமும் வளர்ச்சியும்

கூறு:5 இலக்கணமும் கடித வரைவும்

அ. எழுத்துக்களின் பிறப்பு, மொழிமுதல், இறுதி எழுத்துக்கள், ஓரெழுத்து ஒரு மொழிகள்
வல்லினம் மிகும் இடம், வல்லினம் மிகாஇடம்,
ந,ண,ன ர,றல,ள,ழ வேறுபாடுகள்
நிறுத்தற் குறிகளின் பயன்பாடுகள்

ஆ. கடித வரைவுப் பயிற்சி: விண்ணப்பம், வேண்டுகோள்,புகார், முறையீடு

பாடநூல்:

செய்யுள் தொகுப்பு -1, தமிழ்த்துறை, மதுரைக்கல்லூரி, மதுரை -625011.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A. TAMIL **SUB. CODE:**

TITLE : தாள் - 2 இடைக்கால இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பக்தி இலக்கியங்கள் வழி இறையுணர்வையும் ஆன்மீக அறிவையும் இசை நுட்பங்களையும் அறியச் செய்தல்

கூறு:1 செய்யுள்

அ. தேவாரம் - திருநாவுக்கரசர் - நான்காம் திருமுறை பதிகம் -11
"நமச்சிவாயத் திருப்பதிகம்" (10பாடல்கள்)
ஆ.திருவாசகம் - மாணிக்கவாசகர் - எட்டாந்திருமுறை பதிகம் -37
"பிடித்தபத்து"(திருத்தோணிபுரத்தில் அருளியது)
இ.நாலாயிரத் திவ்யப் பிரபந்தம்

1. பெரியாழ்வார் - முதற்பத்து - நான்காம் திருமொழி "திருத்தாலாட்டு"– 10பாடல்கள்
2. ஆண்டாள் - திருப்பாவை (10பாடல்கள்) - 1முதல் 10 பாடல்கள்

கூறு:2 சிற்றிலக்கியங்கள்

ஈ. கலிங்கத்துப்பரணி - போர் பாடியது
போரின் பேரொளி - 4வகைப்படைகளின் போர்க்காட்சிகள் (பாடல்எண் - 405,406,407,408,409)
உ. குற்றாலக் குறவஞ்சி - மலைவளம் குறித்த 5 பாடல்கள்
ஊ. அழகர் கிள்ளை விடு தூது - முதல் பத்து கண்ணிகள்
எ. பிள்ளைத்தமிழ் - மீனாட்சியம்மை பிள்ளைத்தமிழ் - குமரகுருபரர் - வருகைப்பருவம் - முதல் இரண்டு பாடல்கள்
ஏ. இயேசு காவியம் - மலைப்பொழிவு - கண்ணதாசன்
ஐ. நாயகம் ஒரு காவியம் - நபிகள் நாயகத்தின் பிறப்பு வளர்ப்பு - மு.மேத்தா

கூறு:3 உரைநடை

'இலக்கிய மகரந்தம்'– தாமரை பப்ளிகேசன்ஸ்(பி) லிட்..,சென்னை.

கூறு:4 இலக்கிய வரலாறு

சைவ, வைணவ, கிறித்தவர்கள், இசுலாமியர்களின் தமிழ்த்தொண்டு

கூறு:5 இலக்கணம்

அ. பெயர்ச்சொல் - அறுவகைப்பெயர், ஆகுபெயர்(6), வினையாலணையும் பெயர், பெயரெச்சம்

ஆ. வினைச்சொல், வினைமுற்று, வினையெச்சம்

இ. தற்சமம், தற்பவம்

ஈ. இயல்புவழக்கு, தகுதிவழக்கு

உ. திணை,பால்,எண்,இடம்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A. TAMIL **SUB. CODE:**

TITLE : தாள் - 3 காப்பிய இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தமிழர்களின் பண்பட்ட சொற்கள், பண்பட்ட ஓசைகள், பண்படுத்தும் கருத்துக்களின் மூலம் தொன்மையான இசையினையும் பண்பாட்டு மரபுகளையும் புராண, காப்பியங்களின் வழியாக அறிந்து கொள்வது.

கூறு:1 செய்யுள்

அ. சிலப்பதிகாரம் - ஊர் சூழ் வரி
ஆ. மணிமேகலை – சக்கரவாளக் கோட்டம் உரைத்த காதை
இ. கம்பராமாயணம் - விபிடணன் அடைக்கலம் புக்க காதை
ஈ. சீவகசிந்தாமணி – கோவிந்தையார் இலம்பகம்
உ. பாரதியார் - பாஞ்சாலி சபதம் (சபதச் சருக்கம்)

கூறு:2 நாவல்

கீதாரி– சு.தமிழ்ச் செல்வி
நியூ செஞ்சுரி புக் ஹவுஸ், முதல் பதிப்பு– டிசம்பர் - 2008

கூறு:3 இலக்கிய வரலாறு

அ. ஐம்பெருங்காப்பியங்கள்
ஆ. ஐஞ்சிறுங்காப்பியங்கள்
இ. நாவல் தோற்றம் வளர்ச்சி

கூறு:4 இலக்கணம்

யாப்பு – செய்யுள் உறுப்புக்கள், பா வகைகள் பொது இலக்கணம் (வெண்பா, ஆசிரியப்பா, கலிப்பா, வஞ்சிப்பா)

கூறு:5 தமிழகப் பண்பாட்டு வரலாறு

அ. சங்க காலம் - அரசியல் நிலை, பொருளாதார நிலை, சமய நிலை
ஆ. பல்லவர் காலம் - அரசியல் நிலை, பொருளாதார நிலை, கலை வளர்ச்சி
இ. சோழர் காலம் - அரசியல் நிலை, பொருளாதார நிலை, கலை வளர்ச்சி

பாட நூல்:

செய்யுள் தொகுப்பு 3, தமிழ்த்துறை, மதுரைக்கல்லூரி, மதுரை – 625011

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : B.A. TAMIL **SUB. CODE:**

TITLE : தாள்: 4 - பண்டைய இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பண்டைய இலக்கியங்கள் வாயிலாக தமிழர்களின் வாழ்வியல் கூறுகளையும் பழந்தமிழ் மரபுகளையும் எடுத்துரைப்பதாகும்.

கூறு:1

1. பத்துப்பாட்டு: குறிஞ்சிப்பாட்டு 1 – 95 அடி வரை
   "அன்னாய் வாழிவேண் டன்னை யொண்ணுதலொலி மென் கூந்தலென் றோலி மேனி"

2. அ. நற்றிணை: 2 பாடல்கள்
   பாடல் - 32, மாயோன் அன்ன…..
   பாடல் - 210, நெடிய பொழுதில்…
   பாடல் - 355, முந்தையிலிருந்து நட்டோர்…..
   ஆ. குறுந்தொகை: 5 பாடல்கள்
   பாடல் - 63,ஈதலும் துய்த்தலும் இல்லோர்க்கு இல்லென…
   பாடல் - 99, உள்ளினென் அல்லனோ யானே உள்ளி வாணுதல்….
   பாடல் - 135, வினையே ஆடவர்க்கு உயிரே வாணுதல்….
   இ. ஐங்குறுநூறு : 3 பாடல்கள்
   பாடல் - 10, வாழி ஆதன் வாழி அவினி மாரி வாய்க்க…
   பாடல் - 27, செந்நலம் செறுவிற் கதிர் கொண்டு ….
   பாடல் - 44, தீம்பெரும் பொய்கை யாமை இளம் பார்ப்புத்….
   ஈ. கலித்தொகை: 2 பாடல்கள்
   பாடல் - 9, பலவுறு நறுஞ்சாந்தம் படுப்பவர்க்கு அல்ல…
   பாடல் - 133, ஆற்றுதல் என்பது….
   உ. அகநானூறு: 2 பாடல்கள்
   பாடல் - 86, புதல்வற் பயந்த தி தலை அவ்வயிற்று…
   பாடல் - 136, அங்கண் இருவிசும்பு விளங்கத் திங்கள்…
   ஊ. பரிபாடல்: 2 பாடல்கள்
   பாடல் - விறல் மிகு விழுச்சீர்
   பாடல் - மாயோன் கொப்பூழ் மலர்த் தாமரை
   எ. பதிற்றுப்பத்து:
   பாடல் - இரண்டாம் பத்து
   சான்றோர் மெய்ம்மறை நிலம் நீர் வளி விசும்பி (1-20)
   ஏ. புறநானூறு: 4 பாடல்கள்

பாடல் - கடிமரம் வருந்தந்....
பாடல் - மன்னா உலகத்து...
பாடல் - உண்டால் அம்ம இவ்வுலகம் இனி...
பாடல் - ஈன்று புறந்தருதல் என் தலைக் கடனே...

3. பதினெண்கீழ்க் கணக்கு

அ.திருக்குறள்

அதிகார எண்கள்: 22 - ஒப்புரவறிதல்
அதிகார எண்கள்: 66 – வினைத்தூய்மை
அதிகார எண்கள்: 98 – பெருமை

ஆ. இனியவை நாற்பது

ஆற்றம் துணையால் அறம் செய்க முன் இனிதே...
குழவி பிணி இன்றி வாழ்தல் இனிதே...
நட்டார்க்கு நல்ல செயல் இனிது...
கற்றறிந்தார் கூறும் கருமம் பொருள் இனிதே...

இ. நாலடியார்

பாடல் - 9 உண்ணான் ஒளி நின்றான் ஓங்கு புகழ் செய்யான்...
பாடல் - 10 இல்லா இடத்தும் இயைந்த அளவினால்...
பாடல் - 144 நல்லவை செய்யின் இயல்பு ஆகும்....
பாடல் - 233 நுண் உணர்வினாரொடி கூடி...

ஈ. பழமொழி

பாடல் - 83 உற்றதற்கு எல்லாம் உரம் செய்ய வேண்டும்..
பாடல் - 92 பொலந்தார் இராமன் துணையாகப்...
பாடல் - 106 வான் திறவானை வளைத்தார்கள்...
பாடல் - 159 அறம் செய்பவற்கும் அறவழி நோக்கி...

கூறு:2 நாடகம்

'அற்றைத் திங்கள் அவ்வெண்ணிலவில்'– நாடகம் (சேதுபதி)– நியூசெஞ்சுரி புக்ஹவுஸ்

கூறு:3 இலக்கிய வரலாறு

பத்துப்பாட்டு, எட்டுத்தொகை, பதினெண் கீழ்க்கணக்கு நூல்கள்

கூறு:4 இலக்கணம்

அ. அகப்பொருள்

திணைகள்: குறிஞ்சி, முல்லை, மருதம், நெய்தல், பாலை – முதல், உரிப்பொருள்
துறைகள்: வரைவு கடாதல், அறத்தொடு நிற்றல், உடன்போக்கு

ஆ. புறப்பொருள்

திணைகள்: வெட்சி, வஞ்சி, உழிஞை, வாகை, காஞ்சி
துறைகள்: இயன் மொழி, அரசவாகை, மூதின் முல்லை, பேராண்முல்லை, மறக்காஞ்சி

கூறு:5 தமிழகப் பண்பாட்டு வரலாறு

அ. பாண்டியர் காலம் - அரசியல் நிலை, சமுதாய நிலை, கலை வளர்ச்சி
ஆ. நாயக்கர் காலம் - அரசியல் நிலை, சமுதாய நிலை, கலை வளர்ச்சி
இ. தற்காலம் - சமய சமுதாய சீர்த்திருத்தங்கள், தமிழகத்தில் தேசிய எழுச்சி, ஆங்கிலேயர்ஆட்சியின் விளைவு

பாடநூல்:

செய்யுள் தொகுப்பு, தமிழ்த்துறை, மதுரைக்கல்லூரி, மதுரை

வினாத்தாள் அமைப்புமுறை

பகுதி–I - தமிழ் - முதல் நான்குபருவங்கள்

part – A: ஒரிருசொற்களில் விடையளித்தல் (10 x 1 = 10)

ஒவ்வொரு கூறிலிருந்தும் இரண்டுவினாக்கள் வீதம் 10 வினாக்கள் கேட்கப்படுதல் வேண்டும்.

part – B: இருபக்கஅளவில் விடையளித்தல் (5 x 7 = 35)

ஒவ்வொரு கூறிலிருந்தும் மாற்றுவினாஅமைப்புடன் Either / or ஐந்துவினாக்கள் கேட்கப்படுதல் வேண்டும்.

part – C: கட்டுரைவடிவில் விடையளித்தல் (3 x 10 = 30)

ஒவ்வொரு கூறிலிருந்தும் ஒருவினாகேட்கப்படுதல் வேண்டும். ஐந்துவினாக்களுள் மூன்றுவினாக்களுக்குவிடைஎழுதுதல் வேண்டும்

மதிப்பெண் பங்கீடு

அகமதிப்பீடு: 25:

தேர்வு	:15
கட்டுரை	: 5
வருகைப் பதிவேடு	: 5

	25

புறமதிப்பீடு: 75

தேர்வுநேரம்: 3மணி

தமிழ்த்துறை

பாடத்திட்டம் (2018ON)

பகுதி – I – தமிழ் - இளமறிவியல் கணினி அறிவியல்

இளமறிவியல் / கணினி அறிவியல்- பகுதி – I தமிழ் - முதலாமாண்டு - முதற்பருவம்

பாடத்திட்டம்

பொதுத்தமிழ் - I

பாடமணி: 3	credit - 4	மதிப்பெண்:75

நோக்கம்:

தமிழ்ப் பண்பாட்டையும் நாகரிகங்களையும் தமிழ் இலக்கியங்கள் வழி அறியச் செய்தல்

பயன்:

இலக்கியங்கள் வழியான ஒழுகலாறுகளையும் அறச்சிந்தனைகளையும் பெறுதலே பயனாக அமையும்

கூறு:1 இக்கால இலக்கியம்

அ) பாரதியார் - புதிய கோணங்கி

ஆ) பாரதிதாசன் - எந்நாளோ?

இ) அப்துல் ரகுமான் - கதவு

கூறு:2 பக்தி இலக்கியம்

அ) சைவம்

காரைக்காலம்மையார் புராணம்

1. பிறந்துமொழி…. 2. இடர்களையாரேனும்… 3. அவர்க்கே எழுபிறப்பும்…. 4. ஆளானோம்…. 5.இறைவனே எவ்வுயிருந்… (முதற் 5 பாடல்கள்)
   மாணிக்கவாசகர் - திருவாசகம் - போற்றித்திரு அகவல் - 5பாடல்கள்

ஆ) வைணவம்

1. ஆண்டாள் - திருப்பாவை - முதற் 5 பாடல்கள்

2. பெரியாழ்வார் திருமொழி - முதற்பத்து, 4ம் திருமொழி மாணிக்கங்கட்டி முதற் 5 பாடல்கள்

கூறு:3 அற இலக்கியம்

அ) திருக்குறள் - சான்றாண்மை அதிகாரம்

ஆ) நாலடியார் - நட்பாராய்தல் முதல் 5 பாடல்கள்

இ) சிறுபஞ்சமூலம் - பொருள் உடையான்...

கற்புடைய பெண்...

கல்லாதான்....

உடம்பு ஒழிய...

படைதனக்கு... (முதல் 5 பாடல்கள்)

ஈ) பழமொழி நானூறு - (5, 10, 14, 34, 54) - 5பாடல்கள்

கூறு:4 சிற்றிலக்கியம்

அ) திருக்குற்றாலக் குறவஞ்சி - மலைவளம் - முதற் 2 பாடல்கள்

ஆ) மீனாட்சியம்மைப் பிள்ளைத்தமிழ் -நீராட்டி யாட்டு பொற்... (செங்கீரைப்பருவம்)

காலந் தொடுகற்... (முத்தப்பருவம்) - 2பாடல்கள்

இ) முக்கூடற்பள்ளு - திங்கள் மும்மாரி...

ஆற்றுவெள்ளம்... - 2பாடல்கள் மட்டும்

ஈ) தமிழ் விடு தூது - முதற் 10 கண்ணிகள்

கூறு:5 இலக்கணம்

அ) எழுத்துக்களின் பிறப்பு

ஆ) இயல்பு வழக்கு, தகுதி வழக்கு

இ) தற்பவம், தற்சமம்

ஈ) அறுவகைப் பெயர்கள்

இளமறிவியல் / கணினி அறிவியல் - முதலாமாண்டு - இரண்டாம்பருவம்

பாடத்திட்டம்

பொதுத்தமிழ் - II

பாடமணி: 3	credit - 4	மதிப்பெண்:75

நோக்கம்:

அகமும் புறமும் இணைந்த இலக்கியங்கள் வழி அறச்சிந்தனைகளைப் பெறுதலே நோக்கம்

பயன்:

இலக்கியங்கள் வழிபெற்ற அறங்களை வாழ்வில் பின்பற்றுதலே பயன்பாடாகும்.

கூறு:1 காப்பிய இலக்கியம்

அ) சிலப்பதிகாரம் - வேட்டுவ வரி - முழுவதும்
ஆ) மணிமேகலை - ஆதிரை பிச்சையிட்ட காதை - முழுவதும்

கூறு:2 பழந்தமிழ் இலக்கியம்

அ) அக இலக்கியம்

1. குறுந்தொகை - (3, 4, 23, 25, 40)
2. நற்றிணை - (1,231) நின்ற சொல்லர்...., மைஅற விளங்கிய... (2பாடல்கள்)
3. ஐங்குறுநூறு - வெறிப்பத்து, முதற் 5 பாடல்கள்
4. கலித்தொகை - பாலைக்கலி, அரிதாய.... (11) 1பாடல்

ஆ) புறஇலக்கியங்கள்:

1. புறநானூறு - இவ்வே...(95)
   உற்றுழி... (183) - 2 பாடல்கள்
2. பதிற்றுப்பத்து - இரண்டாம் பத்து, புண்ணுமிழ் குருதி

கூறு:3 உரைநடை

தமிழ் வளர்க்கும் அறிவியல் - இராம.சுந்தரம் (முதல் 5 கட்டுரைகள்)

கூறு:4 இலக்கிய வரலாறு

ஆ) புதுக்கவிதை தோற்றம், வளர்ச்சி வரலாறு
ஆ) சிறுகதை தோற்றம், வளர்ச்சி வரலாறு
இ) புதினம் தோற்றம், வளர்ச்சி வரலாறு
ஈ) தமிழ் நாடகம் தோற்றம், வளர்ச்சி வரலாறு

கூறு:5 இலக்கணம்

அ) மொழிமுதல், இறுதி எழுத்துக்கள்
ஆ) வல்லெழுத்து மிகும், மிகா இடங்கள்
இ) ஓரெழுத்து ஒருமொழி
ஈ) திணை,எண், பால், இடம்

இளமறிவியல் இளம்வணிகவியல் - NME - இரண்டாமாண்டு - மூன்றாம் பருவம்

[Those Who have not studied as part– 1 Tamil in +2 Level]

பாடத்திட்டம்

அடிப்படைத் தமிழ் - I

பாடமணி: 2	credit -	மதிப்பெண்:75

நோக்கம்:

தமிழ் வழிப் பயிலாத மாணவர்க்குத் தமிழ் எழுத்துக்களின் அடிப்படைகளைக் கற்றுத் தருதல் நோக்கம்.

கூறு:1

தமிழ் மொழிச்சிறப்பு – உயிர் எழுத்துக்கள் - மெய்எழுத்துக்கள் - குறில், நெடில் எழுத்துக்கள் - வல்லினம், மெல்லினம், இடையினம் - எழுத்து வரிசை முறை (க, ங, ச, ஞ, ட, ண...) – ஆய்த எழுத்து.

கூறு:2

உயிர், மெய் எழுத்துக்கள் - இயல்பு வழக்கு – தகுதி வழக்கு

கூறு:3

மொழி முதல் எழுத்துக்கள் - மொழி இறுதி எழுத்துக்கள் - சார்பெழுத்துக்கள் - மாத்திரை அளவு.

கூறு:4

ர, ற, - ல,ள,ழ – ந,ன,ண – எழுத்துக்களின் சொற்பொருள் வேறுபாடுகள் (பல சொற்கள் அளித்துக் கற்கச் செய்தல்).

கூறு:5

வல்லெழுத்து மிகும், மிகா இடங்கள் - பிரித்தெழுதுதல், சேர்த்தெழுதுதல் பயிற்சி அளித்தல்

பாடநூல்கள்

1. தொல்காப்பியம் - எழுத்ததிகாரம்
2. நன்னூல் - எழுத்ததிகாரம்
3. இனிய தமிழ் மொழியின் இயல்புகள் - முனைவர். தமிழண்ணல்

பகுதி–I - தமிழ் - பொதுத் தமிழ் - முதல் இரண்டு பருவங்கள்

Part – A: ஒரிருசொற்களில் விடையளித்தல் **(10 x 1 = 10)**

ஒவ்வொரு கூறிலிருந்தும் இரண்டுவினாக்கள் வீதம் 10 வினாக்கள் கேட்கப்படுதல் வேண்டும்.

Part – B: இருபக்கஅளவில் விடையளித்தல் **(5 x 7 = 35)**

ஒவ்வொரு கூறிலிருந்தும் மாற்றுவினாஅமைப்புடன் **Either / or** ஐந்துவினாக்கள் கேட்கப்படுதல் வேண்டும்.

Part – C: கட்டுரைவடிவில் விடையளித்தல் **(3 x 10 = 30)**

ஒவ்வொரு கூறிலிருந்தும் ஒருவினாகேட்கப்படுதல் வேண்டும். ஐந்துவினாக்களுள் மூன்றுவினாக்களுக்குவிடைஎழுதுதல் வேண்டும்

மதிப்பெண் பங்கீடு

அகமதிப்பீடு: 25:

தேர்வு	:15
கட்டுரை	: 5
வருகைப் பதிவேடு	: 5

	25

புறமதிப்பீடு: 75

தேர்வுநேரம்: 3மணி

தமிழ்த்துறை

பாடத்திட்டம் (2018ON)

NME - தமிழ்

(2018 -19 ஆம் கல்வியாண்டில் இரண்டாம் ஆண்டு பயிலும் மாணவர்களுக்கு)

இளமறிவியல்/இளம்வணிகவியல் - NME - இரண்டாமாண்டு - மூன்றாம் பருவம்

[Those Who have not studied as part – 1 Tamil in +2Level]

பாடத்திட்டம்

அடிப்படைத் தமிழ் - II

பாடமணி: 2	credit -	மதிப்பெண்:75

நோக்கம்:

தமிழ்ச் சொற்களை வாக்கியங்களில் கையாளுவதற்கான அடிப்படைகளைப் பிழையின்றி தொடர், கட்டுரை ஆகியனவற்றை எழுதவும் கற்பித்தல் நோக்கம்.

கூறு:1

திணை, பால், எண், இடம், காலம்

கூறு:2

இலக்கண அடிப்படைச் சொற்கள் - பெயர்ச்சொல், வினைச்சொல் - இடைச்சொல், உரிச்சொல், இலக்கிய அடிப்படைச் சொற்கள் - இயற்சொல், திரிசொல், திசைச்சொல், வடசொல்.

கூறு:3

கிழமைப் பெயர்கள், தமிழ் ஆங்கில மாதப் பெயர்கள், பழங்கள், காய்கறிகள் பெயர், விலங்குகள், பறவைகள் பெயர்கள்

கூறு:4

சொற்கள், தொடர்கள் சிறப்பு – பிழைகளைக் கண்டறிதல் - நாளிதழ்களில் உள்ள பிழைகளைக் கண்டறிதல்.

கூறு:5

கவிதை, உரைநடை வாசிப்புப் பயிற்சி – சொற்களை வாக்கியத்தில் அமைத்தல்.

பாடநூல்கள்:

1. தொல்காப்பியம் - சொல்லதிகாரம்
2. இனிய தமிழ் மொழியின் இயல்புகள் - முனைவர். தமிழண்ணல்.

இளமறிவியல் /இளம்வணிகவியல் - இரண்டாமாண்டு - மூன்றாம்பருவம்

பாடத்திட்டம்

சிறப்புத்தமிழ் - I (NME)

பாடமணி: 2	credit - 4	மதிப்பெண்:75

நோக்கம்:

தமிழ் இலக்கியத்தில் உள்ள சிறப்புக்களையும் நயங்களையும் எடுத்துக் கூறி தமிழ் மீதான ஈடுபாட்டை ஏற்படுத்துவது

கூறு:1

கவிதை அறிமுகம் - மரபுக்கவிதை - புதுக்கவிதை
பாரதியார் - முத்துமாரி
பாரதிதாசன் உலகப்பன் பாட்டு
நாமக்கல் கவிஞர்வெ.இராமலிங்கம் பிள்ளை - 'தமிழன்னை திருப்பணி செய்வோமே'
பட்டுக்கோட்டை கல்யாணசுந்தரம் - 'இரை போடும் மனிதருக்கே'

கூறு:2

காப்பிய இலக்கியங்கள் - பொது அறிமுகம்
சிலப்பதிகாரம் - மங்கல வாழ்த்துப்பாடல் (இயற்கை வாழ்த்து மட்டும்)

கூறு:3

பக்தி இலக்கியங்கள் அறிமுகம் (சைவ, வைணவம்)

நாயன்மார்கள்:

ஞானசம்பந்தர் - மண்ணில் நல்ல வண்ணம்...
மாணிக்கவாசகர் - மெய்தான் அரும்பி...
திருமூலர் - உள்ளம் பெருங்கோயில்

ஆழ்வார்கள்:

குலசேகர ஆழ்வார் - செடியாய வல்வினைகள்....
ஆண்டாள் - மத்தளம் கொட்ட....
திருப்பாணாழ்வார் - கொண்டல் வண்ணனைக்....

கூறு:4

சங்க இலக்கிய அறிமுகம்
அகப்பாடல் - நின்ற சொல்லர்(நற்:1)
புறப்பாடல் - சிற்றில் நற்றூண்... (புறநானூறு86)
திருக்குறள் - நட்பு

கூறு:5

கவிதை படைப்பாக்கப் பயிற்சி

இளங்கலை/இளமறிவியல்/இளம்வணிகவியல் இரண்டாமாண்டு - நான்காம்பருவம்

பாடத்திட்டம்

சிறப்புத்தமிழ் - II (NME)

பாடமணி: 2	credit – 4	மதிப்பெண்:75

நோக்கம்:

மாணவர்களின் படைப்பாக்கத் திறன்களை ஊக்குவிக்கவும் படைப்பாக்கச் சிந்தனைகளை வெளிப்படுத்தவும் வழிமுறைகளை எடுத்துரைப்பது.

கூறு:1

உரைநடையின் தோற்றமும் வளர்ச்சியும் - பொது இலக்கணம்

இலக்கியப்பரல்கள் - இரா.மோகன்

முதல் 5 கட்டுரைகள் மட்டும்

கூறு:2

நாடக இலக்கணம் தோற்றமும் வளர்ச்சியும்

ஆறு நாடகங்கள் - அ.சிவக்கண்ணன்

முதல் மூன்று நாடகங்கள் மட்டும்

கூறு:3

புதினத்தின் தோற்றமும் வளர்ச்சியும்

துணிந்தவன் - ஜெயகாந்தன்

கூறு:4 கடிதம்

1. வேலை வேண்டி விண்ணப்பக் கடிதம் (அரசு, தனியார் நிறுவனங்களுக்கு)
2. புகார்க் கடிதம்
3. நண்பனுக்குக் கடிதம்

கூறு:5

கவிதை நயம் பாராட்டல் - கட்டுரைப்பயிற்சி - நூல்மதிப்புரை

வினாத்தாள் அமைப்புமுறை

NME:அடிப்படைத் தமிழ்/பொதுத்தமிழ் முதல் இரண்டுபருவங்கள

ஒவ்வொரு கூறிலிருந்தும் மாற்றுவினாஅமைப்புடன் Either / or

ஐந்துவினாக்கள் கேட்கப்படுதல் வேண்டும்.(5 x 15 = 75)

தமிழ்த்துறை

பாடத்திட்டம் (2018ON)

பி.ஏ. - தமிழ்

(2018 -19 ஆம் கல்வியாண்டு முதல் சேருகின்ற மாணவர்களுக்கு)

மதுரைக்கல்லூரி (தன்னாட்சி) மதுரை – 625011

(தேசிய தரநிர்ணய மறுமதிப்பீட்டில் 'A' (3வது சுற்று) தகுதிபெற்றது)

இளங்கலை தமிழ் - பாடத்திட்டம்

(CBSC Pattern)

(2018 – 19 ஆம் கல்வியாண்டில் சேருகின்ற மாணவர்களுக்கு)

முதலாமாண்டு	முதற் பருவம்	குறியீடு	பாடமணி	credit
தாள் -1	இக்கால இலக்கியம்	18U1TMC1	5	4
தாள் -2	இலக்கணம்	18U1TMC2	4	3
தாள் -3	சுற்றுலாவியல்	18U1TSM1	2	2
தாள் -4	தமிழக வரலாறும் பண்பாடும்	18U1TAC1	5	5
	சுற்றுச் சூழல் கல்வி		2	2

முதலாமாண்டு	இரண்டாம் பருவம்	குறியீடு	பாடமணி	credit
தாள் -5	அற இலக்கியம்	18U2TMC3	5	4
தாள் -6	இலக்கணம் - நன்னூல்(சொல்)	18U2TMC4	4	3
தாள் -7	மக்கள் தகவல் தொடர்பியல்	18U2TSM2	2	2
தாள் -8	சிற்றிலக்கியம்	18U2TAC2	5	5
	மதிப்பீட்டுக் கல்வி		2	2

இரண்டாமாண்டு	மூன்றாம் பருவம் -	குறியீடு	பாடமணி	credit
தாள் -9	பக்தி இலக்கியம்	18U3TMC5	5	4
தாள் -10	இலக்கணம் - யாப்பு – அணி	18U3TMC6	4	3
தாள் -11	அடிப்படைக் கணினியியல்	18U3TSM3	2	2
தாள் -12	தமிழ் இலக்கிய வரலாறு	18U3TAC3	5	5
	பேச்சுக்கலை – NME	18U3TNM1	2	2

இரண்டாமாண்டு	நான்காம் பருவம் -	குறியீடு	பாடமணி	credit
தாள் -13	காப்பிய இலக்கியம்	18U4TMC7	5	4
தாள் -14	இலக்கணம் - நம்பியகப் பொருள்	18U4TMC8	4	3
தாள் -15	ஆட்சித்தமிழ்	18U4TSM4	2	2
தாள் -16	மொழி பெயர்ப்பியல்	18U4TAC4	5	5
	திரைப்படக்கலை - NME	18U4TNM2	2	2

மூன்றாமாண்டு	ஐந்தாம் பருவம் -	குறியீடு	-	பாடமணி	- credit
தாள் -17	இலக்கியத் திறனாய்வு	- 18U5TMC9	-	6	- 4
தாள் -18	இலக்கணம் - புறப்பொருள் வெண்பாமாலை	- 18U5TMC10	-	5	- 4
தாள் -19	உரையாசிரியர்கள்	- 18U5TMC11	-	5	- 4
தாள் -20	நாட்டுப்புறவியல்	- 18U5TMC12	-	6	- 4
தாள் -21	கோயில் கலை	- 18U5TMC13	-	6	- 5
தாள் -22	அறிவியல் தமிழ்	- 18U5TSM5	-	2	- 2

மூன்றாமாண்டு	ஆறாம் பருவம் -	குறியீடு	-	பாடமணி	credit
தாள் -23	சங்க இலக்கியம்	- 18U6TMC15	-	6	- 5
தாள் -24	ஒப்பிலக்கியம்	- 18U6TMC16	-	5	- 4
தாள் -25	நாடகவியல்	- 18U6TMC17	-	5	- 4
தாள் -26	விளம்பரக்கலை	- 18U6TMC18	-	6	- 6
தாள் -27	தமிழ் மொழி வரலாறு	- 18U6TMC19	-	6	- 6
தாள் -28	படைப்புத்திறன்	- 18U6TMC20	-	2	- 2

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U1TMC1**

TITLE : இக்கால இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

ஆங்கிலேயர் வருகைக்குப்பின் எழுந்த உரைநடை இலக்கியங்களான சிறுகதை, புதினம், உரைநடை இவற்றோடு புதிய முறையில் உருவாகிய கவிதை, நாடகம் ஆகியவற்றை மாணவர்களுக்கு அறிமுகம் செய்தும் அவ்விலக்கியங்களின் புதுமைக் கூறுகளை இனங்காட்டுவதும் அவற்றின் வடிவ, உள்ளடக்கங்களை விளக்குவதன் வழி இக்கால இலக்கிய அழகியலை மாணவர்கள் அறியும் படிச் செய்வதாகும்.

கூறு:1

அ. பாரதியார் கவிதைகள் - 1. நிமிர்ந்த நன்னடை
2. நின்னைச் சரணடைந்தேன்
3. மனதில் உறுதி வேண்டும்

ஆ. பாரதிதாசன் கவிதைகள் - 1. நேர்மை வளையுது - "தொழிலாச்சு- உலகம்"
2. செந்தாமரை நீர் இலை, நீர்த் துளிகள்
3. தமிழுக்கும்

இ. அப்துல் ரகுமான் - 1. கண்ணீரின் ரகசியம் (இறைவா எனக்கு புன்னகை கொடு)
2. பாருக்குள்ளே நல்ல நாடு
3. தூண்டில் இரை

ஈ. மீரா - 1. ஊசிகள் - 1.தமிழாமோ திங்கள் முக மங்கை விரல்
2. காக்கைக்கு

உ. வைரமுத்து - இன்னொரு தேசிய கீதம் - இது வித்தியாசமான தாலாட்டு

கூறு:2

புதினம் - புதிய மொட்டுக்கள் - பொன்னீலன்

கூறு:3

சிறுகதை - புதுமைப்பித்தன் சிறுகதைகள்

கூறு:4

நாடகம் - ஆறு நாடகங்கள் (சிவக்கண்ணன்)

கூறு:5

உரைநடை - தமிழின்பம் - இரா.பி.சேதுப்பிள்ளை

பாடநூல்:

1. பாரதியார் கவிதைகள்- நியூ செஞ்சுரி புக் ஹவுஸ், இரண்டாம் பதிப்பு-செப்டம்பர் 2017
2. பாரதிதாசன் கவிதைகள்- பாவை பதிப்பகம்
3. ஆலாபனை - அப்துல் ரகுமான், கவிக்கோ பதிப்பகம் மூன்றாம் பதிப்பு-அக்டோபர் 2000
4. மீரா- ஊசிகள்
5. இன்னொரு தேசிய கீதம் - வைரமுத்து,சூர்யா பதிப்பகம்
6. பொன்னீலன்- புதிய மொட்டுகள் நியூ செஞ்சுரி புக் ஹவுஸ் - 13 ஆம் பதிப்பு-2015
7. புதுமைப்பித்தன்- புதுமைக்கதைகள், கருப்பத்தேவன் தொகுப்பாசிரியர், பாவை பிரிண்டர்ஸ்-ஜூலை-2016
8. ஆறு நாடகங்கள்- சிவக்கண்ணன்,நியூ செஞ்சுரி புக் ஹவுஸ்
9. தமிழின்பம்-ரா.பி.சேதுப்பிள்ளை

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U1TMC2**

TITLE : இலக்கணம் - நன்னூல் (எழுத்து) **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

எழுத்து இலக்கணத்தைப் படிப்பதன் நோக்கம் நல்ல தமிழைத் தெரிந்து கொள்வதாகும். தெளிவான மொழிப்பயிற்சியை மாணவர்கள் பெறுகிறார்கள். எழுத்துக்களின் பிறப்பியலைப் பற்றித் தெரிந்து கொள்வதால் தெளிவாக உச்சரிக்கவும் பிழையில்லாமல் தமிழை எழுதவும் முடியும். மரபிலக்கணத்தைத் தெரிந்துகொள்ளும் வகையில் எழுத்து இலக்கணம் பாடமாக அமைக்கப்பட்டுள்ளது.

கூறு:1

பாயிரம், சிறப்புப்பாயிரம்(நூற்பா55)

கூறு:2

எழுத்தியல்(நூற்பா 1-46)

கூறு:3

எழுத்தியல்(நூற்பா47-72)

பதவியல்(நூற்பா22)

கூறு:4

உயிரீற்றுப் புணரியல்(நூற்பா-52)

கூறு:5

மெய்யீற்றுப்புணரியல் (நூற்பா-35)

உருபுப்புணரியல் (நூற்பா -17)

பாடநூல்:

நன்னூல் - காண்டிகையுரை - ஆறுமுக நாவலர், கழக வெளியீடு

பார்வைநூல்:

நன்னூல் எழுத்ததிகாரம் - முனைவர்.ச.ஈஸ்வரன்
பாவை பதிப்பகம்
சென்னை - 14.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : B.A. TAMIL **SUB. CODE: 18U1TSM1**

TITLE : சுற்றுலாவியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சுற்றுலா மக்களின் மனவளர்ச்சிக்கு உதவுகிறது வாழ்க்கை முறை, கலை மற்றும் கலாச்சாரச் சிறப்புகளை நேரில் பார்க்கும் வாய்ப்பை உருவாக்குகிறது.

பயன்:

சுற்றுலாவினால் மனிதநேயம் வளர்கிறது. பண்பாட்டு பரிவர்த்தனை நடக்கிறது. நல்லுணர்வை வளர்க்கிறது.

கூறு:1

சுற்றுலா – விளக்கம் - சுற்றுலாப் பயணிகள் - சுற்றுலா வகைகள் - சுற்றுலா நோக்கங்கள் - சுற்றுலாவைத் தூண்டும் காரணிகள் - சுற்றுலாத் துறையில் உள்ள தடைகள்.

கூறு:2

சுற்றுலாவின் சமூக விளைவுகள் - பொருளியல் விளைவுகள் - சுற்றுலாவினால் ஏற்படும் தீமைகள் - சார்ஜன்ட் குழு – மணிலாத் தீர்மானங்கள்.

கூறு:3

சுற்றுலாவும் விளம்பரமும் - விளம்பரம் - விளம்பரத்தின் பயன்கள் - திட்டமிடல் - விளம்பரம் செய்யும் வழி – செய்திகளைத் தேர்ந்தெடுத்தல், துண்டு வெளியீடும் மடிப்புச் சுற்றறிக்கையும்.

கூறு:4

சுற்றுலா விடுதிகள் - விடுதிகளின் வரலாறு – சத்திரங்கள் - விடுதிகள் விளக்கம் - வகைகள் - இந்திய விடுதிகளின் பகுப்புகள் - போக்குவரத்துகள் - சாலைப் போக்குவரத்து - இருப்புப் பாதைப் போக்குவரத்து – பயண முகவர்கள் - சுற்றுலாவின் வழிகாட்டிகள்.

கூறு:5

பாரதத்தில் சுற்றுலா வளர்ச்சி – நதிச்சம வெளிகள் - கடற்கரைச் சமவெளிகள் - கட்டிடக்கலை - இந்திய சுற்றுலா வளர்ச்சிக் கழகம் - முக்கியமான சுற்றுலா மையங்கள் - தமிழ்நாட்டில் சுற்றுலா வளர்ச்சி – கோயில்கள் - கோட்டைகள் - நினைவுச் சின்னங்கள் - அணைக்கட்டுகள் - கடற்கரைகள் - மலைகள் - கோடைக் குடியிருப்புக்கள் - வனவிலங்கு உறைவிடங்கள் - பறவைகள் சரணாலயம்.

பாடநூல்:

சுற்றுலா வளர்ச்சி – வெ.கிருட்டிணசாமி, மணிவாசகர் பதிப்பகம், சென்னை – 08

பார்வை நூல்:

சுற்றுலாவியல் - ச.ஈஸ்வரன்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : B.A. TAMIL **SUB. CODE: 18U1TAC1**

TITLE : தமிழக வரலாறும் பண்பாடும **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பழந்தமிழகம் தொன்மையானது. அத்தொன்மை வரலாற்றினையும் பண்பாட்டினையும் அவர்களின் வாழ்வியல் நிலையினையும் அறிந்து கொள்ளச் செய்வது நோக்கமாகும்.

கூறு:1 - சங்க காலத்திற்கு முற்பட்ட தமிழகம்

வரலாற்றினை அறிய உதவும் சான்றுகள்,தமிழகத்தில் இயற்கை அமைப்பு, புதைபொருள் ஆய்வால் அறியலாகும் உண்மைகள், குமரிக்கண்டம், சிந்துசமவெளி மக்களுடன் கொண்ட தொடர்பு, அயல்நாடுகளுடன் கொண்ட தொடர்பு.

கூறு:2 - சங்க காலம் முதல் பல்லவர்கள் காலம் வரை

முச்சங்கம் வரலாறு, சங்க கால அரசியல் நிலை, சமுதாய நிலை, சமய நிலை, போர்முறை, கலைகள், பல்லவர்கள் - பல்லவர்காலப் பொருளாதார நிலை, அரசியல்நிலை, கலைகளின் வளர்ச்சி, சமயம், கல்வி வளர்ச்சி நிலை.

கூறு:3 - சோழர் காலம்:

முத்தரையர், சாதவாகனர், இராட்டிடகூடர், இருக்குவேளிர், சோழப் பேரரசின் தோற்றம், சோழ அரசர்கள், வளர்ச்சி நிலை, வீழ்ச்சி நிலை, ஊராட்சிமுறை, அரசியல்நிலை, சமுதாய நிலை, சமயநிலை, கலைப்பணிகள், கோவில் பணிகள்.

கூறு:4 - பாண்டியர் காலம்:

பாண்டியர் - இரண்டாம் பாண்டியப்பேரரசு, பொருளாதார நிலை, கல்வி, கலைகளின் வளர்ச்சி நிலைகள்.

கூறு:5 - நாயக்கர் காலம் முதல் தற்காலம் வரை தமிழகத்தின் வளர்ச்சி நிலை:

விஜயநகரத்தின் தோற்றம், நாயக்க மன்னர்கள், பாளையப்பட்டு ஆட்சி முறை, சமுதாய நிலை, கலைகளின் வளர்ச்சி, கோவில் பணிகள், மராட்டியர் ஆட்சி, ஆங்கிலேயர் ஆட்சி, விடுதலைப் போரில் தமிழகத்தின் பங்கு, விடுதலைக்குப்பின் தற்காலம் வரை வளர்ந்த வளர்ச்சி நிலைகள்.

பாடநூல்:

தமிழக வரலாறும் பண்பாடும் - ஆ.இராமகிருட்டிணன்,சர்வோதய இலக்கியப் பண்ணை,மதுரை

பார்வை நூல்கள்:

1. தமிழ் நாட்டு வரலாறு - தமிழ் வளர்ச்சித் துறை சென்னை
2. பல்லவர் வரலாறு - மா.இராசமாணிக்கனார், மீனாட்சி புத்தக நிலையம், மதுரை - 1
3. சோழர் வரலாறு1,2 - நீலகண்ட சாஸ்திரி, மதுரை
4. நாயக்கர் வரலாறு - அ.ராமசாமி, உயிர்மைப் பதிப்பகம், சென்னை.
5. தமிழ் நாட்டு வரலாறு - மா.இராசமாணிக்கனார், காவ்யா பதிப்பகம், சென்னை.
6. 1800ஆண்டுகளுக்கு முற்பட்ட தமிழகம் - வி.கனகசபை பிள்ளை, பூம்புகார் பிரசுரம், சென்னை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U2TMC3**

TITLE : அறஇலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

அறம் குறித்த பல்வேறு கருத்துக்கள் இலக்கியங்களில் எடுத்தாளப்பட்ட விதத்தினை எடுத்துக் கூறுவது நோக்கம்.

கூறு:1 திருக்குறள்

1. அறத்துப்பால் (4அதிகாரங்கள்)
   அதிகார எண்கள் 2 முதல் 5வரை
2. பொருட்பால் (4அதிகாரங்கள்)
   அதிகார எண்கள் 40 முதல் 44 வரை
3. இன்பத்துப் பால் (4 அதிகாரங்கள்)
   அதிகார எண்கள் 112 முதல் 115 வரை

கூறு:2 1. நாலடியார்

நட்பாராய்தல் - 10 பாடல்கள்

2. நான்மணிக்கடிகை - 5 பாடல்கள்

1. கள்ளி வயிற்றின் அகில் பிறக்கும் - பாடல் 6
2. கோல் நோக்கி வாழுங் குடியெல்லாந் தாய் - பாடல் 29
3. நாற்ற முரைக்கும் மலருண்மை கூறி - பாடல் 48
4. மழையின்றி மாநிலத்தார்க் கில்லை மழையும் - பாடல் 49
5. கண்ணிற சிறந்த உறுப்பில்லை - பாடல் 57

கூறு:3 1. இன்னா நிற்பது - 5 பாடல்கள்

1. கொடுங்கோள் மறமன்னர் கீழ் வாழ்தலின்னா - பாடல் 3
2. எருதி லுழவர்க்குப் போகிர மின்னா - பாடல் 4
3. சிறையில் கரும்பினைக் காத்தோம்பலின்னா - பாடல் 5
4. அறமனத்தார் கூறுங் கடுமொழிவு மின்னா - பாடல் 6
5. ஆற்ற லிலாதான் பிடித்த படையின்னா - பாடல் 7

2.திரிகடுகம் - 5 பாடல்கள்

1. குறளையுள் நட்பளவு- பாடல் 37
2. தன்னை வியந்து தருக்கலுந் - பாடல் 38
3. வைததனை இன் சொல்லாக் கொள்வானும் - பாடல் 48
4. ஏவாது மாற்றும் இளங்கிளையும் காவாது- பாடல் 49
5. பழமையை நோக்கி அளித்தல் - பாடல் 58

3. ஆசாரக் கோவை - 5 பாடல்கள்

1. வைகறை யாமம் துயில் எழுந்து
2. பிறப்பு நெடுவாழ்க்கை
3. முறுவல், இனிதுரை, கால்நீர்,
4. துன்பத்துள் துன்புற்று
5. அளை உறை பாம்பும், அரசம், நெருப்பும்

கூறு:4 1. பழமொழி நானூறு - 5 பாடல்கள்

சான்றோரியல்பு 70 பாடல் முதல் 75 பாடல் வரை

2.சிறுபஞ்சமூலம் - 5 பாடல்கள்

1. நாணிலான் சால்பும் - பாடல் 12
2. பிழைத்தல் பொறுத்தல் - பாடல் 16
3. கதநன்று சான்றாண்மை- பாடல் 17
4. நட்டாரை யாக்கிப் - பாடல் 18
5. பூத்தாலுங் காயா - பாடல் 23

3. ஏலாதி - 5 பாடல்கள்

1. பிணிபிறப்பு மூப்பொடு- பாடல் 24
2. பாடகஞ் சாரமை பாத்திலார் - பாடல் 25
3. மாண்டைமைந்தா ராய்ந்த மதிவனப்பே - பாடல் 26
4. அ.்.கு தீ செய்ய லெனவறிஞ் - பாடல் 27
5. மையேர் தடங்கண் - பாடல் 28

கூறு:5 1. நீதி நெறி விளக்கம் - 5 பாடல்கள்

206ம் பாடல் முதல் 210ம் பாடல் வரை

2.சித்தர் பாடல்கள் - 3 பாடல்கள்

1. சிவ வாக்கியர் - ஓடி ஓடி உட்கலந்த
2. திருமூலர் - அன்பும் சிவமும் இரண்டென்பார்
3. கடுவெளிசித்தர் - நந்தவனத்தில்

3. ஔவையார் - மூதுரை (10)

பார்வை நூல்கள்:

1. நாலடியார் மூலமும் உரையும் - பதிப்புக் குழு, 6 ஆம் பதிப்பு-ஜூன்-2013, சாரதா பதிப்பகம்.மதுரை
2. நாண்மணிக்கடிகை மூலமும் உரையும்-பதிப்புக்குழு, 7 ஆம் பதிப்பு-2014,சாரதா பதிப்பகம்,மதுரை
3. இனியவை நாற்பது இன்னா நாற்பது மூலமும் உரையும் - ந.மு,வேங்கடசாமி நாட்டார் உரை, 9ஆம் பதிப்பு-2015
4. திரிகடுகம் மூலமும் உரையும் - ஆசிரியர்குழு, 10 ஆம் பதிப்பு-2017
5. நீதி இலக்கியத்தெரிவு, முனைவர்.கா.வாசுதேவன், முனைவர்.வ.நாராயணநம்பி, முனைவர்.மு.அருணாசலம்,சிவகுரு பதிப்பகம், முதற் பதிப்பு-மார்ச் 2006
6. பழமொழி நானூறு மூலமும் -பதிப்பகக் குழு,12 ஆம் பதிப்பு-2016, சாரதா பதிப்பகம்,
7. சிறுபஞ்ச மூலம் மூலமும் உரையும்-ஆசிரியர் குழு, 7 ஆம் பதிப்பு-2016, சாரதா பதிப்பகம்
8. ஏலாதி –ஆசிரியர்குழு, 9ஆம் பதிப்பு-2015, சாரதா பதிப்பகம்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A. TAMIL **SUB. CODE: 18U2TMC4**

TITLE : இலக்கணம் - நன்னூல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தமிழ் படிக்கும் மாணவர்கள் சொற்களைப் பிழையின்றி எழுதவும், படிக்கவும், தமிழ் இலக்கணத்தின் தன்மையைப் புரிந்து கொள்ளும் வகையில் பயன்படுவதும் நோக்கமாகும்.

கூறு:1 பெயரியல் 41 நூற்பா

கூறு:2 பெயரியல் 20 நூற்பா

வினையியல் 20 நூற்பா

கூறு:3 வினையியல் 11 நூற்பா

பொதுவியல் 32 நூற்பா

கூறு:4 பொதுவியல் 34 நூற்பா

இடையியல் 7 நூற்பா

கூறு:5 இடையியல் 13 நூற்பா

உரியியல் 20 நூற்பா

பாடநூல்: நன்னூல்-காண்டிகையுரை - ஆறுமுகநாவலர், கழக வெளியீடு.

பார்வைநூல்: நன்னூல் சொல்லதிகாரம் - முனைவர் ச.ஈஸ்வரன்

பாவை பதிப்பகம், சென்னை -14

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U2TSM2**

TITLE : மக்கள் தகவல் தொடர்பியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

மக்கள் தகவல் தொடர்பியல் குறித்த கருத்துக்களை மாணவர்கள் அறிந்து கொள்ளவும், பண்டைய காலந்தொடங்கி இன்று வரையிலான தகவல் தொடர்புச் சாதனங்கள் குறித்தும் அவை இன்று வளர்ந்து வந்துள்ள விதம் குறித்தும் கற்பிப்பது நோக்கமாகும்.

கூறு:1

தகவல் தொடர்பு விளக்கம் - இதழியல் வரலாறு – தமிழ் இதழ்களின் வளர்ச்சி - இதழியல் முன்னோடிகள் - இலக்கிய இதழ்கள் - இதழ்களில் உள்ளடக்கப் பகுப்பாய்வு.

கூறு:2

கோட்பாடுகள் - மக்கள் ஊடகத் தொடர்பியல் கோட்பாடுகள் - மார்க்ஸியக் கோட்பாடுகள் - ஆட்சி ஆதிக்கக் கோட்பாடு – கட்டற்ற இதழ் சுதந்திரக் கோட்பாடு – சமுதாயப் பொறுப்புக் கோட்பாடு – சோவியத் பொதுவுடைமைக் கோட்பாடு – அரசியல் பொருளாதாரத் தகவல் கோட்பாடு – உண்மை வெளிப்பாட்டுக் கோட்பாடு.

கூறு:3

அச்சு ஊடகம் - செய்தி விளக்கம், எழுதும் முறைகள் - செம்மையாக்கம், சஞ்சிகை இதழியல் - பக்க அமைப்பு இதழியல் படங்கள் - தமிழ் நாளிதழ்கள் ஓர் ஒப்பீடு

கூறு:4

மின்னணு ஊடகங்கள் - வானொலி இதழியல் - தொலைக்காட்சி இதழியல், உத்திகள் - திரைப்பட இதழியல் - திரைப்பட உத்திகள் - கணினி மற்றும் இணையம்.

கூறு:5

இதழியல் மேலாண்மை – பத்திரிக்கைச் சுதந்திரம் - பத்திரிக்கைச் சட்டங்களும் - ஊடகச் சட்டங்கள் - ஊடகச் சுதந்திரம் - இதழியல் ஒலி, ஒளிபரப்பு நெறிகள்.

பாடநூல்கள்:

1. மக்கள் ஊடகத் தொடர்பியல் - அடிப்படைகள்
2. மக்கள் ஊடகத் தொடர்பியல் - புதிய பரிமாணங்கள்

பதிப்பாசிரியர்கள்: டாக்டர்.சாந்தா, டாக்டர்.வீ.மோகன்

52, வீரமுத்து கார்டன், ஸ்ரீநகர் (விசாலம்),ஆனையூர் (அஞ்சல்), மதுரை

பார்வை நூல்கள்:

1. தகவல் தொடர்பியல் - டாக்டர்.வெ.கிருட்டிணசாமி, மணிவாசகர், பதிப்பகம், மதுரை – 1
2. செய்தி சேகரிப்பும் ஊடகச் சட்டங்களும் - முனைவர்.ச.ஈஸ்வரன், பாவை பப்ளிகேசன்ஸ், 142, ஜானி ஜான்கான் சாலை, இராயப்பேட்டை, சென்னை – 14
3. தொலைக்காட்சிவிளம்பரங்கள் - முனைவர்.இரா.விஜயராணி, கண்மணிபதிப்பகம், 21, சர்ச் காலனி, மூன்றாவது தெரு, வயலூர் சாலை, புத்தூர்,திருச்சி-7.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A. TAMIL **SUB. CODE: 18U2TAC2**

TITLE : சிற்றிலக்கியம **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தமிழர்களின் பண்பாடுகளை வாழ்வியல் விழுமியங்களை உணர்த்துவதும் சிற்றிலக்கியங்களின் பாடுபொருள், பா அமைப்பு, சொல்லாட்சி, கற்பனை என அனைத்துக் கூறுகளையும் மாணவர்கள் அறியச் செய்வது நோக்கமாகும்.

கூறு:1 முத்தொள்ளாயிரம்

1. சேரன் முதல் 9 பாடல்கள்
2. சோழன் 24 பாடல் முதல் 36ம் பாடல் வரை -13 பாடல்கள்
3. பாண்டியன் - 11 பாடல்கள் (தேர்ந்தெடுக்கப்பட்ட பாடல்கள்)

(1. மடங்கா…, 2. நந்தினிளஞ்சினை.., 3. மைந்தரோ.., 4. நேமி நிமிர்.., 5. நிறைமதி.., 6. செருவெங்.., 7. நிரை கதிர்வேல்..., 8. மருப்பசி.., 9. உருவத்தார்.., 10. தோற்ற மலை.., 11. வாகை..,)

கூறு:2

அ. குற்றாலக் குறவஞ்சி - நாட்டு வளம் கூறுதல் 3முதல் 9வரை

ஆ. கலிங்கத்துப் பரணி - இந்திர ஜாலம் 154 முதல் 178

கூறு:3

அழகர் கிள்ளை விடு தூது முழுவதும்

கூறு:4

மதுரை மீனாட்சியம்மை பிள்ளைத் தமிழ் - தாலப்பருவம் 23ம் பாடல் முதல் 32ம் பாடல் வரை

கூறு:5 முக்கூடற் பள்ளு

1. மழைக்குறி முதல் சித்திரா நதியில் வெள்ளம் - 16 பாடல்கள்
2. விளைவு! மகிழ்வு! 1. நாள் பார்த்தல் - 15

2.குருத்தி திருத்தினாள் - 15 பாடல்கள்

பார்வை நூல்கள்:

1. சிற்றிலக்கியங்கள் - நாஞ்சில் நாடன், தமிழினி பதிப்பகம், முதற்பதிப்பு - 2013
2. முத்தொள்ளாயிரம் - மாணிக்க வாசகன், உமா பதிப்பகம், பவளக்காரத் தெரு, மண்ணடி, சென்னை
3. குற்றாலக் குறவஞ்சி - மாணிக்க வாசகன், உமா பதிப்பகம், பவளக்காரத் தெரு, மண்ணடி, சென்னை
4. அழகர்க்கிள்ளை விடு தூது - கதிர் முருகு, சாரதா பதிப்பகம்,
5. மீனாட்சியம்மை பிள்ளைத்தமிழ் - டாக்டர். உலகநாதன், முல்லை நிலையம், மறுபதிப்பு - 2013
6. முக்கூடற்பள்ளு - கவிஞர். இளமுருகு

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U3TMC5**

TITLE : பக்தி இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

இறை குறித்த சிந்தனைகள் வாயிலாக மனிதமனம் பக்குவம் அடைவதற்கான வழி முறைகளைக் கூறுவது.

கூறு:1

அ. திருஞானசம்பந்தர் திருவையாறு பதிகம் 10 பாடல்கள் (கலையார் மதியோடு……)

ஆ. திருநாவுக்கரசர் திருவதிகை வீரட்டாணம் 10 பாடல்கள் (கூற்றாயினவாறு விலக்ககலீர்)

கூறு:2

அ. சுந்தரர் - திருமழப்பாடி தேவாரத்திருப்பதிகம் 10 பாடல்கள் (பொன்னார் மேனியனே புலித்தோலை அரைக்கசைத்து)

ஆ. மாணிக்கவாசகர் - பிடித்தபத்து (உம்பர்கட்கு அரசே ஒழிவற நிறைந்த)

கூறு:3

அ. பெரியாழ்வார் - கண்ணனின் திரு அவதாரம் (முதல் பத்து) 10பாடல்கள் (வண்ண மாடங்கள் சூழ் திருக்கோட்டியூர்….)

ஆ. ஆண்டாள் திருப்பாவை (முதல் 10 பாடல்கள்) ("மார்கழித் திங்கள் மதிநிறைந்த நன்னாளால்…)

கூறு:4

அ. குலசேகர ஆழ்வார் - தாலாட்டுப் பாடல்கள் (10பாடல்கள்) (மன்னுபுகழ் கோசலை தன்…..)

ஆ. நம்மாழ்வார் (ஆத்ம உபதேசம்) முதல் திருவாய் மொழி 10 பாடல்கள் (உயர்வற உயர்நலம் உடையவன் எவனவன்….)

கூறு:5

அ. வீரமாமுனிவர் தேம்பாவணி - பாலமாட்சி முதல் 5பாடல்கள் (வானடுத்தரசு அடைந்து வாழ)

ஆ. உமறுப்புலவர் - சீறாப்புராணம் - மானுக்குப்பிணை நின்ற படலம் - முதல் 5 பாடல்கள்

பாடநூல்:

1. தேம்பாவணி - மரிய அந்தோனி.வி., வீரமாமுனி ஆய்வுக்கழகம், தூய சவேரியர் கல்லூரி,பாளையங்கோட்டை, வெளியீடு - 1980
2. நாலாயிர திவ்ய பிரபந்தம் - த.கோவேந்தன், சாரதா பதிப்பகம், சென்னை - 14, இரண்டாம் பதிப்பு - 2017
3. சீறாப்புராணம் - செய்குதம்பி பாவலர்.கே.பி., முல்லை நிலையம், 9பாரதி நகர் முதல் தெரு, தி.நகர், சென்னை. ஆண்டு– 1980

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U3TMC6**

TITLE : இலக்கணம் - யாப்பு அணி **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

செய்யுட்களை அறிதற்கும் புனைவதற்கும் யாப்பு, அணி இலக்கணம் கற்க வேண்டியது இன்றியமையாதது. எனவே, இவ்விலக்கணத்தின் வகைப்பாடுகளையும் அவை உணர்த்தும் கருத்துக்களையும் மாணவர் அறியச் செய்வது நோக்கம்.

கூறு:1

உறுப்பியல், அசை, சீர், தளை, அடி, தொடை விளக்கம்.

கூறு:2

வெண்பா - பொது இலக்கணம் - குறள் வெண்பா, நேரிசை வெண்பா, இன்னிசை வெண்பா - ப.ஃறொடை வெண்பா - சிந்தியல் வெண்பா - அறிமுகமும் விளக்கமும் (தாழிசை, துறை நீங்கலாக)

கூறு:3

ஆசிரியப்பா பொது இலக்கணம் - நேரிசை ஆசிரியப்பா, இணைக்குறள் ஆசிரியப்பா, நிலைமண்டில ஆசிரியப்பா - அடிமறிமண்டில ஆசிரியப்பா (தாழிசை, துறை நீங்கலாக)

கூறு:4

கலிப்பா பொது இலக்கணம் - நேரிசை ஒத்தாழிசைக் கலிப்பா - அம்போதரங்க கலிப்பா - வண்ணகஒத்தாழிசைக்கலிப்பா - வெண்கலிப்பா - கலிவெண்பா - கொச்சகக்கலிப்பா (தாழிசை,துறை நீங்கலாக) வஞ்சிப்பா பொது இலக்கணம்.

கூறு:5

அணிகள் அறிமுகம் - தன்மை அணி, உவமை அணி - உருவக அணி - பின்வருநிலை அணி - வேற்றுப்பொருள் வைப்பு அணி - வேற்றுமைஅணி - பிறிது மொழிதல் அணி - தற்குறிப்பேற்ற அணி - நிரல்நிரைஅணி - சிலேடை அணி

பாடநூல்கள்:

1. யாப்பருங்கலக்காரிகை - மே.வீ.வேணுகோபாலப்பிள்ளை கழக வெளியீடு, சென்னை
2. தண்டியலங்காரம் - சுப்பிரமணிய தேசிகர் உரை கழக வெளியீடு,சென்னை

பார்வை நூல்கள்:

யாப்பருங்கலக்காரிகை - ந.மு.வேங்கடசாமி நாட்டார் உரை கழக வெளியீடு, சென்னை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U3TSM3**

TITLE : அடிப்படைக் கணினியியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

நவீனத் தொழில் நுட்பக்கல்வியும் மாணவர்களுக்குத் தேவை என்ற நிலையில் கணினி பயன்பாட்டு முறைகளையும், அடிப்படைச் செய்திகளையும் அறியச் செய்வது நோக்கமாகும்.

கூறு :1.

கணினி ஓர் அறிமுகம் - கணினியின் வரலாறு - பண்புகள் - கணினிக் கல்வியின் வகை - ஹார்டுவேர் துறை - மானிட்டர் - கீ போர்டு - சி.பி.யூ - பிரிண்டர்ஸ்.

கூறு:2

சாப்ட்வேர் துறை - ஆப்பரேட்டிங் சிஸ்டம் - வேர்ட் பிராசசிங் - ஸ்பிரட் சீட் - டேடா பேஸ் - யுடிலிடி சாப்ட்வேர் - அப்ளிகேசன் - கிராபிக்ஸ் - கம்யூனிகே'ன்

கூறு:3

விண்டோஸ் - டெஸ்க்டாப் - விண்டோஸ் எக்ஸ்புளோரர்

கூறு:4

மைக்ரோசாப்ட் வேர்ட் - பைல் - எடிட் - வியூ - இன்சர்ட் - பார்மட் - டூல்ஸ் - டேபிள் - மைக்ரோசாப்ட் எக்ஸல் - பைல்-எடிட் - வியூ - இன்சாட் - பார்மட் - டூல்ஸ் - டேட்டா - விண்டோ

கூறு:5

இண்டர்நெட் எக்ஸ்புளோரர் - பைல் - எடிட் - இ.மெயில்

பாடநூல்:

கணிப்பொறிக்கல்வி தொடக்க நிலைக் கையேடு - தொகுப்பு. பா.முத்துக்குமாரசாமி,சோ. சொக்கலிங்கம், முதல் வெளியீடு - டிசம்பர்2001,

பார்வை நூல்கள்:

1. பத்துநாளில் கணினிப்பொறி அறிவோம் - பா.கார்த்திகேயேன், முதற்பதிப்பு - மார்ச்2003 கண்ணதாசன் பதிப்பகம்
2. கணிப்பொறியின் அடிப்படை - பா.நந்தகுமார்,அருணா பப்ளிகேசன் முதற்பதிப்பு - ஜனவரி-2013
3. கணினித்தமிழ் - தஞ்சைத் தமிழ்ப் பல்கலைக்கழகம்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A. TAMIL **SUB. CODE: 18U3TAC3**

TITLE : தமிழ் இலக்கிய வரலாறு **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சங்க காலம் தொடங்கி தற்காலம் வரை உள்ள இலக்கிய வரலாற்றினை முறைப்படுத்திக் கற்பிக்கச் செய்வது.

கூறு:1 தமிழின் தொன்மை - சங்க இலக்கியம்

தமிழ் மொழியின் தொன்மை, தனித்தன்மை,கலை, பண்பாடு,இலக்கியவளம், முதல், இடை,கடைச்சங்கம், முச்சங்க வரலாறு, சங்க இலக்கிய நூல்கள், தொல்காப்பியம், எட்டுத்தொகை, பத்துப்பாட்டு, அதன் சிறப்புக்கள் ஒரு பொதுப்பார்வை.

கூறு:2 காப்பியங்கள் - அறநூல்கள்

ஐம்பெருங்காப்பியம், ஐஞ்சிறுங்காப்பியம் - வகை, தொகை, கிறித்துவ,இசுலாமிய காப்பியங்கள், பதினெண்கீழ்க்கணக்கு நூல்கள், பிற்கால அறநூல்கள்.

கூறு:3 - இதிகாசம் - புராணம்:

இதிகாசங்கள், புராணங்கள், பாரதநூல்கள், கம்பராமாயணம், பிறபுராணங்களை அறியச் செய்தல், ஆழ்வார்கள், நாயன்மார்கள், பெரியபுராணம், கந்தபுராணம் திருவிளையாடற் புராணம்.

கூறு:4 - சமயங்களின் தமிழ்ப்பணி:

பௌத்தத்தின் தமிழ்ப்பணி, சமணத்தின் தமிழ்ப்பணி, சைவத்தின் தமிழ்ப்பணி, வைணவத்தின் தமிழ்ப்பணி, கிறித்துவர்களின் தமிழ்ப்பணி, இசுலாமியர்களின் தமிழ்ப்பணி, சிற்றிலக்கியங்களின் தோற்றமும் வளர்ச்சியும் - இலக்கணம் - நிகண்டுகள் - அகராதிகள், சித்தர் இலக்கியங்கள் - உரைநடை - இசைத்தமிழ் தோற்றமும் வளர்ச்சியும் பொதுவாகத் தெரிந்து கொள்ளச் செய்தல்.

கூறு:5 - தற்கால இலக்கியம்:

சிறுகதைநூல்கள் - புதின இலக்கியம் - புதினத்தின் வகைகள் - புதுக்கவிதை நூல்கள் - ஹைக்கூ - சென்ரியூ - குக்கூ வகை நூல்கள் - கடித இலக்கியங்களை பொதுவாக அறிந்து கொள்ளச் செய்தல்

பாடநூல்:

வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு - தி.பாக்யமேரி, நியூசெஞ்சுரி புக்ஹவுஸ், சென்னை 98.

பார்வை நூல்கள்:

1. தமிழ் இலக்கிய வரலாறு - மு.வரதராசன், சாகித்ய அகாதமி, இருபத்தி மூன்றாம் பதிப்பு - 2007
2. தமிழ் இலக்கிய வரலாறு - மது.ச.விமலானந்தம்,
3. தமிழ் இலக்கிய வரலாறு – தேவிரா

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A. TAMIL **SUB. CODE: 18U3TNM1**

TITLE : பேச்சுக்கலை **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

'நயமாய் பேசினால் நாட்டை வெல்லலாம்' அது வரலாற்று உண்மை. பேசுவதும் இன்று சிறந்த கலையாக அறியப்படுகிறது. இடம், காலம், சூழல் போன்றவற்றிற் கேற்பப் பேச்சாளன் தனது பேச்சாற்றலை அமைத்துக் கொண்டு வெற்றி பெறுகிறான். இத்தகைய பேச்சுத்திறனை மாணவர்க்குக் கற்பித்து, மேடைப் பயிற்சி அளித்து பேச்சுத் திறனில் வெற்றி பெறவேண்டும் என்பதும் ஆளுமையை வளர்த்திட வேண்டும் என்பதும் நோக்கமாகும்.

கூறு:1

பேச்சுக்கலை - மேடைப்பேச்சு வரலாறு - இன்றியமையாமை - பேச்சுக்கலையால் விளையும் பயன் - பேச்சாளர்கள்.

கூறு:2

பேச்சுத் தயாரித்தல் - தலைப்பை ஒட்டிக் குறிப்பெடுத்தல் - வானொலி - தொலைக்காட்சி - இலக்கியம் - சமயஉரைகள் தயாரித்தல்

கூறு:3

பல்வேறுபட்ட உரைகளின் அறிமுகம் - வரவேற்புரை - நன்றியுரை - தலைமையுரை - தீர்மானஉரை - பாராட்டுரை.

கூறு:4

மேடைத்தோற்றம் - மேடையில் செய்யத்தக்கன, தகாதன - உச்சரிப்பு - ஆழ்ந்த இலக்கியப் பயிற்சி - உடல்மொழி நினைவாற்றல்.

கூறு:5

பேச்சை முடித்தல் - தெளிவு - நடை - நகைச்சுவை உணர்வு - அவையறிந்து பேசுதல் - பேச்சுப்பயிற்சி - மேற்கோள்களைப் பொருத்தமுற எடுத்தாளுதல்.

பாடநூல்:

பேச்சுக்கலை - டாக்டர்.ம.திருமலை
பேச்சாளராக - அ.கி.பரந்தாமனார்.

பார்வைநூல்கள்:

1. பேசும் கலை - டாக்டர்.கு.ஞானசம்பந்தன்
2. வாருங்கள் பேச்சாளர் ஆகலாம் - முனைவர் உலகநாயகி பழனி, நியூசெஞ்சுரி புக்ஹவுஸ்.
3. பேசும் கலை வளர்ப்போம் - கலைஞர்.மு.கருணாநிதி
4. மேடையில் பேசலாம் வாருங்கள் - அறந்தை நாராயணன்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U4TMC7**

TITLE : காப்பிய இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்

கதை தழுவிய இலக்கியங்களே பன்னெடுங்காலமாக வழக்கில் இருந்து வந்துள்ளன. இக்கதைகள் தனிமனித, சமூக, அரசுகள் உள்ளடக்கியதாக அமைந்துள்ளன. தமிழில் இதனைக் காப்பியம் என அழைப்பர். ஐம்பெருங்காப்பியம், ஐஞ்சிறுகாப்பியம் எனப்பகுக்கப்பட்ட வழி கதை அமைப்பு, கதை கூறும் முறை, பா அமைப்பு, கற்பனை, பாத்திரப்படைப்பு, காட்சி அமைப்பு, அக்காலச் சமுகப்பண்பாடு போன்ற பல்வேறு கருத்துக்களை மாணவர்களுக்கு அறியச் செய்வதாகும்.

கூறு:1 சிலப்பதிகாரம்:

1. அரங்கேற்றுகாதை
2. அந்திமாலைச்சிறப்புச் செய் காதை
3. ஊர் காண் காதை

கூறு:2 மணிமேகலை

1. மந்திரம் கொடுத்த காதை
2. சிறைக்கோட்டம் அறக்கோட்டமாக்கிய காதை
3. காஞ்சி மாநகர் புக்க காதை

கூறு:3 சீவகசிந்தாமணி: - சுரமஞ்சரியர் இலம்பகம்

கூறு:4 இயேசு காவியம் - சாதனையும் போதனையும்

சீறாப்புராணம் - நபிப்பட்டம் பெற்ற படலம், பாத்திமா திருமணப் படலம்

கூறு:5 கம்பராமாயணம் - திருவடி தொழுத படலம்

பார்வை நூல்கள்:

1. சிலப்பதிகாரம் - மாணிக்க வாசகன்.ஞா.(உ.ஆ), உமா பதிப்பகம், 18,பவளக்காரத்தெரு, மண்ணடி, சென்னை – 600001. - ஆண்டு -2003
2. மணிமேகலை - மாணிக்க வாசகன்.ஞா.(உ.ஆ), உமா பதிப்பகம், 55,லிங்கி தெரு, மண்ணடி, சென்னை – 600001. - ஆண்டு -2004
3. சீவகசிந்தாமணி- மாணிக்க வாசகன்.ஞா.(உ.ஆ), மணிவாசகர் பதிப்பகம், 18,பவளக்காரத்தெரு, சென்னை – 600001. - ஆண்டு -1988
4. இயேசுகாவியம் - கவிஞர் கண்ணதாசன், வானதி பதிப்பகம், சென்னை, இரண்டாம் பதிப்பு - 1978
5. சீறாப்புராணம் - செய்குதம்பி பாவலர்.கே.பி.(உ.ஆ), முல்லை நிலையம், 9,பாரதிநகர் முதல் தெரு, தி.நகர். சென்னை. ஆண்டு- 1980
6. கம்பராமாயணம் - நாராயண சேதுப்பிள்ளை (உ.ஆ)ஈ திருமகள் நிலையம்), 55,வெங்கட் நாராயணதெரு, தி.நகர்.சென்னை - 600017. ஆண்டு– 1998

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A. TAMIL **SUB. CODE: 18U4TMC8**

TITLE : இலக்கணம் - நம்பியகப் பொருள் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சங்க அகப் பாடல்களுக்குரிய இலக்கண வரையறைகளை மாணவர் அறிந்து கொள்ளச் செய்வது

கூறு:1

அகத்திணையியல் - அகப்பொருள் விளக்கம் - அகப்பொருள் வகை - அகப்பொருள் கூற்றுமுறை - ஐந்திணைப் பெயர் - ஐந்திணைக்குரிய முதல்,கரு,உரிப்பொருட்கள் - களவுப் புணர்ச்சிவகை - கைக்கிளை, வரைவு - அறத்தொடுநிற்றல்

கூறு:2

அகத்திணையியல் - கற்பின்வகை - பிரிவின்வகை - ஊடல்தவிர்க்கும் வாயில்கள் - பிரிவுக்காலங்கள்

கூறு:3

களவியல் - இயற்கைப்புணர்ச்சி - வன்புறை வகை - தெளிவின் வகை - பிரிவுழி மகிழ்ச்சி - இடந்தலைப்பாடு - பாங்கர் - கூட்டம் - பாங்கிமதிஉடன்பாடு - பாங்கியற்கூட்டம் பகற்குறி வகை - இரவுக்குறி இடையீடு - வரைதல் வேட்கை - வரைவு கடாவுதல் - ஒரு வழித்தணத்தல் - வரைவிடைவைத்துப் பொருள் வயிற்பிரிவு.

கூறு:4

வரைவியல் - வரைவு மறுத்தல், அறத்தொடு நிற்றல் - உடன்போக்கு - தலைவி பிரிவால் மீட்சி வகை - தன்மனை வரைதல் - உடன் போக்கு இடையீடு.

கூறு:5

கற்பியல் - இல்வாழ்க்கை - இல்லத்தால் மகிழ்வு - பரத்தையற் பிரிவு வகை - வாயிற் வேண்டல் மறுத்தல் - வாயில் நேர்வித்தல் - வாயில் நேர்தல் - பிரிவு அறிவுறுத்தல், பிரிவு உடன்படாமை பிரிவு உடன்படுத்தல் - பிரிவுழிக்கலங்கல் வன்புறை - வன்பொறை - வருவழிக்கலங்கல் - வந்துழி மகிழ்வு.

பாடநூல்:

நம்பியகப்பொருள் - வித்துவான்.எம்.நாராயணவேலுப்பிள்ளை, பாரி புத்தகப் பண்ணை, சென்னை

பார்வை நூல்:

நற்கவிராச நம்பி இயற்றிய"அகப்பொருள் விளக்கம்" - புலவர் பி.ரா.நடராசன், உமா பதிப்பகம், சென்னை

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CLASS : B.A. TAMIL **SUB. CODE: 18U4TSM4**

TITLE : ஆட்சித் தமிழ் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

அரசு நிறுவனங்களில் தமிழ்மொழிப் பயன்பாட்டினையும் அரசியலமைப்பினையும் அவைகளின் பல்வேறு அங்கங்களையும் செயற்பாடுகளையும் ஆட்சித்துறைத் தமிழ் வழி அறியச் செய்வதாகும்.

கூறு:1 அடிப்படைக் கோட்பாடுகள்

அரசியலமைப்பின் விளக்கம் - அரசியலமைப்பின் பாகுபாடு – பாராளுமன்ற முறை – குடியரசுத் தலைவர் முறையிலான அரசு, சட்டத்தின் ஆட்சியும் ஆட்சித்துறைக் கூட்டமும் ஆட்சித்தமிழின் வரலாற்று அடிப்படைப் பின்னணி – தமிழ் ஆட்சிமொழி – வடமொழி தொடர்பு.

கூறு:2 அரசியலமைப்பு

அடிப்படை உரிமைகள் - அடிப்படைக்கடமைகள் - ஜனாதிபதி – நெருக்கடி கால அதிகாரங்கள் - பிரதம அமைச்சர், பாராளுமன்றம், மக்களவை, மாநில ஆளுநர் – மத்திய மாநில உறவுகள் - அரசுப்பணி ஆணையம்

கூறு:3 அலுவலக நடைமுறை

ஆட்சித்துறை கடிதப் போக்குவரத்து (கடிதத் தொடர்பு) ஆட்சித்துறை கடிதங்கள் பற்றிய முன்னுரை, முடிவுரை, விளக்கம், ஆட்சிக் கடிதப் போக்குவரத்து நடைபெறும் முறை – அலுவலக நடவடிக்கை ஏற்பு மற்றும் அனுப்புகை ஏடு மாதிரி – விடுப்பு விண்ணப்பப் படிவ மாதிரி

கூறு:4 வரைவு

வரைவு என்பதன் விளக்கம் - வரைவின் வடிவங்கள் - கருத்து, மொழி, முழுமை, தெளிவு, எளிமை, சுருக்கம், பண்பு போன்றவை, வரைவின் வகைகள், அரசுக் கடிதங்கள் அலுவலகக் குறிப்பாணை, ஒப்பளிப்புக் கடிதம், நேர்முகக் கடிதம் - விரைவு அல்லது உடனடிக் கடிதம் - தந்திக் கடிதம் - பகுதிச் சார்பு அலுவலக கடிதங்கள் போன்றவையாகும்.

கூறு:5

கலைச் சொல் விளக்கம் - ஆட்சித் துறை தொடர்பான கலைச் சொற்கள்

பாடநூல்: தற்கால அரசாங்கங்கள் - ஜே.தியாகராஜன், பாவைப்பதிப்பகம், மதுரை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

Reaccredited with "A" Grade by NAAC

CLASS : B.A. TAMIL **SUB. CODE: 18U4TAC4**

TITLE : மொழிபெயர்ப்பியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

மொழிபெயர்ப்புத் தேவை கருதி பல்வேறுபட்ட நுட்பங்களையும், சிந்தனைகளையும் அறிமுகப்படுத்தி மாணவர்களுக்குக் கற்பித்தல்.

கூறு:1

மொழிபெயர்ப்பு விளக்கம் - தோற்றமும் வளர்ச்சியும் தமிழில் மொழிபெயர்ப்புகள், உலக, இந்திய மொழிபெயர்ப்பின் அறிமுகம்.

கூறு:2

மொழிபெயர்ப்பு வகைகள், அறிவியல் மொழிபெயர்ப்பு, இயந்திர மொழிபெயர்ப்பு, இலக்கிய மொழிபெயர்ப்பு, விவிலிய மொழிபெயர்ப்பு, சிறுவர் மொழிபெயர்ப்புகள்.

கூறு:3

மொழிபெயர்ப்புக் கோட்பாடுகளின் அடிப்படைகளும் அதன் வகைகளும் - மொழிபெயர்ப்பில் நிகரன்கள்.

கூறு:4

மொழிபெயர்ப்பாளரும் தகுதிகளும் - மொழிபெயர்ப்புச் சிக்கல்கள் - மொழிபெயர்ப்பின் இன்றியமையாமை

கூறு:5

மொழிபெயர்ப்பின் நோக்கமும் பயனும் - கலைச்சொல் - மொழிபெயர்ப்புப் பயிற்சிகள் - பழமொழிகள்.

பாடநூல்கள்:

1. மொழிபெயர்ப்புக் கோட்பாடுகளும் உத்திகளும் - சேதுமணிமணியன், செண்பகம் வெளியீடு, மதுரை
2. மொழிபெயர்ப்பியல் - சண்முக வேலாயுதம், உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை.

பார்வை நூல்கள்:

1. மொழிபெயர்ப்பியல் - ஈஸ்வரன், பாவைப்பதிப்பகம், சென்னை

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A., / B.Sc., **SUB. CODE: 18U4TNM2**

TITLE : திரைப்படக்கலை - அறிமுகம் - NME **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

திரைப்படக் கலையினை அறிமுகம் செய்வதும் அதன்வழி, தமிழ்ச் சமுதாயப் பண்பாட்டின் பரிமாணங்களை எடுத்துரைப்பதுடன் இக்காலத்தில் உலகளாவிய வேலை வாய்ப்புக்கான களனாக இவ்வூடகம் இருப்பதனை எடுத்துரைப்பது ஆகும்.

கூறு:1 திரை வரலாறு

திரைப்படம் தோற்றம் - உலகத் திரைப்படங்கள் - இந்தியத் திரைப்படங்கள் - தமிழ்த் திரைப்படங்கள் - இன்றைய போக்குகள்.

கூறு:2 திரைக்கதை

திரைக்கதை விளக்கம் - திரைக்கதை அமைத்தல் - திரைமொழியும் கதைமொழியும் - திரைக்கதையும் பார்வையாளனும் - திரைக்கதையின் படிநிலைகள்.

கூறு:3 திரைப்பட வகைகள்

கதைப்படம் - ஆவணப்படம் - குறும்படம் - விளம்பரப்படம்

கூறு:4 திரை இசை

திரையிசை- பின்னணியிசை - பின்னணி இசையின் மூன்று போக்குகள்

கூறு:5 திரைப்பட நுட்பங்கள்

காட்சி அளவு (shot) - கோணம் (angle) - ஒளியமைப்பு (lighting)- ஒருங்கமைத்தல் (composition)- காட்சித்தொடர்ச்சிகள்(continuties)

பாடநூல்:

1. திரைப்படக்கலை - முனைவர்.வெ.மு.ராஜகான் கனி, உயிர்மை பதிப்பகம், முதல்பதிப்பு, செப்.2011
2. சினிமா ஓர் அறிமுகம் - இரா.பிரபாகர், கனவுப்பட்டறை வெளியீடு

பார்வை நூல்கள்:

1. தமிழ்ச் சினிமாவின் கதை - அறந்தை நாராயணன், நியூ செஞ்சுரி புக் ஹவுஸ்
2. தமிழ்ப் பண்பாட்டில் சினிமா - சிவத்தம்பி, கார்த்திகேசு, மக்கள் வெளியீடு
3. திரைக்கதை எழுதுவது எப்படி? - சுஜாதா, உயிர்மை பதிப்பகம்.
4. சினிமா கோட்பாடு - சிவக்குமார் எம்., பாரதி புத்தகாலயம்
5. தமிழ்ச் சினிமாவும் தமிழர்வாழ்க்கையும் - ஆர்.கே.அழகேசன், மணிவாசகர் பதிப்பகம

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., TAMIL **SUB. CODE: 18U5TMC9**

TITLE : இலக்கியத் திறனாய்வு **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

ஓர் இலக்கியத்தைப் படிக்கின்ற போது அதன் உள்ளடக்கத்தை மட்டும் தெரிந்து கொள்வதுடன் அவ்விலக்கியம் தோன்றிய காலம் அதில் வெளிப்படும் சமூகச் சிந்தனை, இலக்கியத்தின் கட்டமைப்பு, இலக்கியத்திறன், கொள்கை எனப் பன்முக நோக்கில் இலக்கியத்தை ஆய்வுக்கு உட்படுத்தும் எண்ணத்தை மாணவர்களுக்குக் கற்பிப்பது.

கூறு:1

இலக்கியக்கலை - நோக்கம் - பயன்பாடு - இலக்கியத்தோற்றம் - வளர்ச்சி வடிவம் - கற்பனை - உத்திகள்.

கூறு:2

இலக்கியத்திறனாய்வு விளக்கம் - வளர்ச்சி - நோக்கம் - பயன் - திறனாய்வாளரின் தகுதிகள் - திறனாய்வின் வகைகள் - முருகியல்முறைத் திறனாய்வு - படைப்பு வழித் திறனாய்வு.

கூறு:3

அணுகுமுறை விளக்கம் - மொழியியல் அணுகுமுறை - அறிவியல் அணுகுமுறை - சமூகவியல் அணுகுமுறை

கூறு:4

இக்கால இலக்கியங்களில் சிறுகதை பெறும் இடம் - சிறுகதையின் விளக்கம் - புதினத்திற்கும் சிறுகதைக்கும் உரிய வேற்றுமை - சிறுகதைக்குரிய ஒருமைப்பாடு

கூறு:5

தற்காலத் தமிழ் இலக்கியத் திறனாய்வாளர்கள்

1. க.பஞ்சாங்கம்
2. ச.அகத்தியலிங்கம்
3. கார்த்திகேசு சிவதம்பி

பாடநூல்:

1. இலக்கியத் திறனாய்வு - சு.பாலச்சந்திரன், பாவை பதிப்பகம், சென்னை.
2. திறனாய்வுக்கலை - தி.சு.நடராசன்,நியூ.செஞ்சுரி புக் ஹவுஸ், 41 - பி - சிட்கோ இண்டஸ்ரியஸ் எஸ்டேட், சென்னை - 600098

பார்வை நூல்கள்:

1. திறனாய்வும் தமிழ் இலக்கிய கொள்கைகளும் - ந.பிச்சமுத்து, நியூசெஞ்சுரி புக் ஹவுஸ்
2. இலக்கியக்கலை - அ.ச.ஞானசம்பந்தன், நியூசெஞ்சுரி புக் ஹவுஸ்
3. தமிழ் இலக்கியத் திறனாய்வு வரலாறு - க.பஞ்சாங்கம், நியூசெஞ்சுரி புக் ஹவுஸ்
4. இலக்கியத் திறனாய்வியல் - தா.ஏ.ஞானமூர்த்தி, நியூசெஞ்சுரி புக் ஹவுஸ்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., TAMIL **SUB. CODE: 18U5TMC10**

TITLE : இலக்கணம் புறப்பொருள்வெண்பாமாலை **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

பழந்தமிழ் சான்றோர் எழுத்து, சொல் ஆகியவற்றிற்கு இலக்கணம் அமைத்துத் தந்துள்ளனர். திணை,துறைகள் என வகுத்து இலக்கியம் புனைவதற்கான களமும் ஏற்படுத்தப்பட்டிருக்கிறது. இதனைத் தமிழ் இலக்கிய மாணவர்கள் கற்றறியச் செய்வது.

கூறு:1

வெட்சித்திணையும் துறைகளும்

கரந்தைத் திணையும் துறைகளும்

கூறு:2

வஞ்சித் திணையும் துறைகளும்

காஞ்சித் திணையும் துறைகளும்

கூறு:3

நொச்சித் திணையும் துறைகளும்

உழிஞைத் திணையும் துறைகளும்

கூறு:4

தும்பைத் திணையும் துறைகளும்

வாகைத் திணையும் துறைகளும்

கூறு:5

பாடாண் திணையும் அதன் துறைகளும்

பாடநூல்:

புறப்பொருள் வெண்பாமாலை - பொ.வே.சோமசுந்தரனார்.
கழக வெளியீடு,சென்னை

பார்வை நூல்:

புறப்பொருள் வெண்பாமாலை - மூலமும் சாமுண்டி தேவநாயகர் இயற்றிய உரையும்
உ.வே.சா.நூல், நிலைய வெளியீடு,சென்னை.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : B.A., TAMIL **SUB. CODE : 18U5TMC11**

TITLE : உரையாசிரியர்கள் **QN.NO :**

TIME : 3Hrs **Max. Marks : 75**

நோக்கம்:

பழந்தமிழ் இலக்கண, இலக்கியங்களின் உரைகள் வழி, தமிழ் இலக்கியங்களின் தொன்மையையும் பண்பாடு மற்றும் உரைமரபுகளையும் எடுத்துரைப்பது.

கூறு:1

உரை விளக்கம் - உரை வகைகள் - உரையாசிரியர்கள் - உரையாசிரியர்களின் காலம் - உரைப்பயன்

கூறு:2

இலக்கண உரையாசிரியர்கள் - இளம்பூரணர், சேனாவரையர், நச்சினார்க்கினியர், பேராசிரியர் - நன்னூல் உரைகள்

கூறு:3

இலக்கிய உரையாசிரியர்கள் - அரும்பதவுரையாசிரியர்கள், அடியார்க்கு நல்லார், பரிமேலழகர், ஆறுமுக நாவலர்

கூறு:4

பக்தி இலக்கிய உரைகள் - சைவ சித்தாந்த நூல்களின் உரைகள் - சிவஞான முனிவர் - நாலாயிரதிவ்வியப் பிரபந்தம் வியாக்கியானங்கள்.

கூறு:5

இருபதாம் நூற்றாண்டு உரையாசிரியர்கள்

பாடநூல்:

மு.வை.அரவிந்தன் - உரையாசிரியர்கள்
மணிவாசகர் பதிப்பகம்

பார்வை நூல்கள்:

1. சூ.சோசப் சுந்தரராசு - உரை நடைத்திறன்
2. இரா.மோகன், ந.சொக்கலிங்கம் - உரை மரபுகள்
3. ந.சுப்பு ரெட்டியார் - வைணவ உரைவளம்
4. தமிழண்ணல் - உரை விளக்கு

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., TAMIL **SUB. CODE: 18U5TMC12**

TITLE : நாட்டுப்புறவியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கங்கள்:

நாட்டுப்புற இலக்கிய வகைகள், பண்பாடு, மக்களின் வாழ்வியல், கலைகளின் நுட்பங்கள், கதைகள், வீரவிளையாட்டுக்கள் போன்றவற்றை அறியச் செய்தல்

கூறு:1 - நாட்டுப்புற இலக்கியமும் பண்பாடும்

நாட்டுப்புறவியல் - விளக்கம் - நாட்டுப்புற இயலின் வகைகள் - பயன்பாடு - நாட்டுப்புறக் கள ஆய்வு முறைகள்

கூறு:2 - நாட்டுப்புறப் பாடல்கள் விளக்கம்

குழந்தைப்பாடல்கள் - தெய்வப்பாடல்கள் - தொழிற்பாடல்கள் - கொண்டாட்டப் பாடல்கள் - உணர்ச்சிப்பாடல்கள் - ஒப்பாரிப்பாடல்கள் - பன்மலர் பாடல்கள்.

கூறு:3- நாட்டுப்புறக் கூறுகள்

கதைகள் - பழமரபுக்கதை - நாட்டுப்புறக்கதை,பழமொழிகள் - பொருள் அடிப்படை, பயன் அடிப்படை,விடுகதைகள் - கருப்பொருட்கள்,கதைப்பாடல்கள் - சமூகம் - முத்துப்பட்டன் கதைப்பாடல், பூச்சியம்மன் வில்லுப்பாட்டு,வரலாறு - தேசிங்குராஜன் கதைப்பாடல், நல்லதங்காள் கதைப்பாடல்.

கூறு:4 - நாட்டுப்புறக் கலைகள்

கலைகள் அறிமுகம் - பொழுதுபோக்கு கலைகள், வீரக்கலைகள், கைவினைக்கலைகள். - சிலம்பு- மஞ்சுவிரட்டு - ஜல்லிக்கட்டு - ஏறுதழுவல் - சேவல்போர் - கிடாசண்டை - தேங்காய்ப்போர் - வண்டிப் பந்தயம். - காவடியாட்டம் -கரகாட்டம் - கோலாட்டம் - கும்மியாட்டம் - பொய்க்கால் குதிரையாட்டம் - மயிலாட்டம் - ஆலியாட்டம் - கோடாங்கியாட்டம்.

கூறு:5 - நாட்டுப்புற வாழ்வியல் கூறுகள்

நாட்டுப்புறத் தெய்வம் - நாட்டுப்புறச் சமயம் - வழிபாடு - பொதுவழிபாடு - சிறப்பு வழிபாடு - சாமியாடிகள் - சடங்குகள் - நம்பிக்கைகள் - நேர்த்திக்கடன்கள் - நாட்டுப்புற மருத்துவம் - மருத்துவர்கள் பற்றிய விளக்கம்.

பாடநூல்:

1. சு.சண்முகசுந்தரம் - "நாட்டுப்புறவியல் ஓர் அறிமுகம்", மறுமதிப்பு, காவ்யா பதிப்பகம், சென்னை,2008
2. சு.சக்திவேல் - நாட்டுப்புறவியல் ஆய்வு மணிவாசகர் பதிப்பகம், 8சிங்கர்தெரு, பாரிமுனை, சென்னை - 8
3. ஆ.சிவசுப்பிரமணியன் - "பூச்சியம்மன் வில்லுப்பாட்டு" முதற்பதிப்பு, நியூசெஞ்சுரி புக் ஹவுஸ்,சென்னை,2013
4. ஆ.சிவசுப்பிரமணியன் - "நல்லதங்காள் கதைப்பாடல்" மறுபதிப்பு, நியூசெஞ்சுரி புக் ஹவுஸ்,சென்னை, 2013
5. நா.வானமாமலை-"முத்துப்பட்டன் கதைப்பாடல்" மறுபதிப்பு சாரதா பதிப்பகம்,சென்னை, 2003

பார்வை நூல்கள்:

1. சு.சண்முகசுந்தரம் - நாட்டுப்புறவியல், மணிவாசகர் பதிப்பகம்,சென்னை .
2. ஆறு.இராமநாதன் -நாட்டுப்புற ஆய்வு
3. தே.லூர்து -நாட்டார் வழக்காற்றியல் ஓர் அறிமுகம்
4. சரசுவதி வேணுகோபால் - தமிழக நாட்டுப்புறவியல்-தாமரை வெளியீடு
5. கே.ஏ.குணசேகரன் - "தொட்டில் தொடங்கி தொடுவானம் வரை"(நாட்டுப்புறப்பாடல்)
6. பொன்னீலன் - "அந்தாணிக்கதைகள்" முதற்பதிப்பு
7. வானமாமலை.நா - "தமிழர் நாட்டுப்பாடல்கள்" மறுபதிப்பு
8. வேலுச்சாமி.ந - "புலியாட்டம்" முதற்பதிப்பு
9. ஆறு.அழகப்பன் - "நாட்டுப்புறப்பாடல்கள் ஒரு திறனாய்வு

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

(Affiliated to Madurai Kamaraj University)

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CLASS : B.A., TAMIL **SUB. CODE: 18U5TMC13**

TITLE : கோயிற்கலைகள் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

தமிழ்ச் சமூக வரலாற்றில் சமயம் என்பதை அறியச் செய்தல், கோயில்கள் தான் மக்களின் கலைகளையும் பண்பாட்டையும் வெளிப்படுத்துகின்றது என்பதை மாணவர்களுக்குப் புரியச் செய்தல்,கோயில் கட்டுமானம் வகைகள் போன்றவை காலந்தோறும் எங்ஙனம் செயல்பட்டு வந்துள்ளன என்பதை மாணவர்களை உணரச் செய்தல்

கூறு:1

தமிழ் இலக்கியங்களில் தெய்வம், கோயில் பற்றிய பதிவு - தொல்காப்பியத்தில் இடம்பெறும் தெய்வ உருவங்கள் - தெய்வம் பற்றிய செய்திகள் - சங்க இலக்கியத்தில் தெய்வம் பற்றிய கருத்துக்கள் - சிலம்பில் தெய்வம் பற்றிய பதிவுகள் - சிற்றிலக்கியங்களில் தெய்வம் பற்றி கருத்துக்கள்.

கூறு:2 - கோவில் தோற்றம் வளர்ச்சி

கோயில் தோற்றுவிக்கப்பட்டதன் நோக்கம் - கோயிலின் அமைப்பு - கோயிலின் உறுப்புக்கள் - கோயிலின் வகைகள், கோயில் கட்டிடத்தின் அமைப்பு முறை - கோயிலின் தரையமைப்பு

கூறு:3 - கோயில் மூலம் வளர்ந்த கலைகள்

ஓவியக்கலை- சிற்பக்கலை - இசைக்கலை - ஆடற்கலை

கூறு:4 - அரசர்களின் கோயில் பணி

பல்லவர்களின் கோவில் பணிகள் - வளர்ச்சி - வகைகள்.

பாண்டியர்களின் கோவில் பணிகள் - வளர்ச்சி - வகைகள்

பிற்காலச் சோழர், நாயக்கர்களின் கோவில் வளர்ச்சி – சீர்திருத்தங்கள் - விழாக்களை உருவாக்கி மாற்றி அமைத்தல்

கூறு:5 - செப்புத் திருமேனிகளும் இந்து அறநிலைத்துறையும்

செப்புத்திருமேனி வரலாறு - நாயக்கர் ஆட்சியில் கோயிலின் சீர்திருத்தங்கள் - விழாக்களை உருவாக்கி மாற்றி அமைத்தல் - இந்து அறநிலைத்துறையின் பயன்கள் - பணிகள்.

பாடநூல்:

1. டாக்டர் அம்பைமணிவண்ணன் -"தமிழகக் கோயிற்கலை வரலாறு"
ஜெ.ஜெ.பப்ளிகேசன்ஸ், முதற்பதிப்பு - டிசம்பர் 2005,மதுரை -07

பார்வை நூல்கள்:

1. மயிலை சீனி வேங்கடசாமி - தமிழர் வளர்த்த அழகுக்கலைகள்
2. முனைவர் இரா.அரங்கநாதன் - தமிழகக் கோயிற் கலை
3. இரா.நாகசாமி - மா.சந்திரமூர்த்தி - தமிழகக்கோயில் கலை
4. அ.கி.பரந்தாமனார் - மன்னர் திருமலை நாயக்கர்
5. மங்கள முருகேசன் - பல்லவ வரலாறு
6. மா.இராசமாணிக்கனார் - சோழர் வரலாறு
7. ந.பாண்டுரங்கன் - மதுரை கோவில்கள் அறியப்படாத செய்திகள்
8. அ.கி.பரந்தமனார் - மதுரை நாயக்கர் வரலாறு

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : B.A., TAMIL **SUB. CODE: 18U5TMC13**

TITLE : கோயிற்கலைகள் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம் :

தமிழில் அறிவியல் கலைச்சொற்களை மாணவர்களுக்கு அறிமுகப்படுத்துவதும், அறிவியலைத் தாய்மொழியில் படிக்க வேண்டியதன் முக்கியத்துவத்தை உணர்த்துவதும் இதன் நோக்கமாகும்.

கூறு : 1

காலந்தோறும் அறிவியல் - சங்க காலம் சங்க மருவிய காலம் - பல்லவர் காலம் - நாயக்கர் காலம் - ஐரோப்பிய காலம் - இந்திய சுதந்திர பிற்காலம்.

கூறு : 2

கலைச்சொல்லாக்கமும் அறிவியல் தமிழ் அமைப்பும் - மொழி நிலையும் தமிழும் - மரபுவழிச் சொற்கள் - ஒப்புமையாக்கச் சொற்கள் - ஒலி ஒத்தச் சொற்கள் - கருத்தழியாச் சொற்கள் - நடை முறைக்கொத்த வழக்கு சொற்கள் - சிறப்புச் சொற்கள் - ஒட்டுச் சொற்கள் - ஆங்கிலச் சொற்கள் - வடமொழிச் சொற்கள் - அயல்மொழிச் சொற்கள்.

கூறு : 3

அறிவியல் தமிழ்க்கல்வி-ஆரம்ப வரலாறு - மொழியாக்கப் பிரச்சினை - மதச் சிக்கல் - இருபதாம் நூற்றாண்டு காலக் கட்டம்.

கூறு : 4

அறிவியல் தமிழ்ப் படைப்பாக்கமும் பரவலாக்கமும் - கலைச் சொல்லாக்கம் - ஒற்றைச் சொற்கள் - சிறப்புச் சொற்கள் - வேர்ச் சொற்கள் - கலைச் சொல் விளக்கம் - கலைச் சொல் ஒருமைப்பாடு - மொழி நடை - ஒலிப் பெயர்ப்புச் சொற்கள் -உருப் பெயர்ப்புச் சொற்கள்.

கூறு : 5

இணையத்துக்கு ஏற்ற இனிய தமிழ் - கல்விக் கூடங்களில் தகவல் தொழில் நுட்பச் சேவைகள் - தமிழில் எழுத்துச் செந்தரமாக்கம் - வேறுபடும் விசைப் பலகைகள்

பாடநூல்:

அறிவியல் செம்மொழி- நெல்லை சு.முத்து முதற் பதிப்பு: டிசம்பர்,2004, மணிவாசகர் நூலகம்..

பார்வை நூல்கள்:

1. அறிவியல் தமிழாக்கம்-டாக்டர்.செ.வை.சண்முகம் முதற் பதிப்பு: டிசம்பர்,1994
2. அறிவியலும் இலக்கியமும் -முனைவர் பொ.திராவிட மணி முதற் பதிப்பு 2018
3. இராமசுந்தரம் - அறிவியல் தமிழ

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CLASS : B.A., TAMIL **SUB. CODE: 18U6TMC15**

TITLE : சங்க இலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

சங்கத் தமிழிலக்கியத்தின் வடிவத்தையும், உள்ளடக்கத்தையும் அறியச் செய்வதோடு, சங்ககாலத் தமிழரின் பரந்துபட்ட உலக அறிவையும், பண்பட்ட மரபினையும், வாழ்வியல் நெறிமுறைகளையும், தத்துவங்களையும், மாணவர்களுக்கு அறியச் செய்வதாகும்.

கூறு:1

பத்துப்பாட்டு: குறிஞ்சிப்பாட்டு (முழுவதும்)

கூறு:2

1. நற்றிணை: 2 பாடல்கள்
   - பாடல் - 60, 1.மலைகண் டன்ன நிலையுணர் நிவப்பின்....
   - பாடல் - 210,2.அரிகால் மாறிய அங்கண் அகல்வயல்....
2. அ. குறுந்தொகை: 5 பாடல்கள்
   - பாடல் - 25, 1.யாரும் இல்லை, தானே கள்வன்.....
   - பாடல் - 27, 2.கன்றும் உண்ணாது கலத்தினும் படாது...
   - பாடல் - 40, 3.யாயும் ஞாயும் யார் ஆகியரோ?....
   - பாடல் - 41, 4.காதலர் உழையர் ஆகப் பெரிது உவந்து....
   - பாடல் -135, 5.வினையே ஆடவற்கு உயிரே, வாள்நுதல்....

ஆ. ஐங்குறுநூறு : குன்றக் குறவன் பத்து - (10பாடல்கள்)

(குறிஞ்சி - அருவி, வாடை, மன்றம், மடமகள், ஆர்அணங்கினல், நாடு, கொடுத்தமை, காந்தள், பலித்தகண், திளை)

கூறு:3

1. கலித்தொகை: பண்பெனப்படுவது, பாடறிந்து ஒழுகல்...
2. அகநானூறு: 3 பாடல்கள்
   1. களிற்றுயானைநிரை - குறிஞ்சி - கபிலர் - பா.எண்:12
      (யாயே, கண்ணி னுங்கடுங் காதல்....)
   2. மணிமிடைபவளம் - நெய்தல் - அம்மூவனார் - பா.எண்:140
      "பெருங்கடல் வேட்டத்துச் சிறுகுடிப் பரதவர்...."

3. நித்திலக்கோவை - பாலை - கயமனார் - பா.எண்.32

“பசித்த யானைப் பழங்கண் அன்ன...

கூறு:4

அ. புறநானூறு - (3பாடல்கள்)

1. உற்றுழி உதவியும், உறுபொருள் கொடுத்தும்....பா.எண் - 183
2. யாதும் ஊரே யாவரும் கேளீர்....பா.எண் - 192
3. கவைக்கதிர் வரகின் அவைப்புறு வாக்கல்.... பா.எண் - 215

ஆ. பதிற்றுப்பத்து - இரண்டாம் பத்து: (முதல் இரண்டு பாடல்கள்)

இ. பரிபாடல் - 1.வையை (6வது பாடல்)

“நிறைகடல் முகந்துராய் நிறைந்துநீர் துளும்புந்தம்...”

கூறு:5

அ. திருக்குறள் - ஒழுக்கமுடைமை - 14

அறிவுடைமை - 43

நலம் புனைந்துரைத்தல் - 112

ஆ. நாலடியார் - 1.இளமை நிலையாமை - (பாடல் எண்கள் 11, 13, 15, 19)

“நரைவரும் என்றெண்ணி நல்லறி வாளர்....”

“சொல்தளர்ந்து கோல்ஊன்றிச் சோர்ந்த நடையினராய்ப்...”

“எனக்குத்தாய் ஆகியாள் என்னைஈங் கிட்டுத்...”

“மற்றறிவாம் நல்வினை யாம்இளையம் என்னாது...”

2. நட்பாராய்தல் - (பாடல் எண்கள் 211, 214, 219)

“கருத்துணர்ந்து கற்றறிந்தார் கேண்மையெஞ் ஞான்றும்...”

“பலநாளும் பக்கத்தா ராயினும் நெஞ்சில்...”

“தெளிவிலார் நட்பின் பகைநன்று, சாதல்...”

3. ஈயாமை - (பாடல் எண்கள் 271, 276, 279)

“நட்டார்க்கும் நள்ளா தவர்க்கும் உளவரையால்....”

“எனதென தென்றிருக்கும் ஏழை பொருளை....”

“குரவலர் கன்றாகஈவார் ஆவாக....”

இ. ஆசாரக்கோவை (5பாடல்கள் - 16, 38, 42, 48, 50)

‘அரசன் வாத்தியான் தாய், தந்தை, தம்முன்....’

‘பொய், குறளை,வெளவல், அழுக்காறு இவை நான்கும்....’

‘காட்டுக் களைந்து கலம் கழீஇ இல்லத்தை...’

‘கலியாணம், தேவர், பிதிர்விழா வேள்வி என்று...’

‘பழியார் இழியார் பலருள் உறங்கார்....’

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CLASS : B.A., TAMIL **SUB. CODE: 18U6TMC16**

TITLE : ஒப்பிலக்கியம் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

ஒரு மொழியின் இலக்கியச் சிந்தனையைப் பிறமொழி இலக்கியச் சிந்தனையோடு ஒப்பிட்டு அறியும் போது அதன் அகன்ற ஆழ்ந்த புலமையும் சிறப்பும் வெளிப்படும். பல்வேறு நாட்டு அறிஞர்களின் அறிவும் இலக்கியச் சிந்தனைகளும் பெறப்படு ஒப்பிலக்கியச் சிந்தனைகளைக் கற்பிப்பதால் படைப்புக்களின் அறிவைப் பெறச் செய்யலாம்.

கூறு:1

ஒப்பிலக்கியம் - இலக்கிய ஒருமைப்பாடு - இலக்கிய ஒப்பீடு முன்னைய ஒப்பீட்டு முறைகள் - திராவிட மொழிகளில் ஒப்பிலக்கியம் - தமிழ், வடமொழி இலக்கிய ஒப்பீடு - நான்கு வகை இலக்கியப் பார்வை

கூறு:2

ஒப்பிலக்கியத் தோற்றமும் வளர்ச்சியும் - ஒப்பியல் இலக்கியம் ஆங்கிலம் முதலான பிற மொழிகளில் தமிழில் ஒப்பிலக்கியம் அறிஞர்களின் கருத்துக்கள் - பேகன், ஹெர்டர், செலகல் இரட்டையர், கிரிம் சகோதரர்களின் தொண்டு

கூறு:3

ஒப்பிலக்கிய ஆய்வு நெறிகள் - இயற்கை அறிவியல் கோட்பாடும் - அடிப்படை வகைகளும், இலக்கிய வகைக் கோட்பாடு - தமிழில் இலக்கிய வகைமைச் சிந்தனை.

கூறு:4

ஒப்பிலக்கியக் கோட்பாடுகள் இலக்கியமும் உளவியலும் - இலக்கியமும் இசையும் கூத்தும் - இலக்கியமும் ஓவியமும் - பிரெஞ்சுக் கோட்பாடு - அமெரிக்கக் கோட்பாடு

கூறு:5

ஒப்பிலக்கியத்தின் ஆய்வுப்பரப்பு - யாப்பு வடிவம் - தாக்கக் கோட்பாடு ஏற்றல் கொள்கை - உருக்காட்சி - உருவமும் படிமமும் புராணக் கதை - அடிக்கருத்துக்கள் - சமூகப்பின்னணி - சமுதாய நோக்கம்.

பாடநூல்:

தமிழண்ணல் - ஒப்பிலக்கிய அறிமுகம், மீனாட்சி புத்தக நிலையம்.

பார்வை நூல்கள்:

வை.சச்சிதானந்தம் - ஒப்பிலக்கியம் ஓர் அறிமுகம்
க.கைலாசபதி - ஒப்பியல் இலக்கியம்
ம.திருமலை - ஒப்பிலக்கியக் கொள்கைகளும் பயில் முறைகளும்

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CLASS : B.A., TAMIL **SUB. CODE: 18U6TMC17**

TITLE : நாடகவியல் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

முத்தமிழில் ஒன்றான நாடகக்கலையின் தொன்மையையும் தோற்றத்தையும் அறியச் செய்வதுடன் தற்காலம் வரையுள்ள நாடகத்தின் வளர்நிலையை எடுத்துரைப்பதாகும். மேலும் நாடகத்தின் சிறப்புகளை மாணவர்கள் மனதில் நிலைபெறச் செய்வதாகும்.

கூறு:1

தொல்காப்பியத்தில் நாடகச் செய்திகள் - பழந்தமிழ் இலக்கியங்களில் நாடகப்பதிவுகள் - ஆற்றுப்படை இலக்கியங்கள் - புற இலக்கியங்களில் நாடகக்கூறுகள் புறநானூறு, பதிற்றுப்பத்து.

கூறு:2

காலந்தோறும் மரபு நாடகம் - தொல்காப்பியம் - சங்ககாலம், சிலப்பதிகாரம் - அரங்கேற்று காதையில் நாடகச் செய்திகள் - பதினோராடல் - அரங்கமைப்பு – எழினி, இசை, பெருங்கதை, சோழர் காலம், பல்லவர் காலம், நாயக்கர் காலம், கிறித்தவக் காலம், இசுலாமியக் காலம்.

கூறு:3

தெருக்கூத்து நாடகங்களின் அறிமுகம் - சிற்றிலக்கியங்களில் நாடகப்பதிவுகள் - பள்ளு, குறவஞ்சி, நொண்டி, கீர்த்தனை, முன்னோடி நாடகக்கலைஞர்கள், பேராசிரியர்.சுந்தரம்பிள்ளை, பரிதிமாற் கலைஞர், பம்மல் சம்பந்த முதலியார், சங்கரதாஸ் சுவாமிகள்.

கூறு:4

விடுதலை இயக்க நாடகக்கலைஞர்கள் - திராவிட இயக்க நாடகங்கள் - பாரதிதாசன் நாடகங்கள் - கலைவாணர், எம்.ஆர்.ராதா, அண்ணாவின் நாடகங்கள், ஓரங்க நாடகங்கள், பெண்ணிய நாடகங்கள், வீதி நாடகங்கள், மொழிபெயர்ப்பு நாடகங்கள்.

கூறு:5

இந்திரா பார்த்தசாரதியின் 'ஔரங்கசீப்' நாடகம்

பாட நூல்:

தமிழ் நாடகச் சரித்திரம் - சண்முக சுந்தரம்,காவ்யா பதிப்பகம், சென்னை.

பார்வை நூல்:

தமிழ் நாடக வரலாறு - சு.சக்திப்பெருமாள்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., TAMIL **SUB. CODE: 18U6TMC18**

TITLE : விளம்பரக்கலை **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

வணிக வளர்ச்சிக்கும் பரவலாக்கத்திற்கும் காரணமான விளம்பரத்தின் அடிப்படைகளையும் அதன் பயன்பாட்டினையும் தெரிவிப்பது.

கூறு:1

விளம்பரம் - சொற்பொருள் விளக்கம் - விளம்பரத்தின் வரலாறு - இந்திய விளம்பர வரலாறு - விளம்பரத்தின் தேவை

கூறு:2

விளம்பரம் செய்யக்கூடிய இடங்களும் மூலங்களும் - விளம்பரத்தின் நோக்கங்கள் - வகைகள் - துறை விளம்பரம்

கூறு:3

விளம்பரச் சாதனங்கள் - கூப்பன்கள் - விளம்பர ஆராய்ச்சி - விளம்பரத்துறையின் கட்டமைப்பு - விளம்பர பட்ஜெட் தயாரித்தல்.

கூறு:4

விளம்பர நிறுவனங்கள் - பாகுபாடு - விளம்பர நகல் - உத்திகள்.

கூறு:5

நாளிதழ் விளம்பரப் பிரிவுகள் - விளம்பரத் தயாரிப்பு - மொழிநடை - விளம்பரங்களும் சட்டங்களும்.

பாடநூல்:

விளம்பரக்கலை - டாக்டர் அ.விநாயகமூர்த்தி
பாலமுருகன் பதிப்பகம்
காட்பாடி, வேலூர்

பார்வை நூல்கள்:

விளம்பரத் தொழில் - எஸ்.கிருட்டிணன்

விளம்பரம் செய்வது எப்படி - எஸ் ரவிராஜ்

விளம்பரம் - இராம.முத்தையன்

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., TAMIL **SUB. CODE: 18U6TMC19**

TITLE : தமிழ் மொழி வரலாறு **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

நெடிய தமிழ்மொழியின் வரலாற்றினையும் காலந்தோறும் அதில் ஏற்பட்ட மொழி மாற்றங்களையும் அறிந்துக் கொள்ளச் செய்வது.

கூறு:1 - மொழி வரலாற்றுச் சான்றுகள்

இலக்கிய, இலக்கணங்கள் - உரையாசிரியர்கள் - வெளிநாட்டார் எழுதிய இலக்கணங்கள் - அகராதிகள் - கிளைமொழிகள் - கல்வெட்டுக்கள் - திருப்பரங்குன்றம் - கழுகுமலை

கூறு:2 சங்ககாலத் தமிழ்

தொல்காப்பிய அமைப்பிலிருந்து மாறுபடுதல் - இறந்த காலம் காட்டும் இடைநிலைகள், தன்மை, ஒருமையும் பன்மையம், முன்னிலைப் பன்மை, படர்க்கை, பால்காட்டும் விகுதிகள்.

கூறு:3 சங்கம் மருவிய காலத் தமிழ்

பன்மைவிகுதிகள் - உயர்வு ஒருமைப் பெயர்கள் - சுட்டுப் பெயரடைகள் - வேற்றுமை உருபுகள் - எண்ணுப்பெயர்கள் - பெயர் - வினை எச்சங்கள்.

கூறு:4 இடைக்காலத்தமிழ் (பல்லவர், சோழர், நாயக்கர்)

ஒலியன்கள் - ஒலிமாற்றங்கள் (மொழி முதல், இறுதி) - பதிலிடு பெயர்கள் - வேற்றுமை - புதிய விகுதிகள்

கூறு:5 தற்காலத்தமிழ்

பேச்சுத்தமிழ் ஒலியன்களும் ஒலி மாற்றங்களும் - உயர்வு ஒருமை, முன்னிலை, பன்மை பெயர்ப் பாகுபாடுகள், அறிவியல் தமிழ், வானொலி, பத்திரிக்கைத் தமிழ் - பண்பாடு

பாடநூல்:

தமிழ்மொழி வரலாறு - சு.சக்திவேல்,மணிவாசகர் பதிப்பகம்,சிதம்பரம்

பார்வை நூல்கள்

1. தமிழ் மொழி வரலாறு - தெ.பொ.மீனாட்சி சுந்தரனார் காவ்யா பதிப்பகம்,சென்னை
2. மொழி வரலாறு - மு.வரதராசன் தாயகம்,பாரி நிலையம்,சென்னை

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., TAMIL **SUB. CODE: 18U6TMC20**

TITLE : படைப்புத் திறன் **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

நோக்கம்:

மாணவர்களின் கற்பனைத் திறத்தினை வெளிக்கொண்டு வந்து அவர்களின் திறமையை வெளிபடுத்தி வேலைவாய்ப்பை ஏற்படுத்தி தருவதே இதன் நோக்கமாகும்

கூறு:1

படைப்பு இலக்கியம் - விளக்கம், படைப்புணர்வு, படைப்பிற்கான ஊக்கம், படைப்பு விதிகள், பயன்கள்

கூறு:2

சிறுகதையின் அடிப்படைகள், சிறுகதையின் உத்திகள், கு.ப.ராவின் சிறுகதை'பண்ணைச் செங்கான்'

கூறு:3

புதுக்கவிதையின் அடிப்படைகள், நாடகத்தின் உத்திகள், அ.இராமசாமியின் நாடகம்,'திருப்பிக்கொடு'

கூறு:4

புதுக்கவிதையின் அடிப்படைகள், புதுக்கவிதையின் உத்திகள், மு.மேத்தா வின் "தேசப்பிதாவிற்குத் தெருப்பாடகனின் அஞ்சலி" (கண்ணீர் பூக்கள்)

கூறு:5

படைப்பாக்க் பயிற்சிகள் - சிறுகதை, புதுக்கவிதை, ஓரங்க நாடகம் எழுத பயிற்சிகள்.

பாடநூல்:

படைப்புக்கலை - மு.சுதந்திரமுத்து, அருவிப்பதிப்பகம், இராயப்பேட்டை, சென்னை.

பார்வை நூல்கள்:

1. எழுதுவது எப்படி? - மகரந்தன், பழனியப்பா பிரதர்ஸ், சென்னை.
2. எழுதும் கலை - ஜெயமோகன், தமிழினி பதிப்பகம், சென்னை.

மதுரைக் கல்லூரி (தன்னாட்சி) மதுரை– 625011

வினாத்தாள் அமைப்புமுறை

B.A தமிழ் - முதல் ஆறுபருவங்கள்

Part – A: ஒரிருசொற்களில் விடையளித்தல் (10 x 1 = 10)

ஒவ்வொரு கூறிலிருந்தும் இரண்டுவினாக்கள் வீதம் 10 வினாக்கள் கேட்கப்படுதல் வேண்டும்.

Part – B: இருபக்கஅளவில் விடையளித்தல் (5 x 7 = 35)

ஒவ்வொரு கூறிலிருந்தும் மாற்றுவினாஅமைப்புடன் Either / or ஐந்துவினாக்கள் கேட்கப்படுதல் வேண்டும்.

Part – C: கட்டுரைவடிவில் விடையளித்தல் (3 x 10 = 30)

ஒவ்வொரு கூறிலிருந்தும் ஒருவினாகேட்கப்படுதல் வேண்டும். ஐந்துவினாக்களுள் மூன்றுவினாக்களுக்குவிடைஎழுதுதல் வேண்டும்

மதிப்பெண் பங்கீடு

அகமதிப்பீடு: 25:

தேர்வு :15	
கட்டுரை	: 5
வருகைப்	
பதிவேடு	: 5

	25

புறமதிப்பீடு: 75

தேர்வுநேரம்: 3மணி

Department of English

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11

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CLASS : B.A., ENGLISH **SUB. CODE: 18U1NED1**

TITLE : ENGLISH - I **QN.NO :**

TIME : 3Hrs **Max. Marks: 75**

Objective: To empower learners with English language for their employability.

Outcome: Students will be able to build overall expertise for a successful career at a global level.

Unit-I- English for Competitive Reasoning 12hrs

1. Logical Reasoning
2. Paragraph Completion
3. Summary Writing

Unit-II – Enhancing Vocabulary 12hrs

1. Confused Words
2. Phrasal Verbs
3. Cloze Tests
4. Common Spelling Mistakes

Unit-III– Grammar and Composition 12hrs

1. Tense
2. Voice
3. Parts of Speech
4. Application Letter with CV.

Unit- IV – Poetry & Short Stories 12hrs

1. All the World's a Stage – William Shakespeare
2. Ozymandias – Percy Bysshe Shelley
3. The Village School Master – Oliver Goldsmith

Unit-V- Prose 12hrs

1. I Am a Cat – Natsume Soseki
2. The Conjuror's Revenge – Stephen Leacock
3. A Day's Wait – Ernest Miller Hemingway

Text Book:

Sunlight- III . *An Anthology of Prose, Poetry and Short Stories*.Chennai: Anuradha Publications, 2016.Print.

References:

Arora, Mrinalini Anand. *Essential English For Competitive Exams* .New Delhi: Source Books, 2016. Print.

Pillai,G.Radhakrishna. *English Grammar and Composition* . Chennai: Emerald Publishers,2016.Print.

Murphy, Raymond. *Essential English Grammar*. New Delhi: Univ. Press, 2012.Print.

Course Code	Course Title	C	H	I	E	T
18U2NED2	**ENGLISH – II**	3	3	25	75	100

Objective: To empower learners with English language for their employability.

Outcome: Students will be able to build overall expertise for a successful career at a global level.

Unit I – *English For Competitive Exams* **12hrs**

1. Critical Reasoning: Paragraph Jumbles
2. Re-statements
3. Figures of Speech

Unit II – Enhancing Vocabulary **12hrs**

1. Synonyms and Antonyms
2. Odd Man Out
3. Idioms & Phrases, Famous Proverbs

Unit -III–Grammar and Composition **12hrs**

1 Modal Auxiliary Verbs
2. Conditional Clause
3. Degrees of Comparison
4. Comprehension Passages

Unit IV – Prose & Short Stories **12hrs**

1. Rethink Your Thinking – C. L.N. Prakash
2. The Gift of the Magi – O. Henry
3. Two Gentlemen of Verona - A.J. Cronin

Unit V – Drama **12hrs**

1. Window to the Mind - A Soliloquy from Shakespeare's *Hamlet*
2. Sleep Walking Scene -Shakespeare's *Macbeth* (Act-V, Scene I, Lines 1 to 75)
3. Post Early For Christmas - R.H. Wood

Text Book:

Sunlight- III . *An Anthology of Prose, Poetry and Short Stories*. Chennai: Anuradha Publications, 2016.Print.

References:

Arora, Mrinalini Anand. *Essential English For Competitive Exams* .New Delhi: Source Books, 2016. Print.

Pillai, G.Radhakrishna. *English Grammar and Composition*. Chennai: Emerald Publishers, 2016. Print.

Murphy, Raymond. *Essential English Grammar.* New Delhi: Univ. Press, 2012. Print.

Course Code	Course Title	C	H	I	E	T
17U3NMC5	**BRITISH POETRY- I**	**4**	**5**	**25**	**75**	**100**

Objective: To introduce British Poetry from the Age of Chaucer to the Romantic Age.

Outcome: Students will be able to understand and appreciate poetry as a literary form.

Unit I: Age of Chaucer **15 hrs**

Geoffrey Chaucer – "From the Knight's Tale" (Lines 859-1354)

Edmund Spenser – The Epithalamion

Unit II: Age of Milton **15 hrs**

Paradise Lost – Book I (The Story of Creation)

Unit III: Metaphysical Poets **15 hrs**

John Donne – A Valediction Forbidding Mourning

George Herbert – Redemption

Andrew Marvell – The Dialogue between the Soul and the Body

Unit IV: Augustan Age **15 hrs**

Alexander Pope – The Rape of the Lock (Canto 1)

John Dryden - Alexander's Feast

Unit V: Romantic Age

William Wordsworth – London 1802 **15 hrs**

Percy Bysshe Shelly – To a Skylark

John Keats – Ode to a Nightingale

Poems are taken from different anthologies available in the Department library and in the Harvey library. However copies meant for private circulation are made available in the department. Students are encouraged to photocopy the same.

COURSE CODE	COURSE TITLE	C	H	I	E	TOTAL
17U3NMC6	**British Fiction-I**	3	4	25	75	100

Objective : To introduce British Fiction from the Late Romantic period to the period of Postmodernism.

Outcome: Students will be able to understand and appreciate British Fiction by historically contextualizing.

UNIT-1 **12hrs**

Jane Austen : *Emma*

UNIT-2 **12hrs**

Walter Scott : *Talisman*

UNIT-3 **12 hrs**

Emily Bronte : *Wuthering Heights*

UNIT-4 **12 hrs**

Charles Dickens : *Tale of Two Cities*

UNIT-5 **12 hrs**

William Golding: *Lord of the Flies*

*Limited copies of the Novels are available in the Department Library as well as in the Harvey Library. Students are also encouraged to purchase their personal copies.

Reference Books:

Brooks, Cleanth and Robert Penn Warren. Understanding Fiction.NY. Prentice Hall, 1959.

Forster; E.M. *Aspects of the Novel* USA:Harcourt, 1927.

Kermode, Frank. *Sense of an Ending*.NY: OVP, 2000.

Prasad, B. *A Background to the Study of English Literature*. Chennai:Macmillan,2008

COURSE CODE	COURSE TITLE	C	H	I	E	TOTAL
17U3NAC3	**SOCIOLOGICAL, PHILOSOPHICAL &PSYCHOLOGICAL APPROACHES TO LITERATURE**	5	5	25	75	100

Objective: To introduce students to a range of specific approaches to the study of literary texts.

Outcome: Students are enabled to apply various approaches to a literary study of texts prescribed.

Unit I **15 hrs**

Ulrich Weisstein : The Mutual Illumination of Arts

Unit II **15 hrs**

Relationship between Literature and Sociology

George Bernard Shaw: A Study of the Bourgeois Superman

Unit III **15 hrs**

Introduction to Marxist and Feminist Criticism

Virginia Woolf : "A Room of One's Own"

Unit IV **15 hrs**

Essentials of Existentialism

Antoine de Saint Exupery: *The Little Prince*

Unit V **15 hrs**

Relationship between Literature and Psychology

Key Terms: Anxiety, Depression,Id, Ego, Super Ego

Geoffrey Gazer : The Myth in Jane Austen

Reference Book:

Wilbur Scott- Five Approaches of Literary Criticism

CourseCode	Course Title	C	H	I	E	T
17U3NSM3	COMPUTER APPLICATIONS	2	2	25	75	100

Objective: To develop a basic understanding of technologies used on the internet, including current web-based applications, e-mail and social networking tools.

Outcome: Students will be able to make use of computers to create word documents.

UNIT-I: FUNDAMENTALS OF COMPUTER **6hrs**

Introduction – Input/output& processing – Memory devices – Data Processing concept

UNIT-2: APPLICATIONS OF COMPUTER **6hrs**

Types of Computer – Characteristics of Computer – History and Generation – Applications of Computer

UNIT-3: MS-OFFICE **6hrs**

Microsoft Word – Microsoft Excel – Microsoft PowerPoint

UNIT-IV: E-MAIL AND INTERNET **6hrs**

E-mail account & its functions – Search Engine – Mail Merge – Surfing Web Pages

UNIT-V: BASICS OF SOCIAL NETWORKING **6hrs**

Google Plus – LinkedIn – YouTube – Facebook – Twitter – Instagram – Reddit – Pinterest – Flickr – Live Journal – My space

Text book:

Dr. Ranjit Patil Mr.Vilas Wani. *Computer Concepts and Applications (Computer Fundamentals)*

Reference Works:

Leon , Alexis and Mathews Leon.*Fundamentals of Information Technology.* India L&L., n.d.Print.

Ackerman,Jennifer, Guy Hart Kettell and Curt Simens.*Microsoft Office 2003* – The Complete Reference.Mumbai:Tata McGraw Hill, 2003.

Course Code	Course Title	C	H	I	E	T
17U3NNM1	**English for Employability**	2	2	25	75	100

Objective: To empower learners with English language abilities for their employability.

Outcome: Students will be able to draft job applications and attend interviews with confidence.

Unit 1: Communication Skills **6 hrs**

Verbal & Non verbal communication - Process & Barrier of communication - Methods of Effective communication

Unit 2: Interview Skills **6 hrs**

Types of Interview - Stages of Interview - Interview preparation

Unit 3: Language Focus-Vocabulary **6 hrs**

Words and Phrases (Job/Profession) - Employment vocabulary - Business & Finance vocabulary

Unit 4: Writing Skills **6 hrs**

Importance of written communication - Formal & Informal style - Applying for a Job

Unit 5: Professional Skills **6hrs**

Job search strategy - Career Path - Professional Ethics & Etiquettes

Study materials meant for private circulation are prepared by the department and students are encouraged to take photocopies of the same

Reference Work:

Rao, M S. *Soft Skills Enhancing Employability – Connecting Campus with Corporate*. New Delhi: I.K. International Publishing House Pvt. Ltd., 2011.

Course Code	Course Title	C	H	I	E	T
17U3NNM1	**English for Employability**	2	2	25	75	100

Model Question Paper for the Summative Examination

Duration: 3 hrs Maximum: 75 marks

Part A

Choose the right answer: (10x1=10)

1. Non-verbal communication is/are

a) facial expression b) appearance & dressing c) Posture d) speaking e)All of the above

2. One who works for the welfare of the society is a/an

a) social worker b) scientist c) examiner d) politician e) choreographer

3. *prima facie* means

a) the right choice b) at first sight c) ambitious d) cause of offence e) an order

4. A person who is employed by someone is a/an

a) Employee b) manager c) boss d) officer e) both (b) and (c)

5. A person who uses flattery in order to win favors is a/an

a) activist b) euphemist c) Sycophant d) purist e) aesthetic

6. Expressive movement of a part of body is termed as ……

a) smiling b) writing c) staring d) gesture e) none of the above

7. Good communication matters in business because

a) Everyone communicates for a living

b) it reflects who you are professionally

c) it is impossible to work in an office setting without communicating orally/by writing

d) all of the above e) both (a) and (b)

8. A letter sent along with other documents, such as résumé/curriculum vitae, to provide additional information is called ……..

a) formal letter **b)** cover Letter c) personal letter d) business letter e) Friendly Letter

9. ……. is believed to be the average percentage of time a person spends in listening.

a) 75% b) 90% c) 45% d) 25% e) 20%

10. Job Description is giving details about……

a) work b) personal life c) college d) none of the above e) Both b and c

Part-B

Answer **ALL** of the following: (5x7=35)

1.a. Differentiate between verbal and non-verbal communication.

or

b. Discuss the various barriers of effective communication.

2.a. What will happen if you go to an interview without proper preparation?

Or

b. What are the different stages of interview?

3a. Explain the purpose of a resume.

or

b. Why is writing skill an important part of communication?

4a. Write the key differences between formal and informal letters.

or

b. What is etiquette? Explain with examples.

5a. What is business letter? Mention the types of business letter.

OR

b. Prepare a detailed resume for the post of sales executive.

Part-C

Answer any THREE of the following: (10x3=30)

1. .How do you define professional ethics and why is it important in today's society?

2. What are the different types of interviews? Explain the three stages of an interview?

3. What is your career goal? What are your plans to achieve it?

4. Prepare your own Curriculum Vitae to apply for a job of your liking.

5. Write a covering letter for the post of an accountant in a company.

COURSE CODE	COURSE TITLE	C	H	I	E	TOTAL
17U4NMC7	**BRITISH POETRY- II**	4	5	25	75	100

Objective: To introduce British poetry from the Victorian Age to the Contemporary Age

Outcome: Students will be able to recognize and appreciate poetry belonging to different historic periods

Unit I: Victorian Age **15 hrs**

Lord Tennyson – The Lady of Shallott

Robert Browning – My Last Duchess

Arthur Hugh Clough – Say not the Struggle naught Availeth

Unit II: Modern Age **15 hrs**

T.S. Eliot – The Journey of the Magi

W.B. Yeats – The Second Coming

William Henry Davies – Leisure

Unit III: War Poets **15 hrs**

Wilfred Owen – The Anthem for Doomed Youth

Rupert Brooke – Peace

Siegfried Sassoon – The Survivors

Unit IV: Contemporary Age **15 hrs**

Philip Larkin – The Church Going

Ted Hughes – Snow drop

Dylan Thomas – Do not go gentle into that Good Night

Unit V: Women Poets **15 hrs**

Christiana Rossetti – The Goblin Market

Charlotte Smith – From "The Emigrants"

Emily Bronte – Come Walk With me

Poems are taken from different anthologies available in the Department library and in the Harvey library. However copies meant for private circulation are made available in the department. Students are encouraged to photocopy the same.

Course Code	Course Title	C	H	I	E	TOTAL
17U4NMC8	**British Fiction- II**	3	4	25	75	100

Objective: To introduce various genres in British Fiction from the Victorian period to the Edwardian era.

Outcome: Students will become adept in genre studies.

UNIT-1 **12 hrs**

George Eliot - *Silas Marner*

UNIT-2 **12 hrs**

Arthur Conan Doyle - *Memoirs of Sherlock Holmes: 1.Silver Blaze*

2.The Stock Broker's Clerk

3. The Card Board box

UNIT-3 **12 hrs**

H.G. Wells - *Time Machine*

UNIT-4 **12 hrs**

E. M Foster - *A Passage to India*

UNIT-5 **12 hrs**

Virginia Woolf - *Mrs. Dalloway*

*Limited copies of the Novels are available in the Department Library as well as in the Harvey Library. Students are also encouraged to purchase their personal copies.

Reference Books:

Brook, Cleanth and Robert Penn Warren. *Understanding Fiction*.NY:Prentice Hall,1959, Forster,E.M. *Aspects of the Novel*. USA: Harcourt,1927.

Kermode, Frank. *Sense of an Ending* NY: OUP,2000

Prasad, B.A *Background to the Study of English Literature*. Chennai:Macmillan,2008..

Course Code	Course Title	C	H	I	E	T
17U4NAC4	**LITERATURE AND THEATRE**	**5**	**5**	**25**	**75**	**100**

Objective: To introduce the performance traditions in English and Indian theatre.

Outcome: Students will be enabled to comprehend and analyze the dramatic literature.

UNIT – I History of Theatre **15 hrs**

Role of Theatre in Human Culture with Special Reference to India.

UNIT – II Forms and Elements of Theatre **15 hrs**

Classical and Contemporary - Stylized and Naturalistic Theatre - Types of Theatre (dance, musical, puppet, mime, mask) – Types of Stages (proscenium, thrust, round, open) - Stage and its Requirements (set, properties, costume, make-up, lighting)

UNIT – III Performance Traditions in English Theatre (Renaissance to the 20th Century) **15 hrs**

Mystery and Morality Plays – Masques – Restoration Comedy – Machine Play – Melodrama - Operas – Burlesque – Pantomimes – Epic theatre – Theatre of Cruelty – Theatre of Absurd

UNIT – IV Performance Traditions in Indian Theatre **15 hrs**

Popular forms of different States of India namely Koodiyattam – Bhagavatamela – Yakshagana – Ras Lila – Ram Lila – Kathakali - Nautanki – Tamasha – NondiNadakam - Harikatha – Terukkoothu – Thorpavaikoothu. – Independence Indian Theatre – Experimentalists – Features of Modern Indian Theatre

UNIT – V How Plays are Made? **15 hrs**

Preparation – Subject,Theme, Message – Characterization - Dialogue - The scenario – Vision of Performance.

Study materials meant for private circulation are prepared by Department and students are encouraged to take photocopies of the same.

Reference Books:

Bentley, Eric., ed. *The Theory of the Modern Stage: An Introduction to Modern Theatre and Drama*. N.P.: Penguin, 1968.

Boulton, Marjorie. *The Anatomy of Drama.*New Delhi: Kalyani, 1985.

Holt, Michael. *Stage Design and Property*.Oxfored: Phaidon, 1968.

Richmond, FarelyP.,et.al. *Indian Theatre: Tradtions of Perfomance.* New Delhi: Motilal Banarasidass,1933.

Sethuraman, V.S.*Indian Aesthetics: An Introduction*. Chennai: Macmillian, 2005.

Thailambal, P.A. *Study of Indian Theatre.*Udumalpet: Ennes Publications, 2010.

Course Code	Course Title	C	H	I	E	T
17U4NSM4	**NATURE OF TRANSLATION: CONCEPTS AND THEORIES**	2	2	25	75	100

Objective: To provide an overview of translation studies as an academic discipline.

Outcome: Students will be able to establish lexical, grammatical and stylistic correspondence in diverse languages.

UNIT -1: **6 hrs**

What is Translation? - A Layman's Approach – Reason for translating – Types of Translation – Is Translation a Science or an Art?

UNIT -2: **6 hrs**

Translation in ancient times – Translation in the third Millenium B.C to Twentieth Century – Need for Translation in India – Translation During the British Regime in India to Post-Independence Era.

UNIT – 3: **6 hrs**

Kinds of Translation – Translation Procedure - Equivalence.

UNIT -4: **6 hrs**

Machine Translation – Translation of the Bible.

UNIT -5: **6 hrs**

Translating Prose text – Translation of Poems – Evaluating a translation

Study Materials meant for private circulation are prepared by the Department and Students are encouraged to take photocopies of the same.

Reference Books:

Bev.Roger.T – *Translation and Translating: Theory and Practice*. London; Longman, 1991.

Catford J.C. *A LinguisticTheory of Translation*. Oxford: Oxford University Press,1965.

Frenz, Horsst. "The Art of Translation".*Comparative Literature: Method and Prespectives*. Ed.Stalknechtand Frenz. Carbondale and Edwardswille.Southern Illinnois University Press, 1971.

Nida, Eugene. *Towards A Science of Translating.* Leiden; E.J.Brill, 1964.

Course Code	Course Title	C	H	I	E	T
17U4NNM2	**Soft Skills**	2	2	25	75	100

Objective: To enable learners to develop soft skills required for their future professions.

Outcome: Students will be able to improve the social, work –life skills, as well as their personal and emotional well being.

Unit 1: Attitude **6 hrs**

Factors influencing Attitude - Positive & Negative Mental Attitude - PMA can do everything

Unit 2: Goal Setting **6 hrs**

To set SMART goals -Theory of Motivation- Motivation, Goals & Achievement -Skills to achieve goals

Unit 3: Leadership **6 hrs**

The power of Leadership - Leadership Styles - Ethics & Values

Unit 4: Time Management **6 hrs**

Value of Time, Planning, Scheduling - The Priority Matrix - Techniques of Time Management

Unit 5: Empathy **6 hrs**

Importance of Empathy - Types of Empathy - Ways to strengthen Empathy

Study materials meant for private circulation are prepared by the department and students are encouraged to take photocopies of the same

Reference Books:

Biswas, Dipali. Enhancing Soft Skills. 1st Edition. New Delhi: Shroff Publishers & Distributors Pvt. Ltd., 2005.

Ramesh, Gopalaswamy, and Mahadevan Ramesh. The Ace of Soft Skills-Attitude, Communication and Etiqutte for Success. Noida: Pearson Education, 2013.

Rao, Ravikanth K, and Dinakar P. Life Skills Education. 1st Edition. Hyderabad: Neelkamal Publishers, 2016.

Course Code	Course Title	C	H	I	E	T
17U4NNM2	**Soft Skills**	2	2	25	75	100

Model Question Paper for the Summative Examination

Duration: 3 hrs Maximum: 75 marks

Part A

Choose the right answer: (10x1=10)

1. One who gets pleasure from hurting other people is a/an

a) Atheist b) Sadist c) Optimist d) Feminist e) None of the above

2. _____ is putting yourself in another person's situation.

a) Empathy b) Sympathy c) Apathy d) Panty e) Kindness

3. Our dress code is an example of _____communication.

a) Verbal b) nonverbal c) written d) spoken e) None of the above

4. What is an action plan?

a) A system to beat the odds

b) A good credit rating

c) A dream

d) A set of steps to be followed to reach a goal

e) All of the above

5. Integrity is essential in all functions, but it is most crucial in

a) Leadership b) Management c) Supervision d) Compliance e) Direction

6. The whole concept of achieving success begins with how you

a) behave b)think c) work d) job e) all of the above

7. Attitude can impact

a) Overall performance b) public life c) spiritual life d) professional life e) both (b) & (c)

8. A person who tends to see the worst aspect of things/believe that the worst will happen is a/an

a) Optimist b) Atheist c) Pessimist d) feminist e) both (b) and (d)

9. One who does not express himself freely is a/an

a) Introvert b) Extrovert c) Achiever d) Taskmaster e) None of the Above

10. A person who is well aware of his traits, feelings and behaviout--------

a) Danger to society b) cannot be successful c) can be an effective communicator d) is arrogant and selfish e) None of the above

Part-B

Answer any FIVE of the following: (5x7=35)

1.a. Define attitude. Explain the three components of attitude.

or

b. Write a short note on smart goals.

2. a. What is time management? Mention the benefits of time management.

or

b. What is motivational skill? Why is it important?

3. a. What is the difference between sympathy and empathy? Illustrate with examples.

or

b. What are the qualities of a good leader?

4. a. What is goal-setting? Mention some effective goal-setting principles.

or

b. Attitude is a desirable attribute in any person. Elaborate.

5. a. Explain the different leadership styles.

or

b. What do you think of Film stars entering politics? Is there a future for them in politics.

Part-C

Answer any THREE of the following: (10x3=30)

1. To succeed in life is important to convert our negative thoughts and emotions into opportunities for learning & growth. Illustrate with examples.

2. The ability to emphathise with others is a necessary soft skill for creating a harmonious and enabling social environment. Comment.

3. What according to you are the important values that one needs to demonstrate as a leader? Explain with examples.

4. What are the essential time management skills that will help you grow as an individual?

5. Why do you procrastinate? Suggest ways to overcome procrastination?

Department of Economics

M.A. ECONOMICS SYLLABUS – UNDER CBCS PATTERN

Students to be admitted from the Academic Year 2018-19 Onwards

Sl. No.	Semester and Course Title	Course Code	Hours per Week	Credit	Page Number
	Semester – I				
1.	Advanced Micro Economics – I (C)	18P1VMC1	6	4	
2.	Foreign Trade (C)	18P1VMC2	6	4	
3.	Mathematical Methods in Economics (C)	18P1VMC3	6	4	
4.	Macro Economics – I (C)	18P1VMC4	6	4	
5.	Environomics (C)	18P1VMC5	6	4 (20)	
	Semester – II				
6.	Advanced Micro Economics - II (C)	18P2VMC6	6	4	
7.	Macro Economics - II (C)	18P2VMC7	6	4	
8.	Statistical Methods (C)	18P2VMC8	6	4	
9.	Agricultural Economics (C)	18P2VMC9	6	4	
10.	Monetary Economics (C)	18P2VMC10	6	4 (20)	
	Semester – III				
11.	Development Economics (C)		5	4	
12.	Fiscal Economics (C)		5	4	
13.	Computer Applications in Economics (C)		5	4	
14.	Managerial Economics (C))		5	4	
15.	Human Resource Development (ME)		6	5	
16.	Indian Economic Development (NME)		4	4 (25)	
	Semester – IV				
17.	Indian Economy (C)		6	5	
18.	Health Economics (C)		6	5	
19.	Research Methodology (C)		6	5	
20.	Entrepreneurship Development (ME)		6	5	
21.	Demography (ME)		6	5 (25)	
Total			**120**	**90**	

Examination	Hours	Marks (Maximum)
Internal	2	25
External	3	75
Total	-	**100**

C.I.A. AND END SEMESTER EXAMINATION PATTERN FOR M.A.ECONOMICS

I – Components of C.I.A. for M.A. Economics – Maximum 25 Marks

i) Test - 20 Marks

ii) Seminar - 5 Marks

Total - **25 Marks**

C.I.A. Test – Maximum 20 Marks

Part – A (5 X 1 = 5 Marks)

- Answer all objective type – multiple choice questions (5 questions)

Part – B (3 X 3 = 9 Marks)

- Answer all questions either A (or) B from each question (Paragraph type)

Part – C (1 X 6 = 6 Marks)

- Answer any 1 question out of 2 (Essay Type)

II – End Semester Components for M.A. Economics

Part – A (10 X 1 = 10 Marks)

- Answer all objective type –multiple choice questions (10 questions)
- 2 Questions from each unit

Part – B (5 X 7 = 35 Marks)

- Answer all questions either A (or) B from each question
- 2 Questions from each unit

Part – C (3 X 10 = 30 Marks)

- Answer any 3 questions out of 5 questions (Essay Type)
- 1 question from each unit

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Blue Print for Semester Question Paper Setting for M.A. Economics

Section	Unit – I	Unit – II	Unit – III	Unit – IV	Unit – V	Total Questions
Part – A (Objective Type – Multiple choice Questions)	2	2	2	2	2	10
Part – B (Either A or B Type)	2	2	2	2	2	10
Part – C (Open Choice Essay Type)	1	1	1	1	1	5

Time: 3 Hours **Maximum Marks: 75**

Part – A (10 X 1 = 10 Marks)

- Answer all objective type – multiple choice questions (10 questions)
- Question Number starts from 1 to 10

Part – B (5 X 7 = 35 Marks)

- Answer all questions either A (or) B from each question
- Question Number starts from 11 (a) or 11 (b) to 15 (a) or 15 (b)

Part – C (3 X 10 = 30 Marks)

- Answer any 3 questions out of 5 questions (Essay Type)
- Question Number starts from 16 to 20.

THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : M.A. ECONOMICS	**SUB. CODE :18P1VMC1**
TITLE : Advanced Micro Economics - I	**QN.NO :**
TIME : 3Hrs	**Max. Marks : 75**

Objectives

1. To understand and apply demand theory into the practical world
2. To obtain knowledge and skill about different production laws and technique
3. To have an idea about Price-Output determination under different market situations

Learning Outcome

Develops the skill to determine the level of consumption, homogeneity of production function and pricing of output

Unit – I Cardinal and Ordinal Utility Analysis

Meaning of cardinal and ordinal utility – Law of diminishing marginal utility – Principle of Equi-marginal utility – Indifference curve analysis: Price effect, Income effect, Substitution effect, Combined effect by Hicks and Slutsky – Revealed preference theory of demand – Hicks logical ordering theory of demand – Neuman-Morgenstern method of constructing utility index.

Unit – II Consumer's Surplus and Elasticity of Demand

Consumer's surplus and the law of diminishing marginal utility – Hicks concept of consumer's surplus- Practical utility of consumer's surplus – Law of demand and elasticity of demand – Types - Measurement - Factors– Relationship among price, income and cross elasticity of demand.

Unit – III Production Function Analysis

Meaning of production function - The law of variable proportions - The law of returns to scale – Iso-cost curves - Iso-quants Vs Indifference curves – Producer's equilibrium (least cost combination) – Isoquants and returns to scale - Linear homogeneous production function – Cobb-Douglas production function – CES production function and their properties.

Unit – IV Cost, Revenue Analysis and Perfect Competition

Cost concepts: TFC, TVC, TC, AFC, AVC, AC and MC – Cost curves in the short run and long run – Revenue concepts: TR, AR and MR – Significant relationship between AR and MR curve – Revenue curves under perfect and imperfect competition – Price and output under perfect market both in the short run and long run for the firm and industry.

Unit – V Pricing in Imperfect Market

Price and output equilibrium under monopoly: short run and long run – Price discrimination: Degrees of price discrimination – Price-output equilibrium under monopolistic competition (firm), Chamberlin's excess capacity under monopolistic competition – Duopoly: Cournot model, Chamberlin model and Edgeworth model – Oligopoly: Price leadership by low cost and dominant firm, Collusive oligopoly with cartel and Kinked demand curve theory.

Text Books

1. H.L.Ahuja, "**Advanced Micro Economic Theory**", 2006, S.Chand & Company Ltd., New Delhi.
2. M.Maria John Kennedy , "**Advanced Micro Economic Theory**", 2012, Himalaya Publishing House, Mumbai.
3. K.K.Dewett and M.H.Navalur, "**Modern Economic Theory**", 2015, S.Chand & Company Ltd., New Delhi.

References

1. Jack Hirschleifer, "**Price Theory and Applications**", 1980, Prentice Hall of India, New Delhi.
2. A.Koutsoyiannis, "**Modern Micro Economics**", 1979 & 1983, Mac Millan, London.
3. Jhingan M.L. "**Advanced Economic Theory**", 2016, Vrindha Publications Pvt. Ltd. Delhi.
4. J.Cyril Kanmony, **"Advanced Micro Economics"**, 2016, Himalaya Publishing House, Mumbai.

Websites / e-books

1. David A.Dilts, "**Introduction to Micro Economics**", http://www.ebooks-for-all.com/bookmarks/detail/Introduction-to-Microeconomics/onecat/Electronic-books+Economics-and-Business+Microeconomics
2. Sanjay Rode, "**Modern Micro Economics**", http://bookboon.com/en/modern-microeconomics-ebook.

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THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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CLASS : M.A. ECONOMICS	**SUB. CODE :18P1VMC2**
TITLE : Foreign Trade	**QN.NO :**
TIME : 3Hrs	**Max. Marks : 75**

Objectives

1. To impart knowledge on theoretical basis of international trade
2. To provide an understanding of trade barriers and balance of payment
3. To appreciate the relevance of international monetary system and institutions

Learning Outcome

Students can understand the basic knowledge theories on Foreign Trade

Unit I Theories of International Trade

Classical theories- Absolute Advantage model of Adam Smith-Comparative Advantage model of David Ricardo-Offer curve Analysis- Modern theories of International Trade-Haberler's Theory of opportunity cost- Hecksher-Ohlin theorem – Stolpher Samulelson theorem – Rybezynski theorem - Some New Theories- Kenen's Theory of Human Capital-Emmanuels's theory of Unequal Exchange.

Unit II Terms of Trade and Balance of payment

Terms of Trade- types- Factors affecting Terms of Trade-Terms of Trade and Economic development. Free Trade versus Protection-Balance of payments-disequilibrium in Balance of Payments –causes – measures to correct disequilibrium in BOP - Foreign Trade Multiplier.

Unit III International Trade Policy

Instruments of Trade policy-Tariff-Classification of Tariff- impact of Tariff-Effects of Tariff- Quota-quantitative restrictions- Types- effects of quota –Dumping objectives-Anti dumping measures-Social responsibility in International Trade – Business ethics – social issues-Environmental issues –Labour issues –positive and negative sides.

Unit 1V Exchange rate and Exchange Control

Foreign Exchange- Functions of Foreign Exchange Market-Methods affecting international payments – transactions in the Foreign Exchange Market. Exchange rate – types Determination of Exchange Rates –Theories of exchange – Purchasing Power Parity Theory-mint Parity Theory- Exchange control Methods of Exchange control.

Unit V International Economic Institutions

Economic Institutions The Bretton woods System- IMF - IBRD -ASEAN- EEC-SAARC –GATT-UNCTAD-G8-G20- WTO-objectives and functions TRIMS and TRIPS-New Economic Policy-Globalisation and its Impact on India-BRICS origin- New Development Bank-aims and functions

Text Books

1. M.L.Jhingan, "**International Economics**", 2010, Vrinda Publications (P) Ltd, New Delhi.
2. Fransis Cherunilam, "**International Economics**", 2010, Tata Mc Graw Hill Education Private Limited New Delhi.

References

1. Paul R.Krugman, "**International Economics Theory and Policy**", 2009, Darling Kindershey India Pvt Ltd, New Delhi.
2. K.R.Gupta, **"International Economics",** 2009, Atlantic Publisher, New Delhi.

Website

Dominick Salvatore, "**International Economics**",
www.ebook777.com/international-economics-11th-edition

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(Affiliated to Madurai Kamaraj University)
Reaccredited (3rd Cycle) with "A" Grade by NAAC

CLASS : M.A. ECONOMICS **SUB. CODE :18P1VMC3**

TITLE : Mathematical Methods in Economics **QN.NO :**

TIME : 3Hrs **Max. Marks : 75**

Objectives

1. To strengthen the quantitative background of the learner.
2. To understand the derivatives, partial derivatives, integration and Matrices
3. To apply the Mathematical methods in Economic analysis.
4. To gain knowledge about the operations research

Learning Outcome

Depth knowledge in differentiation, integration and its applications in economics

Unit - I Simple and Partial Differentiation

Meaning – Basic Rules of Simple Differentiation (Addition, Subtraction,Product, Quotient, Exponential &Logarithmic) – Marginal concepts(MU,MC &MR) – Elasticity of Demand – Determination of Equilibrium level of price and output – Utility Maximization – Profit Maximization – Cost Minimization – Partial Differentiation – Basic Rules – second order differentiation.

Unit - II Integration

Meaning – Basic Rules (Addition, Subtraction, Product, Quotient, Exponential & Logarithmic) – Definite Integrals and Indefinite Integrals - Applications in Economics and Business Cost and Revenue functions (TC,AC,MC,TR, AR &MR)– Consumer's Surplus – Producer's Surplus.

Unit - III Matrices

Meaning – Types – Inverse of a square matrix – Cramer's Rule – Input - output analysis - meaning - Assumptions – Uses – Limitations – solving Leontief Input-output system (Two Industries Model) - Simon-Hawkins conditions.

UNIT - IV Assignment Problems and Theory of Games

Meaning – Hungarian Method – Balanced Assignment – Unbalanced Assignment – Maximisation Assignment problem – Two-Person-Zero Sum Game – Pure and Mixed Strategies – Saddle Point solution – Graphical Method (2xm games-mx2 games).

UNIT - V Linear Programming

Meaning – Assumptions – uses - General formulation of LPP – Graphical Method – Simplex Method (using slack variables only).

Text Books

1. Chiang, A.C., "**Fundamental Methods in Mathematical Economics**", 1984, McGraw Hill, New Delhi.
2. Bose D., "**An Introduction to Mathematical Economics**", 2013, Himalaya Publishing House, Mumbai.

References

1. Mehta and Madani, "**Mathematics for Economists**", 2009, Sultan Chand & Sons, New Delhi.

2. Allen, R.G.D., , "**Mathematical Analysis for Economics**", 1973, AITBS Publishers, New Delhi.

3. G.S Monga, "**Mathematics and Statistics for Economics**", 2003, Vikas Publishing House Pvt. Ltd., Noida.

4. Kalavathy, S., "**Operations Research**", 2013, Vikas Publishing House Pvt. Ltd., Noida.

Website

1. Michael Klein, "**Mathematical Methods for Economics**", www.amazon.in/Mathematical-Methods-Economics-Addison-Wesley/dp/0201726262

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THE MADURA COLLEGE (AUTONOMOUS). MADURAI -11
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Reaccredited (3rd Cycle) with "A" Grade by NAAC

CLASS : M.A. ECONOMICS	**SUB. CODE :18P1VMC4**
TITLE : Macro Economics - I	**QN.NO :**
TIME : 3Hrs	**Max. Marks : 75**

Objectives

1. To understand the classical, Keynesian and post Keynesian theories
2. To have an insight into the development of the modern macro economics

Learning Outcome

Demonstrate a good understanding of macroeconomic principles, concepts and theories

Unit – I Introduction to Macro Economics

Macro Economic Issues- Growth related issues-. The issue of Business cycle-The issue of Inflation – Issue of Unemployment and Poverty – The issue of budgetary deficit – The International Economic Issue – Concepts used in Macro Analysis: Stock and flow variables Macro Economic Model Building – The Circular Flows in a Two Sector, Three sector and Four sector – Graphic Presentation.

Unit – II Classical Theory of Employment

Classical Theory of Employment – Say's Law of Market – Keynesian Theory of Income and Employment, Principles of effective demand - Determinants of aggregate demand function – aggregate supply function.

Unit – III Consumption Function

Meaning of consumption Function – Significance of APC and MPC – Keynes's Psychological Law of consumption function – Absolute Income Hypothesis – Relative Income Hypothesis – Permanent Income Hypothesis -= Life Cycle Hypothesis.

Unit – IV Investment Function

Types of Investment – Autonomous and Induced Investment – Working of Investment Multiplier – concept of employment multiplier, Tax Multiplier, Foreign trade multiplier – Principle of Acceleration and Super Multiplier.

Unit - V General Equilibrium and Macro Economic Policy

General Equilibrium of product and money market (IS – LM Function) – product market equilibrium – money market equilibrium – General equilibrium of product of

money market – shifts IS-LM functions – effectiveness of monetary and fiscal policies – weakness of IS-LM model – Efficacy of fiscal policy.(Keynesian Range, Classical Range, Intermediate Range) –Goals of Macro Economic Policy.

Text Books

1. D.N. Dwivedi, "**MacroEconomics",** 2010, Tata Mc Graw Hill Education Private Limited, New Delhi.

2. M.L. Jhingan, "**Macro Economic Theory**", 2010, Vrinda Publications (P) LTD. New Delhi.

References

1. Neva Goodwin, Julie A. Nelson and Jonathan Harris, "**Macro Economics in Context"** 2009, PHI Learning private Limited. New Delhi.

2. Debes Mukherjee, "**Macro Economics"** 2009, New Central Book Agency (P) Ltd, West Bengal.

3. Dr. H.L.Ahuja, "**Macro Economics Theory and Policy**", 2010, S. Chand &Company Ltd, New Delhi.

4. M.Maria John Kennedy, **"Macro Economics Theory"** 2011, PHI Learning private Limited. New Delhi.

5. M.C.Vaish, **"Macro Economics Theory"** 2010, Vikas Publishing House Pvt Ltd, New Delhi.

6. G.S. Gupta, "**Macro Economics Theory and Applications**" 2002, Tata Mc Graw Hill Education Private Limited, New Delhi.

Website

1. Evgeniy Chernyshov, et al, "**Macro Economics**", www.e-booksdirectory.com/details.php?ebook=8471

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CLASS : M.A. ECONOMICS	**SUB. CODE :18P1VMC5**
TITLE : Environomics - I	**QN.NO :**
TIME : 3Hrs	**Max. Marks : 75**

Objectives

1. To understand the Inter linkages of Environment and Economics.
2. To study the implications of welfare Economics in environmental concept
3. To make an awareness in the conservation of Economic resources
4. To analyze the ways and means to protect the environmental quality
5. To evaluate the Environmental Policies of India

Learning Outcome

Integrate knowledge to understand the environomics

Unit – I Introduction to Environmental Economics

Definitions of Environmental Economics – Economics and Environment – Transformation Curve – Environment and Economic Systems – Subject Matter of Environmental Economics –Scope and Significance of Environmental Economics - Integration of Conservation and Development – Global Environmental Problems.

Unit – II Natural Resources and Environmental Quality

Role of Natural Resources in Economic Development - Land Resources of India – Forest Resources of India - Forest and Environmental Quality- Benevolent Role of the Forest – Deforestation - Effects of Deforestation - Deforestation in India – Measures to overcome deforestation - Water Resources – Mineral Resources.

Unit – III Pollution Control

Pollution Control and Environmental Protection – Pollution as an Economic Problem – Basic Approach to the Problem of Pollution Control – Moral Suasion – Direct Control – Regulation – Prohibition - - Fiscal Techniques – Effluent or residual Charges - Subsidies – Pollution permits - Refundable Deposits.

Unit – IV Economics of Recycling and Waste Management

Economics of Recycling – Market for Recyclable Products – Solid Wastes – Sources of Solid Wastes – Industrial wastes – Nuclear wastes – The Problem of Waste Management in Developing Countries – World Summit on Sustainable Development – Sustainable Management of Wastes – Waste Management Hierarchy – Solid Wastes in India.

Unit - V Environmental Management and Environmental Policy

Environmental Hazards and Disaster Management – Environmental Management – Principles of Environmental Management – Environmental Impact Assessment System - Environmental Education in India – Environmental Laws in India – The Water Act 1974 – Air Act 1981 – The Environment Act 1986 – The Forest Conservation Act - National Environmental Policy 2006 – National Green Tribunal Act 2010.

Text Books

1. S. Sankaran, "**Environmental Economics**", 2014, Margham Publications, Chennai.
2. Nick Hanely, Jason F. Shogren and Ben White, "**Environmental Economics in Theory and Practice**", 2009,Macmillan India Limited , New Delhi.
3. Metha, Mundle and U. Sankar "Controlling Pollution: Incentives and Regulation",
   2008, Sage Publications, New Delhi.

References

1. M.L. Jhingan, Chander K. Sharma, "**Environmental Economics –Theory, Management and Policy**", 2015 Vrinda Publications (P) Ltd, New Delhi.
2. T. Eugine "**Environmental Economics**", 2010, Vrinda Publishers, New Delhi.

Website

1. www.envfor.nic.in

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Department	ECONOMICS	Class	I -M.A.		Semester	II
Course Title	Advanced Micro Economics - II	Hours	Credit	CIA	External	Total
Course Code	18P2VMC6	90	4	25	75	100

Objectives

1. To know about various alternative theories of firm
2. To know the different welfare economic criteria of social welfare.
3. To understand about the basic knowledge of Welfare Economics

Learning Outcome

Student gets equipped with the knowledge and skill in effective decision making under uncertain market situations.

Unit - I Alternatives Theories of The Firm (18hours)

Full Cost Pricing Principle (Andrew's Version) – Bain's Limit pricing theory – Sylos-Labini's Model — The Behavioural Model of Cyert and March-Baumol's theory of Contestable markets.

Unit - II Individual choice under Risk and Uncertainty (18hours)

St. Petersburg Paradox – Utility theory and Attitude towards risk – The Friedman Savage Hypothesis – The Markowitz Hypothesis.

Unit - III Managerial theories of the firm (18hours)

Baumol's Sales Maximization model (Price and output determination without advertisement and with advertisement) - Marris's Managerial theory of the firm- Williamson's Managerial theory of the firm.

Unit - IV Market Failure and Externalities (18hours)

Meaning of Market Failure- Causes of market failure-Externalities: Positive and negative externalities in production and consumption- External Economies (Positive Externalities) – External Diseconomies (Negative Externalities) – Externalities in Consumption – Externalities and Pareto Optimality – Free-Rider's Problem.

Unit - V Welfare Economics and Asymmetric information **(18hours)**

Pareto Optimality conditions-Bergson-Samuelson Social Welfare function-Point of constrained bliss- Kaldor-Hicks Compensation Principle-Arrow's Impossibility Theorem-Theory of Second Best-Meaning of Asymmetric information-Problems of Asymmetric information: The market for lemons-Moral Hazard-Market signalling (concepts only).

Text Books

1. Ahuja H.L., "**Advanced Economic Theory**", 2014, S. Chand & Company Ltd., New Delhi.
2. M. John Kennedy, "**Advanced Micro Economic Theory**", 2012, Himalaya Publishing House, Mumbai.

References

1. A. Koutsoyiannis, **"Modern Micro Economics**", 1979, Macmillan Press, London.
2. H.A.J.Green, "**Consumer Theory**", 1976, Mac Milan, London.
3. Jhingan M.L. "**Advanced Economic Theory**", 2016, Vrindha Publications Pvt. Ltd. Delhi.
4. J.Cyril Kanmony, **"Advanced Micro Economics"**, 2016, Himalaya Publishing House, Mumbai.

Websites / e-books

1. David A.Dilts, "**Introduction to Micro Economics**", http://www.ebooks-for-all.com/bookmarks/detail/Introduction-to-Microeconomics/onecat/Electronic-books+Economics-and-Business+Microeconomics
2. Sanjay Rode, "**Modern Micro Economics**", http://bookboon.com/en/modern-microeconomics-ebook

Department	Economics	Class	I M.A		Semester	II
Course Title	Macro Economics-II	Hours	Credit	CIA	External	Total
Course Code	18P2VMC7	90	4	25	75	100

Objectives

1. To understand the theories of trade cycle and new classical macro economics
2. To study the rational expectations, supply side economics and macro theories of distribution.

Learning Outcome

Demonstrate an understanding of the macroeconomic implications of decisions.

Unit – I : Theories of Trade Cycle **(18 hours)**

Hicks Theory of Trade Cycle – Samuelson's Trade Cycle Model – Kaldor's Model of Trade Cycle-explanation-criticisms.

Unit – II: New Classical Macro Economics **(18 hours)**

Introduction – The New Classical Critique of Keynesian Micro Foundations- Review of the Keynesian Position – The Foundation of New Classical Macroeconomics – The New Classical Policy Implications –Criticisms New Classical Macroeconomics.

Unit – III: Rational Expectations **(18 hours)**

Introduction – Adaptive Expectation –Ineffective Policies – Criticisms of Rational Expectations – Importance – Real Business Cycle Theory- Disturbances – Propagation Mechanism - Criticism.

Unit – IV: Supply Side Economics **(18 hours)**

Supply Side Economics - Introduction- Meaning – Classification- Implications of Supply Side – Criticisms – Lucas Theorem - Demand side Vs Supply Side.

Unit – V: Macro Theories of Distributions **(18 hours)**

Introduction- The Ricardian or Classical Theory of Income Distribution- The Marxian Theory of Income Distribution –Kalecki's Model of Distribution – Kaldor's Model of Income Distribution – Pasinetti Model of Income Distribution.

Text Books

1. D.N. Dwivedi, "**MacroEconomics",** 2010, Tata Mc Graw Hill Education Private Limited, New Delhi.
2. M.L. Jhingan, "**Macro Economic Theory**", 2010, Vrinda Publications (P) LTD. New Delhi.

References

1. Neva Goodwin, Julie A. Nelson and Jonathan Harris, "**Macro Economics in Context"** 2009, PHI Learning private Limited. New Delhi.
2. K.C.Rana and K.N.Verma, "**Macro Economic Analysis"** 2009, Vishal Publishing House, New Delhi.
3. Dr. H.L.Ahuja, "**Macro Economics Theory and Policy**", 2010, S. Chand &Company Ltd, New Delhi.
4. M.Maria John Kennedy, **"Macro Economics Theory"** 2011, PHI Learning private Limited. New Delhi.
5. M.C.Vaish, **"Macro Economics Theory"** 2010, Vikas Publishing House Pvt Ltd, New Delhi.
6. R.D.. Gupta, "**Keynesian and Post-Keynesian Economics**" 1977, Kalayani Publisher, New Delhi.

Website

1. Evgeniy Chernyshov, et al, "**Macro Economics**", www.e-booksdirectory.com/details.php?ebook=8471

Department	Economics	Class	I – M.A.		Semester	II
Course Title	Statistical Methods	Hours	Credit	CIA	External	Total
Course Code	18P2VMC8	90	4	25	75	100

Objectives

1. To understand the describe and inferential statistics
2. To Know the various statistical tools in Economics
3. To facilitate a research bent of mind in statistical tools
4. To inculcate the practice of applying various statistical tools

Learning Outcome

Obtained knowledge on statistical methods and its applications in economics

Unit – I Correlation Analysis **(18 hours)**

Significance – Correlation and causation Types – Method of Least Squares - Interpreting the correlation coefficient – Correlation of time series – Partial correlation: Meaning, Partial correlation coefficients, characteristics, uses, significances and partial correlation coefficient estimation (3 variables).

Unit – II Regression Analysis **(18 hours)**

Meaning – Significance – Uses – Difference between correlation and regression – Regression line of X on Y and Y on X: Algebraic method – Regression equations of X on Y and Y on X: Arithmetic mean method and Assumed mean method – Regression coefficients – Standard Error Estimation – Co-efficient determination.

Unit – III Theoretical Distributions **(18 hours)**

Theoretical distribution: Meaning and utility - Binomial distribution: Meaning, properties and simple problems – Poisson distribution: Meaning, properties and simple problems – Normal distribution: Meaning, properties, importance of normal curve and simple problems.

Unit – IV Testing of Hypothesis – Parametric Test **(18 hours)**

Hypothesis testing and estimation – Sampling distribution – Standard error – Procedure of hypothesis testing - Type I and Type II error – One tailed and Two tailed tests – Z-test (Large Sample): Assumptions, test for specified population mean and test for two means – t- test (Small sample): Assumptions, test for specified mean, test for two means, paired comparison test and co-efficient of correlation test – F-test (Small sample): Properties, test for equality of two variances.

Unit – V Testing of Hypothesis – Non-Parametric Test **(18 hours)**

Definition - Characteristics – Properties – Important applications – Cautions applying chi-square test - Test for goodness of fit, test of independence of attributes and test for a specified population variance.

Text Books

1. S.P.Gupta and M.P.Gupta, "**Business Statistics**", 2012, Sultan Chand & Sons, New Delhi.

2. R.S.N.Pillai and Bagavathi, "**Statistics – Theory and Practice**", 2010, S.Chand & Company, New Delhi.

3. D.Kathambarajan, "**Economic and Business Statistics**", 2011, Himalaya Publishing House, Mumbai.

References

1. S.P.Gupta, "**Statistical Methods**", 2014, Sultan Chand and Sons, New Delhi.

2. S.C.Gupta and V.K.Kapoor, "**Fundamentals of Applied Statistics**", 2003, Sultan Chand and Sons, New Delhi.

3. D.N.Elhance, **"Fundamentals of Statistics"**, 1964, Kitab Mahal Wholesale Division, New Delhi.

Websites / e-books

1. Darius Singpurwalla, "**A Handbook of Statistics – An Overview of Statistical Methods**", http://bookboon.com/en/a-handbook-of-statistics-ebook
2. Mohamed A.Shayiup, "**Applied Statistics**", http://bookboon.com/en/applied-statistics-ebook

Department	ECONOMICS	Class	I-M.A.		Semester	II
Course Title	Agricultural Economics	Hours	Credit	CIA	External	Total
Course Code	18P2VMC9	90	4	25	75	100

Objectives

1. To know the various issues in Indian agriculture
2. To make the students to understand the concepts in Agricultural Economics

Learning Outcome

Gained depth knowledge on agricultural economics

Unit – I Introduction to Agricultural Economics (18 Hours)

Definition of Agricultural Economics – Nature and Scope of Agricultural Economics- Interdependence of Agriculture and Industry – Role of Agriculture in Indian Economy – Share of Agriculture in National Income and Employment - Agricultural Problems in India - Present Position of Indian Agriculture – New Thrust areas in Indian Agriculture.

Unit – II Cropping Pattern (18 Hours)

Major Crops in India – Food Crops – Commercial crops – Cropping Pattern in India – Factors Influencing Cropping Pattern - Crop Rotation – Shifting and Jhumming Cultivation – Mixed Farming – Subsistence Agriculture; Commercial agriculture and Sustainable Agriculture – Objectives of Modern agriculture – Critical Appraisal of Green Revolution – Merits, Problems and Limitations – Irrigation – Types and defects.

Unit – III Agricultural Finance (18 Hours)

Need for Agricultural Finance – Types of Credit – Sources of Credit – Money Lenders – Co-operative Credit Societies – Commercial Banks –State Bank of India – Reserve Bank of India – Regional Rural Banks –National Bank For Agriculture and Rural Development (NABARD): Functions – Agricultural Finance Corporation – Micro Finance with special reference to Gram Bank and SHGs.

Unit – IV Agricultural Marketing and Agricultural Policies **(18 Hours)**

Agricultural Marketing – Problems of Agricultural Marketing – Suggestions to Improve Agricultural Marketing - Agricultural Price Policy - Instruments of Agricultural Price Policy - National Seed Policy – National Agricultural Policy – National Policy for Farmers.

Unit – V Agricultural Policy and New Initiatives **(18 Hours)**

The New Economic Policy and India Agriculture –Role of Multinationals in Indian agriculture – Nanotechnology and Agriculture – National Mission For Sustainable Agriculture (NMSA) - Rainfed Area Development Programme (RADP) – National Watershed Development Project for Rainfed Areas (NWDPRA) – National Agriculture Market Scheme – Agricultural Policy Vision 2020.

Text Book

1. R. N. Soni, "**Leading Issues in Agricultural Economics**", 2011, Vishal Publications, Jalandhar.

References

1. S. Subba Reddy.et.al., "**Agricultural Economics**", 2005, Oxford and IBH Publishing Co, NewDelhi.
2. S. Sankaran, **Indian Economy**" 2018, Margham Publications, Chennai – 17.
3. Amarjit Singh, A.N.Sadhu and Jasbir Singh, "**Fundamentals of Agricultural Economics"**, 2013, Himalaya Publishing House, Mumbai.
4. RuddarDutt and K.P.M. Sundharam, **Indian Economy**, 2016, S. Chand & Company Ltd, New Delhi.

Website

1. www.agriculture.gov.in

2. www.agricoop.gov.in

Department	Economics	Class	I – M.A.		Semester	II
Course Title	Monetary Economics	Hours	Credit	CIA	External	Total
Course Code	18P2VMC10	90	4	25	75	100

Objectives

1. To understand the basic concepts of money supply and macro economics policies
2. To have an insight into the classical and Keynesian and post Keynesian theories and the development of monetarism.

Learning Outcome

Acquired knowledge on various theories of money and monetary policies

Unit I – Introduction to Money and Banking **(18 hours)**

Meaning and Types of Monetary Standards; The Gold Standard; Bimetallism; Gresham's law; Paper Currency Standard; Standard Systems of Note Issue- Commercial Banks: Meaning – Function- Role - The Balance Sheet of a Commercial Bank - Central banking: Functions and Credit Control.

Unit II – Value of Money and Quantity Theory of Money **(18 hours)**

Meaning of value of Money – Fisher's Quantity Theory of Money - The Cash Transactions Approach; The Cambridge Equation – the Cash Balances Approach- Transactions Approach vs cash Balances Approach. Income and Expenditure Theory: Introduction – Income-Expenditure Approach; Saving- Investment Approach –The Keynesian Theory: Introduction - Keynes' reformulated Quantity Theory of Money – Superiority of the Keynesian Theory over the Traditional Quantity Theory of Money – Criticism of Keynes theory of Money and Prices.

Unit III – Restatement of Quantity Theory of Money **(18 hours)**

Friedman's restatement of the Quantity Theory of Money: Introduction - Friedman's Theory – Friedman Vs Keynes – Patinkin's General equilibrium Model – James Tobin's Risk Aversion theory

Unit IV – The Supply of Money and Demand for Money **(18 hours)**

Definition of Money supply – Determination of Money Supply; High Powered Money and the Money Multiplier – Measures of Money Supply in India – Money supply and Liquidity - Derivation of Money Multipliers. The Demand of Money: Introduction - The Classical Approach – The Keynesian Approach – Liquidity Preference – The Post – Keynesian Approaches.

Unit V - Monetary Policy **(18 hours)**

Introduction- Meaning of Monetary Policy – Objectives, Targets, Instruments and Indicators – Time Lags in monetary Policy - Monetary Policy and Economic Development.

Text Books

1. M. L. Jhingan, **" Monetary Economics"**, 2010, Vrinda Publications (P) Ltd, NewDelhi.
2. M. C. Vaish. **" Monetary Economics"**, 2010, Vikas Publications (P) Ltd, NewDelhi.

References

1. Suraj B. Gupta, **" Monetary Economics Theory and Policy"**, 2009, S. Chand &Company Ltd, NewDelhi.
2. N. Kumar, R. Mittal, " Monetary Economics", 2002 Anmol Publications Pvt Ltd, NewDelhi.
3. M.L. Seth, **" Monetary Economics"**, 2016 Lakshmi Narain Agarwal, Newdehi

Website

Jagadish Handa, "**Monetary Economics**",
http://dl4a.org/uploads/pdf/Monetary%20Economics.pdf

B.A. ECONOMICS SYLLABUS – UNDER CBCS PATTERN

Students to be admitted from the academic year **2018-19** onwards

Sl. No.	Course Title	Course Code	Hours per Week	Credit	Page No.
	SEMESTER – I				
1.	Micro Economics – I (C)	18U1VMC1	5	4	
2.	Economics of Marketing (C)	18U1VMC2	4	3	
3.	Economic Statistics – I (A)	18U1VAC1	5	5	
4.	Elements of Communication (SBE)	18U1VSM1	2	2	
5.	Environmental Studies*	17U1EVS1	2	2 (16)	
	SEMESTER – II				
6.	Micro Economics – II (C)	18U2VMC3	5	4	
7.	Advertising and Sales Promotion (C)	18U2VMC4	4	3	
8.	Economic Statistics – II (A)	18U2VAC2	5	5	
9.	Economics of Insurance (SBE)	18U2VSM2	2	2	
10.	Value Education*	17U2VEN1	2	2 (16)	
	SEMESTER – III				
11.	Money and Banking (C)		4	3	
12.	Mathematical Methods – I (C)		5	4	
13.	Elementary Econometrics (SBE)		2	2	
14.	Elements of Economics (NME)		2	2	
15.	Financial Accounting (A)		5	5 (16)	
	SEMESTER – IV				
16.	International Economics (C)		4	3	
17.	Mathematical Methods – II (C)		5	4	
18.	Soft Skills (SBE)		2	2	
19.	Elements of Public Finance (NME)		2	2	
20.	Agricultural Economics (A)		5	5 (16)	
	SEMESTER – V				
21.	Macro Economics – I (C)		6	4	
22.	Economics of Development and Planning (C)		5	4	
23.	Labour Economics (C)		6	5	
24.	Environmental Economics (CE)		6	5	
25.	Fundamentals of Computer (CE)		5	4	
26.	Retail Marketing (SBE)		2	2	
	Extension Activity		-	1 (25)	
	SEMESTER – VI				
27.	Macro Economics – II (C)		6	5	
28.	Indian Economics (C)		6	6	
29.	Public Finance (C)		5	4	
30.	Economic Thinkers (CE)		5	4	
31.	Entrepreneurship Development (CE)		6	6	
32.	Human Resource Management (SBE)		2	2 (27)	
	TOTAL		**132**	**116**	

Credits

Major Subjects	:	116
Language Subjects	:	24
Total	:	140

Subjects	Internal		External	
	Time	**Marks**	**Time**	**Marks**
Core	2 hours	25	3 hours	75
Core Elective	2 hours	25	3 hours	75
Non Major Elective	2 hours	25	3 hours	75
Allied	2 hours	25	3 hours	75
Skill Based Elective	2 hours	25	3 hours	75
Environmental Studies	2 hours	25	2 hours	75
Value Education	2 hours	25	2 hours	75

C.I.A. AND END SEMESTER EXAMINATION COMPONENTS FOR B.A.ECONOMICS

(for CORE and CORE ELECTIVE Courses)

I – Components of C.I.A. for B.A. Economics – Maximum 25 Marks

i) Test	-	15 Marks
ii) Assignment	-	5 Marks
iii) Attendance	-	5
Total	-	**25 Marks**

C.I.A. Test – Maximum 20 Marks

Part – A (3 X 1 = 3 Marks)

- Answer all objective type – multiple choice questions (5 questions)

Part – B (3 X 2 = 6 Marks)

- Answer all questions either A (or) B from each question (Paragraph type)

Part – C (2 X 3 = 6 Marks)

- Answer any 2 question out of 3 (Essay Type)

II – End Semester Exam Components for B.A. Economics

Time : 3 Hours **Maximum Marks: 75**

Part – A (10 X 1 = 10 Marks)

- Answer All objective type – multiple choice questions (10 questions)
- 2 Questions from each unit

Part – B (5 X 7 = 35 Marks)

- Answer All questions either A (or) B from each question
- 2 Questions from each unit

Part – C (3 X 10 = 30 Marks)

- Answer Any 3 THREE out of 5 questions (Essay Type)
- 1 Question from each unit

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Blue Print for Semester Question Paper Setting for B.A. Economics

(for CORE and CORE ELECTIVE Courses)

Section	Unit – I	Unit – II	Unit – III	Unit – IV	Unit – V	Total Questions
Part – A (Objective Type - Multiple Choice Questions)	2	2	2	2	2	10
Part – B (Either A or B Type)	2	2	2	2	2	10
Part – C (Open Choice Essay Type)	1	1	1	1	1	5

Time: 3 Hours **Maximum Marks: 75**

Part – A (10 X 1 = 10 Marks)

- Answer All objective type – multiple choice questions (10 questions)
- Question Number starts from 1 to 10

Part – B (5 X 7 = 35 Marks)

- Answer All questions either A (or) B from each question
- Question Number starts from 11 (a) or 11 (b) to 15 (a) or 15 (b)

Part – C (3 X 10 = 30 Marks)

- Answer Any THREE questions out of 5 questions (Essay Type)
- Question Number starts from 16 to 20.

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CLASS : B.A. ECONOMICS **SUB. CODE :18U1VMC1**

TITLE : Micro Economics - I **QN.NO :5801**

TIME : 3Hrs **Max. Marks : 75**

Department	Economics	Class	I -B.A.		Semester	I
Course Title	Micro Economics - I	Hours	Credit	CIA	External	Total
Course Code	18UIVMC1	90	4	25	75	100

Objectives

1. To Introduce Basic Concepts and Definitions of Economics
2. To Enable the Students to understand the important areas of Micro Economics
3. To Teach the Students about the theory of consumer behaviour and production

Learning Outcome

Gained knowledge in basics of economics and micro economics

Unit – I Basic Concepts in Economics

Definitions of Economics (Wealth, Welfare, Scarcity and Growth) – Characteristics of Human wants – Differences between Micro and Macro Economics – Economics is a Positive or a Normative Science- Methods of economics – Inductive and deductive -Concepts in Economics - Utility – Wealth – Income – Commodity.

Unit – II Cardinal Utility Analysis

Concepts of Total and Marginal Utility – Law of Diminishing Marginal Utility – Law of Equi-Marginal Utility – Consumer's surplus.

Unit – III Ordinal Utility Analysis

Meaning of Indifference Curve – Indifference Schedule – Indifference Map – Marginal Rate of substitution – Properties of Budget Line - Consumer's Equilibrium – Superiority of Indifference curve over the cardinal utility analysis.

Unit – IV Demand and Supply Analysis

Law of Demand - Demand schedule – Demand determinants – Types of Demand – Reasons for the Negative slope of Demand curve – Exceptions – Elasticity of Demand – Types of Elasticity of Demand – Degrees of Price Elasticity of Demand – Measurement of elasticity of Demand – Factors Determining elasticity of Demand – Law of supply - Determinants of Supply.

Unit – V Theory of Production

Factors of Production – Land, Labour, Capital and Organisation and their Characteristics – Functions of an Entrepreneur – The law of variable proportions – The laws of Returns to scale – Isoquant – Iso-cost line – Producer's equilibrium.

Text Book (s)

1. Jhingan M.L., **"Advanced Economic Theory**, 2011, Vrinda publications (P) Ltd,Delhi

2. Deepashree, **"Principles of Micro Economics"**, 2010, Ane book Pvt.Ltd, New Delhi

Reference (s)

1. Koutsoyiannis A, "**Modern Microeconomics**, 2013, (International Edition), Macmillan Press Ltd, London.

2. John Kennedy M., **Micro Economics**, 2012, Year of Publication, Himalaya Publishing House (P) Ltd, Mumbai

3. Dr. Ahuja H.L., "**Principles of Microeconomics**, 2012, S.Chand & Company Ltd, New Delhi

Website

1. www. m.sparknotes.com> Spark Notes.

2. wikieducator.org> Economics_Textbook.

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CLASS : B.A. ECONOMICS **SUB. CODE :18U1VMC2**

TITLE : Economics of Marketing **QN.NO : 5802**

TIME : 3Hrs **Max. Marks : 75**

Objectives

1. To understand the performance of marketing activity
2. To comprehend the role of marketing in an economy

Learning Outcome

Student equipped with the knowledge on marketing

Unit- I Introduction of Marketing **(18hours)**

Meaning of marketing – Definitions- Evolution of marketing - Objectives of marketing — Concepts - Distinction between marketing and market – Role of Marketing in the Economic development.

Unit – II Marketing Functions And Market Segmentation **(18hours)**

Functions of marketing - Functions of exchange – Functions of physical supply – Facilitating functions – Meaning and definition of market segmentation – Importance of market segmentation – Methods of segmenting Markets.

Unit - III Marketing Mix **(18hours)**

4P's (Product, Price, Place (Distribution), Promotion) and their meaning- factors influencing product mix – product life cycle- product related strategies

Unit – IV Pricing **(18hours)**

Objectives- pricing policies and strategies- channels of distribution - structure and types of marketing channels – channels functions – factors influencing the choice of channels

Unit – V Marketing Research and Information System **(18hours)**

Meaning of marketing research - Objectives of marketing research – Advantages of marketing research – Limitations of marketing research – Meaning of market information – Development of market information system – Essential requisites of a good market information system – Benefit of market information system.

Text Books

1. Pillai and Bhagavathi (2011) **"Modern Marketing"** S.Chand & Co, New Delhi
2. Agarwal, R.C (2012) **"Principles of Management"** Lakshmi Narain Agarwal, Agra
3. Sherlekar S.A &. Nirmala Prasad K (2007) **"Principles of Marketing"** Himalaya Publishing House.

References

1) Philip Kotler (2009) **"Marketing Management",** Dorling Kindersley (India) Pvt. Ltd
2) Thirunavukkarasu.R Dr. L.P. Ramalingam (2009) **"Marketing Management"**

Merit India publications, Madurai.

Website

1. https:/open.lib.umn.edu> principles.ma….
2. https:/www.amazon.com> principles.ma….

Department	Economics	Class	I -B.A.		Semester	I
Course Title	Economic Statistics – I	Hours	Credit	CIA	External	Total
Course Code	18U1VAC1	90	4	25	75	100

Objectives

1. To acquire basic Knowledge about Statistics
2. To use the statistical techniques in Economics
3. To construct different types of index numbers and the importance of index numbers in Indian Economy.

Learning Outcome

Student gets equipped with the knowledge on Economic Statistics

Unit – I Introduction **(18 hours)**

Meaning – Definitions – Scope – Characteristics - Limitations of Statistics – Methods of collection of primary data and Secondary data

Unit – II Classification, Tabulation, and Diagrams **(18 hours)**

Meaning of classification, Types of classification and Tabulation: Types of tables – Difference between classification and Tabulation – Diagrams: Bar Diagram - Pie diagram and Histogram – Frequency Distribution Sampling Types: Non probability sampling.

Unit – III Measures of Central Tendency **(18 hours)**

Meaning – definitions – objectives – Types of Averages – Calculation of Arithmetic Mean – Median – Mode – Geometric mean – Harmonic mean.

Unit – IV Measures of Dispersion **(18 hours)**

Meaning – significance – methods of studying variation: Range, Quartile Deviation, Mean Deviation – Standard Deviation and note on Lorenz Curve.

Unit – V Index Numbers **(18 hours)**

Meaning and uses of index numbers – problems in the construction of Index Numbers – Methods of constructing Index numbers – Calculation of Laspeyre's, Paasche's, Fisher's, Dorbish and Bowley Method.

Text Book (s)

1. Pillai R.S.N. & Bagavathi V., **"Statistics- Theory and Practice",** (2012), S. Chand & Company Ltd., New Delhi.
2. Kathamba Rajan D **"Economic and Business Statistics",** (2011), Himalaya Publishing House, Mumbai

Reference (s)

1. Gupta S.P. & Gupta M.P., "**Business Statistics",** (2008), Sultan Chand & Sons. New Delhi.
2. Gupta S.C and.Kapoor V.K, "**Fundamentals of Applied Statistics**", 2003, Sultan Chand and Sons, New Delhi.
3. Gupta S.P., **"Statistical Methods"**, (2004), Sultan Chand & Sons, New Delhi.

Websites/e-books

1. Darius Singpurwalla, **"A Handbook of Statistics-An Overview of Statistical Methods",** http://bookboon.com/en/a-handbook-of-statistics-ebook

Department	Economics	Class	I -B.A.		Semester	I
Course Title	Elements of Communication	Hours	Credit	CIA	External	Total
Course Code	18U1VSM1	30	2	25	75	100

Objective

To impart the communication skill

Learning Outcome

Student develops the skill for communication in the real world situation

Unit – I Introduction of Communication **(6 hours)**

Meaning of Communication - Objectives of communication– Principles of Communication – Importance of effective Communication in business – Barriers to communication – Steps to improve communication skills.

Unit – II Written and Oral Communication **(6 hours)**

Types of Communication – Written – Oral – Face to Face – Visual – Audio Visual – Computer based communication – Barriers to communication – Steps to improve communication skills.

Unit – III Resume Writing **(6 hours)**

Resume – Resume Preparation -Types of Resume – Chronological – Functional – Hybrid – Paper copy – Electronic – Important features of Resume – Sample Resume.

Unit – IV Interview **(6 hours)**

Interviews – Types of Interviews – Interview Letters – Enquires – Replies – Order – Order form – Complaints.

Unit – V Advertisement **(6 hours)**

Advertisement –Characteristics of Good Advertisement – Structure of Advertisement Copy -Types of Advertisement copy - Press release – Information Technology – E-mail – Voice mail.

Text Book (s)

1. Rajendra Pal, J.S. Korlahali," **Essentials of Business Communication"**, (2004) Sultan & Chand & Sons.
2. Sanjay Kumar, Pushp Lata, "**Communication Skills"**, (2012) Oxford University
3. Urmila Rai, Rai S.M. ,"**Business Communication"**, (2010) Himalaya Publishing House.

Reference (s)

1. Roshan Lal Raina, Iftikhar Alam, Faizia Siddiqui, 2012, Himalaya Publishing House – Professional Communication.
2. Sathya Swaroop Debasish, Bhagaban Das, 2010, Business Communication, PHI Learning Private Limited, New Delhi.

Website

1. Web site: www.notedesk.com>notes>business-communication
2. www.the businesscommunication.com.

Department	Economics	Class	I -B.A.		Semester	II
Course Title	Micro Economics - II	Hours	Credit	CIA	External	Total
Course Code	18U2VMC3	90	4	25	75	100

Objectives

1. To know the basic concept of cost and revenue
2. To understand the idea of perfect and imperfect market structure
3. To elucidate the importance of factor pricing

Learning Outcome

Student acquired knowledge on micro economics

Unit – I Equilibrium of the Firm, Cost & Revenue Analysis **(18 hours)**

Intersection of Demand and Supply Curve – Equilibrium conditions - Concept of Costs – Fixed Cost – Variable Cost – Average cost, Marginal Cost – Relationship between Average and Marginal Cost – Concepts of Revenue – Total Revenue - Average Revenue and Marginal Revenue – Relationship between AR and MR Under Perfect and Imperfect Competition.

Unit – II Price and Output Determination under Perfect Competition **(18 hours)**

Meaning of Perfect Competition – Characteristics – Price and Output determination under Perfect Competition in the Short Run and Long Run – Marshall's Time Period Analysis.

Unit – III Price and Output Determination under Imperfect Competition **(18 hours)**

Monopoly: - Meaning – Characteristics – Price and Output determination under Monopoly - Monopolistic Competition – Meaning – Characteristics – Price and Output determination under Monopolistic Competition- Selling Cost and Excess Capacity (Concept Only) – Oligopoly: Meaning and Features.

Unit – IV Theories of Factor Pricing **(18 hours)**

Marginal Productivity Theory of Distribution – Modern Theory Distribution – Rent – Meaning - Ricardian Theory of Rent – Quasi-Rent – Wage – Meaning – Subsistence Theory of Wages - The Wage Fund Theory.

Unit – V Theories of Interest and Profit **(18 hours)**

Interest – Meaning - Loanable fund Theory of Interest – Liquidity Preference Theory of Interest – Liquidity Trap - Profit – Meaning - Innovation Theory of Profit – Risk Theory of Profit - Uncertainty Theory of Profit.

Text Book (s)

1. Jhingan M.L, "**Advanced Economic Theory",** 2011, Vrinda publications (P) Ltd, Delhi
2. John Kennedy M, "**Micro Economics"**, 2012, Himalaya Publishing House (P) Ltd, Mumbai.

Reference (s)

1. Koutsoyiannis A, **"Modern Microeconomics"**, 2013, (International Edition), Macmillan Press Ltd, London.
2. Dr. Ahuja H.L, **"Principles of Microeconomics"**, 2012, S. Chand & Company Ltd, New Delhi.
3. Deepashree, **"Principles of Micro Economics"**, 2010, Ane Book Pvt.Ltd, New Delhi

Website

1. www. m.sparknotes.com> Spark Notes.
2. wikieducator.org> Economics_Textbook.

Department	Economics	Class	I BA		Semester	II
Course Title	Advertising and Sales Promotion	Hours	Credit	CIA	External	Total
Course Code	18U2VMC4	90	4	25	75	100

Objective

To make the students understand the importance of Advertising and Salesmanship.

Learning Outcome

Obtained basic knowledge on Advertising and Sales Promotion

Unit – I Advertising **(18 hours)**

Meaning of Advertising – Definition – Objectives of Advertising – Functions of Advertising - – Essential of Good Advertisement - AIDA Model of Advertising – Objections of Advertising (Economic, Social and Ethical) - Advertisement vs Publicity.

Unit – II Advertising Media **(18 hours)**

Advertising media - Types of Advertising media – Advertisement agency – Functions – criteria for selection of an advertising agency – methods of remunerating advertising agency.

Unit – III Sales Promotion **(18 hours)**

Meaning-Definition of Sales Promotion-Importance-objectives-Kinds of Sales Promotion-Consumer Sales Promotion-Dealers Sales Promotion-Sales Force Sales Promotion.

Unit – IV Sales Manager **(18 hours)**

Sales Manager – types – duties – selection and training of salesmen – control of salesmen – remuneration of salesmen.

Unit – V Personal Selling and Consumer Behaviour **(18 hours)**

Meaning of personal selling – objectives of personal selling – functions of personal selling – consumer behaviour – factor influencing consumer behaviour – meaning of buying motives – important buying motives.

Text Book (s)

1. Pillai and Bhagavathi (2011) "**Modern Marketing"** S. Chand & Co, New Delhi

2. Thirunavukkarasu. R Dr. Ramalingam. L.P. (2009) "**Marketing Management"** Merit India Publications, Madurai

Reference (s)

1. Agarwal, R.C (2008), "**Salesmanship and Advertising",** Lakshmi Narain Agarwal, Agra

2. Agarwal, R.C (2012) **"Principles of Management"** Lakshmi Narain Agarwal, Agra

3. Sherlekar S.A &. Nirmala Prasad K. (2007) **"Principles of Marketing"** Himalaya Publishing House.

Website:

1. http://books.google.com>books>about advertising and sales promotion. S,h.kazm, sathish K. Batra

Department	Economics	Class	I B.A.		Semester	II
Course Title	Economic Statistics-II	Hours	Credit	CIA	External	Total
Course Code	18U2VAC2	90	4	25	75	100

Objectives

1. To know the differences between correlation and regression.
2. To understand the concept of probability and counting techniques (addition rule and multiplication rule,) to compute probability.
3. To give knowledge about various measurement of trend like semi average, moving average and least square.

Learning Outcome

Equipped emergence understanding on Economic Statistics

Unit – I Correlation **(18 hours)**

Meaning – Definition - Significance – Types – Simple Correlation – Calculation of Karl Pearson's Co- efficient of correlation – Spearman's Rank Correlation.

Unit – II Regression **(18 hours)**

Meaning and Uses – Difference between Correlation and Regression – Limitations - Calculation of Regression Equations of x on y and y on x.

Unit – III Time Series **(18 hours)**

Definition – Significance – Components – Measurement of Trend – Freehand Method – Semi-average Method – Moving Average Method – Method of Least Squares.

Unit – IV Probability **(18 hours)**

Meaning – Importance – Calculation of Probability – Theorems of Probability: Additional Theorem, Multiplication Theorem, permutation and combinations (Simple Problems).

Unit – V Vital Statistics **(18 hours)**

Meaning of Vital Statistics-uses-methods of obtaining vital statistics-Registration method-Census enumeration and Analytical method-measurement of fertility –crude birth rate-specific

fertility rate-general fertility rate and total fertility rate-Measurement of mortality rate –crude death rate-specific death rate-standardized death rate.

Text Book (s)

1. Pillai R.S.N. & Bagavathi V., **"Statistics- Theory and Practice",** (2012), S. Chand & Company Ltd., New Delhi.
2.. Kathamba Rajan D **"Economic and Business Statistics",** (2011), Himalaya Publishing House, Mumbai

Reference (s)

1. Gupta S.P. & Gupta M.P., "**Business Statistics",** (2008), Sultan Chand & Sons. New Delhi.
2. Gupta S.C. and.Kapoor V.K, "**Fundamentals of Applied Statistics**", 2003, Sultan Chand and Sons, New Delhi.
3. Gupta S.P., **"Statistical Methods"**, (2004), Sultan Chand & Sons, New Delhi.

Websites/e-books

1. Darius Singpurwalla, **"A Handbook of Statistics-An Overview of Statistical Methods",** http://bookboon.com/en/a-handbook-of-statistics-ebook

Department	ECONOMICS	Class	I B.A		Semester	II
Course Title	Economics of Insurance	Hours	Credit	CIA	External	Total
Course Code	18U2VSM2	2	2	25	75	100

Objectives

1. To know the basic ideas of economics of insurance
2. To understand the concept and importance of insurance
3. To enable the student to understand Insurance Policy

Learning Outcome

Depth knowledge on principles of insurance and types of insurance.

Unit – I Introduction **(6 hours)**

History of Insurance – Principles of Insurance – Indemnification – Under writing and Investing - Insurance claims

Unit – II Insurance in India **(6 hours)**

Insurance in India –Specialization - Insurance Regulatory and Development authority (IRDA) – Duties, Powers – Functions.

Unit – III Life Insurance Corporation of India **(6 hours)**

Nationalization of LIC - List of Insurance companies – Objectives of LIC – Classification of Insurance – Types of Life Insurance - Term, Permanent, Endowment policy- 4 I's of Insurance service.

Unit – IV Insurance Plans **(6 hours)**

BIMA Account I – Account II – Endowment Plus – Children plans – Plans for Handicapped Dependents – Money back policy – Recent plans.

Unit – V Life Insurers in Private Sector **(6 hours)**

SBI Life Insurance – ICICI Prudential Life Insurance – Bajaj Allianz Life – New India Life Insurance – Sahara Life Insurance – Tata AIG Life – Birla Sun Life – Kotak Life Insurance – Reliance Life Insurance Company- Motor Insurance – Fire Insurance – Health Insurance – Insurance sector reforms and their features.

Text Book (s)

1. Satya N.K. Pal Sharma,.Antony R, Podder S.K., "**Banking and Insurance"** , 2011 , Himalaya Publishing House, Delhi.
2. Gordon & Natarajan, "**Banking theory Law and Practice"** (2010), Himalaya Publishing House, Delhi.
3. Gurusamy S., "**Banking theory Law and Practice"**, 2009, Vijay Nlcole Chennai.

Reference

1. Dr. Misra M.N.,"**Principles and Practice of Insurance"** , 2006, S. Chand Publications, New Delhi.

ECONOMICS OF AGRICULTURE

Unit I: Introduction to Economics of Agriculture (15 hours)

Meaning, Nature and scope of Agricultural Economics – Place of Agriculture in Indian Economy – Attitude towards agricultural sector – Relationship between Agriculture and industry.

Unit II : Agricultural Problems and Prospects (15 hours)

Agricultural Problems – Agricultural holding, optimum holding and economic holding, - Size or holding in India- Causes or Sub-division and fragmentation – Cause for low Productivity in agriculture – Suggestions for raising agricultural productivity – Prospects of Indian Agriculture.

Unit III: Agriculture Cropping Pattern and Agricultural Credit (15 hours)

Cropping pattern in India – Factors in flouncing cropping Pattern – Agricultural finance – Need and features – Sources of Agricultural finance – Money lenders – Co-operatives – Commercial Banks- NABARD.

Unit IV: Live Stock Resources and Mechanization of Agriculture (15 hours)

Live stock resources – Lives stock production – Importance and significance of livestock in india – Problems and constraints of livestock development – Mechanization of agriculture - Advantages and disadvantages of mechanization of agriculture.

Unit V: Food Problem, Food Policy, Food Security (15 hours)

Food problem – famines and good shortages before Independence – Measures to slove the food problem – food policy in India – Objective and instruments of food policy- Food security- new Agricultural Policy.

Text Book:

1. R.G. Desal "Agricultural Economics" 2010, Himalaya Publishing houses, Mumbai.

References:

1. S.Sankaran, "Indian Economy" 2010, Margaham Publications, Chennai -17.
2. R.N. Soni, "Lending issues in Agricultural Economics" 2011, Vishal Publication Jalandhor.
3. Amarijit Singh, A.N. Sandhu and Jasbirsingh, "Fundamentals of Agricultural Economics" 2013, Himalaya Publishing houses, Mumbai.

Department of Mathematics

Department of Mathematics

CBCS Pattern for B.Sc., Mathematics – Major Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
III	17U3MMC5	Groups and Rings	6	6
IV	17U4MMC6	Sequence and Series	2	2
	17U4MMC7	Mathematical Statistics	2	2
	17U4MSM3	Major Skill Based Elective – III : Fourier Transforms	2	2

Course Code	Course Title	C	H	I	E	T
17U3MMC5	**Groups and Rings**	6	6	25	75	100

Learning Objectives

- To enrich the students with the knowledge of Abstract Algebra.
- To have a good foundation in Groups and Rings.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Explain the fundamental concepts of Groups & Rings and their role in modern mathematics and applied contexts.
- Demonstrate accurate and efficient use of advanced algebraic techniques.

Unit I Groups

Definition and examples – Elementary properties of a group – Permutation groups.

Unit II Subgroups

Definition and examples of subgroups – Cyclic groups – Order of an element – Cosets and Lagrange's theorem.

Unit III Normal subgroups and Homomorphisms

Definition and examples of Normal subgroups – Quotient groups – Isomorphism – Homomorphism.

Unit IV Rings

Definition and examples of rings – Elementary properties of rings – Isomorphism – Types of rings – Characteristic of a ring – Sub rings.

Unit V Ideals

Definition and examples of ideals – Quotient rings – Maximal and Prime ideals -Homomorphism of rings – Field of quotients of an integral domain.

Text Book:

1. S. Arumugam and A. ThangapandiIssac, Modern Algebra, 2011, Scitech Publications (India) Pvt. Ltd.

Chapters: 3 (3.1 – 3.2, 3.4 – 3.11), 4 (4.1 – 4.11)

Reference Books:

1. Vijay K. Khanna and S. K. Bhambri, A Course in Abstract Algebra, 3rd Edition,

Vikas Publishing House Pvt. Ltd.

2. Surjeet Singh and QuaziZameeruddin, Modern Algebra, 2nd Reprint 2009,

Vikas Publishing House Pvt. Ltd.

Course Code	Course Title	C	H	I	E	T
17U4MMC6	**Sequence and Series**	2	2	25	75	100

Learning Objectives

- To impart the knowledge of sequences and summation of series.
- To have a good foundation in Sequences of Bounded, Monotonic, Cauchy etc., and Summation of infinite series of positive terms and arbitrary terms.
- To develop the skill of computation with real sequences and series.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Determine if an infinite sequence is bounded , monotonic or oscillating.
- Determine the sequence whether it is convergent or divergent by using the appropriate tests.
- Find the sequence of partial sum for an infinite series.
- Determine if an infinite series is convergent or divergent by selecting the appropriate tests such as D' Alemberts ratio test, Rabe's test, Bertrand test, Kummer's test, Gauss test, Cauchy condensation test, Cauchy nth root test, etc.

Unit I Sequences

Definition and examples of sequences – Bounded sequences – Monotonic sequences – Convergent sequences – Definition and examples of divergent and oscillating sequences – Problems.

Unit II Sequences (Continued)

Algebra of Limits – Properties – Problems.

Unit III Monotonic sequences

Behavior of monotonic sequences – Some theorems on Limits — Problems.

Unit IV Series of Positive terms

Infinite series - Problems – Comparison test (without proof) – Problems – Harmonic series.

Unit V Series of positive terms (Continued)

Kummer'test (without proof), Gauss's test (without proof) – Problems based on these tests - Cauchy's nth root test (without proof) – Problems.

Text Book:

1. S. Arumugam and A. ThangapandiIssac, Sequences and Series, Edition 2012, New Gamma Publishing House.

Chapters : 3 (3.1 – 3.8), 4 (4.1 – 4.4)

Reference Books:

1. K. Chandra SekharaRao and K. S. Narayanan, Real Analysis Volume – I, Edition 2008, S. Viswanadhan Printers and Publishing Pvt. Ltd.
2. M. K. Venkatraman and Manorama Sridhar, Sequence and Series, Edition 2002, The National Publishing Company.

Course Code	Course Title	C	H	I	E	T
17U4MMC7	**Mathematical Statistics**	2	2	25	75	100

Learning Objectives

- This course is to enable the students to understand the various statistical techniques and apply them in real life problems.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Calculate Measures of Central Tendency and Measures of dispersion for both grouped and ungrouped data.
- Find the Moments, Skewness and Kurtosis.
- Compute and interpret the results of Correlation & Regression analysis.

Unit I Measures of Central Tendency

Arithmetic Mean - Change of Origin and Scale – Properties of Mean – Geometric Mean – Harmonic Mean – Median – Quartiles – Partition values and their Graphical Location – Mode – Requisites for an Ideal Measure of Central Tendency.

Unit II Measures of Dispersion

Dispersion – Characteristics of an Ideal Measure or Dispersion – Measures of Dispersion – Range – Mean Deviation – Variance – Standard Deviation – Coefficient of Variation – Relation between Standard and Root – Mean Square Deviation – Effect of change of origin and scale on S.D – Problems.

Unit III Moments and Skewness

Moments – Moments about the Mean in terms of Moments about any Point and Conversely – Effect of change of origin and scale on Moments - Sheppard's Correction to Moments of Grouped Frequency Distribution – Skewness – Kurtosis - Pearson's β *and* γ Coefficients – Factorial Moments-Absolute Moments Problem.

Unit IV Correlation

Bivariate distribution – Correlation Coefficient – Effect of Change of Origin and Scale - Theorem Cauchy-Schwartz Inequality – Limits for Coefficient of Correlation – Rank Correlation Coefficient Problems.

Unit V Regression

Linear Regression, Curvilinear, Regression – Equations of the Lines of Regression, Regression Coefficients – Standard Error of Estimate –Theorem – Regression Curves-Problems.

Text Book:

1. J.N. Kapur, H.C. Saxena, Mathematical Statistics, Reprint 2005, S. Chand and Company.

Chapters:2(2.5.1 – 2.5.5, 2.6),3,10

Reference Books:

1. D.C.Sanchetti and V.K.Kapoor, Statistics (Theory, Method and Application), Reprint 2010, Seventh thoroughly Revised Edition, Sultan Chand and sons.
2. S.C.Gupta and V.K.Kapoor, Fundamentals of Mathematical Statistics, Reprint 2000, 9th revised edition, Sultan Chand and sons.

Course Code	Course Title	C	H	I	E	T
17U4MSM3	**Major Skill Based Elective- III: Fourier Transforms**	2	2	25	75	100

Learning Objectives

- To enable the students to study Fourier Transforms and some concepts of infinite Fourier Sine and Cosine transforms, finite Fourier Sine and Cosine transforms and applications to solve some infinite and boundary value problems using finite and infinite transforms.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Calculate the Infinite Fourier transform, Fourier Sine and Cosine transform of elementary functions from the definition.
- Demonstrate their understanding of the shifting theorems, Fourier integral theorems, Inverse Fourier sine and cosine transforms by applying them to appropriate examples.
- Calculate the Finite Fourier cosine and sine transform and apply it in solving boundary value problems.
- Approach more advanced aspects of transform methods.

Unit I Infinite Fourier Transforms

Definition of Infinite Fourier transform – Fourier integral theorem – Inversion theorem for Infinite Fourier transform – Properties of Infinite Fourier transforms – Problems based on these properties – Convolution theorem – Parseval's identity – Problems.

Unit II Infinite Fourier Sine and Cosine transforms

Definition of Infinite Fourier sine and cosine transforms – Inversion formula for Inverse Fourier sine and cosine transforms – Properties – Problems.

Unit III Application of Infinite Fourier transforms

Fourier transform of derivatives – Relation between Fourier transforms and Laplace transforms – Solving Boundary value problems using infinite Fourier Transforms – Problems.

Unit IV Finite Fourier Sine and Cosine Transforms

Definition of finite Fourier Sine and Cosine transforms – Inversion formula for Sine and Cosine transforms – Problems.

Unit V Application of Finite Fourier transforms

Finite Fourier Sine and Cosine transform of derivatives - Solving boundary value problems using Finite Fourier Sine and Cosine transforms – Problems.

Text Book:

1. P. Kandasamy and K. Thilagavathy, Engineering Mathematics Vol. III (Transforms and Partial Differential Equations), Edition 2009, S. Chand & Company Ltd.

Chapter: 4 only.

Reference Books:

1. S. Arumugam, A.ThangapandiIssac and A. Somasundaram, Higher Engineering Mathematics Vol. II , Edition 2010, Scitech Publications.
2. T. Veerarajan, Transforms and Partial Differential Equations (Updated Edition), Third Reprint 2013, McGraw Hill Education (India) Private Ltd.

Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
III	17U3MAC1	Ancillary CCM-I: Office Automation	2	1
	17U3MAP1	LAB: Practical in Office Automation	2	1
IV	17U4MAC2	Ancillary CCM – II: Programming in C	4	2
	17U4MAP2	LAB: Practical in Programming in C	2	1
V	17U5MSA1	Skill Based Elective (CCM): Combinatorics	2	2
	17U5MAC3	Ancillary CCM - III: Programming with C++	2	1
	17U5MAP3	LAB: Practical in C++	2	1
VI	17U6MAC4	Ancillary CCM - IV: Fundamentals of JAVA Programming	4	2
	17U6MAP4	LAB: Practical in JAVA Programming	2	1

Course Code	Course Title	C	H	I	E	T
17U3MAC1	**ANCILLARY CCM – I: OFFICE AUTOMATION**	1	2	25	75	100

Learning Objectives

- To enable the students to study MS Office and to enrich the practical knowledge in MS Office.

Learning Outcomes

After successful completion of this course, students will be

- Able to perform documentation and presenting skills.
- Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and Presentation Graphics Applications.

Unit I MS Word

Introduction to MS Word, Starting word – Creating a Document – Saving and Printing a document – Move and Copy Text – Smart Cut and Paste – Quickly Opening Recently Used Files – Copying Text to Another File – Formatting Text – Using Bullets and Numbering in Paragraphs – Finding Text – Replace Command – Checking Spelling and Grammar – Using Auto Correct to Automatically Fix Typing Errors .

Unit II MS Word (Continued)

Enhancing a Document – Page Setup – Inserting Page Breaks – Looking at a Document in Different Views – Adding Borders and Shading to Paragraphs – Using Headers and Footers in the Document – Print Preview – Print Options – Creating Tables – Formatting a Table – Using Table Autoformat to Format a Table – Calculations in a Table – Using Mail Merge.

Unit III MS Excel

Introduction to Worksheet and MS Excel – Getting Started with Excel – Editing Cells and using Commands and Functions – Excel Functions – Range – Moving and Copying, Inserting and Deleting Rows and Columns – Formatting a Worksheet – Formatting Numbers.

Unit IV MS Excel (Continued)

Creating Charts – Resizing and Moving the Chart – Changing the Chart Type – Controlling the Appearance of a Chart – Updating, Modifying and Deleting a Chart – Previewing and Printing

Charts – Using Date and Time in a Worksheet – Naming Ranges and Using Statistical, Math Functions.

UnitV Power Point

Power Point – Creating a Presentation – Power Point Views – Running a Slide Show – Printing a Presentation.

Text Book:

1. R K Taxali, PC Software for Windows 98 Made Simple, 2015, McGraw Hill Education Pvt. Ltd.

Chapters : 9(9.4 – 9.7), 11(11.1 – 11.5),12(12.1, 12.4), 13(13.2-13.4,13.7),15(15.1-15.4, 15.6,15.7,15.9),16(16.1-16.4),18, 20, 21, 22(22.1-22.5), 23, 24(24.2-24.4), 26, 27(27.2 – 27.5, 27.7,27.8), 28(28.1-28.6), Annexure B

Reference Books:

1. Jodi Davenport, Critch Greaves, Michael Groh and Eruce Hall berg, Inside Microsoft Office Professional , 1994, New Riders Publications.
2. CloriaMadumere, 3 – IN – 1 Microsoft Word, Powerpoint and Excel 2010, First Edition 2016, Create space Independent Publishing Platform.

Course Code	Course Title	C	H	I	E	T
17U3MAP1	**LAB: PRACTICAL IN OFFICE AUTOMATION**	1	2	50	50	100

S.NO.	LIST OF PRACTICALS
1	Design a Document Using a MS – Word with the Following Options : Bold, Underline, Italics, Different Styles.
2	Design a Document Using a MS – Word with Tables.
3	Design a Document Using a MS – Word with Header and Footer.
4	Design a Document Using a MS – Word with Mail Merge
5	Design a Document Using MS – Excel To Perform Mathematical Functions.
6	Design a Document Using MS – Excel To Perform String Functions.
7	Design a Document Using MS – Excel To Perform Logical Functions.
8	Design a Document Using MS – Excel To Perform Date & Time Functions.
9	Design a Document Using MS – Excel To Create Different Types of Chart for Some Data.
10	Create a Slide Show Using Power Point.

Course Code	Course Title	C	H	I	E	T
17U4MAC2	**ANCILLARY CCM– II: PROGRAMMING IN C**	2	4	25	75	100

Learning Objectives

- Enrich the students to have a good foundation and practical knowledge on Programming in C.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Write a C program for simple applications of real life using Structures and files.
- Implement Programs with Pointer arrays.
- Design an algorithmic solution for a given problem.

Unit I Fundamentals

C Fundamentals - The C Character Set - Identifiers and Keywords - Data Types - Constants - Variables and Arrays- Declarations - Expressions - Statements - Symbolic Constants - Arithmetic Operators - Unary Operators - Relational and Logical Operators - Assignment Operators - The Conditional Operator - Library Functions.

Unit II Data Input and Output

The getchar Function - The putchar Function - The Scan f Function - The Print f Function - Writing a C Program - Compiling and Executing the Program.

Unit III Control Flow

The if else Statement - The while Statement - The do while Statement - The for Statement - Nested Control Structures - The switch Statement - The break Statement - The Comma Operator - The go to Statement.

Unit IV Functions

Accessing a Function - Function Prototypes - Passing Arguments to a Function - Recursion - Storage Classes - Automatic Variables - External (Global) Variables - Static Variables.

Unit V Arrays and Structures

Defining an Array - Processing an Array - Passing Arrays to Functions -Multidimensional Arrays - Arrays and Strings - Structures and Unions - Defining a Structure - Processing a Structure - Structures and Pointers- Unions.

Text Book:

1. Byron S. Gottfried, Programming with C, 2nd edition Thirteenth Reprint 2001, Schaum's Outline Series, Tata McGraw – Hill Publication.

Chapters: 2, 3, 4(4.2- 4.6), 5(5.2- 5.4), 6(6.2- 6.11), 7(7.2- 7.6), 8(8.1- 8.4), 9(9.1- 9.5), 11(11.1, 11.2, 11.4, 11.7).

Reference Books:

1. E. Balagurusamy, Programming in ANSI C, 2nd Edition, 2000, Tata McGraw-Hill.
2. YashavantKanetkar, Let us C, 7th Edition 2007, BPB Publications.

Course Code	Course Title	C	H	I	E	T
17U4MAP2	**LAB: PRACTICAL IN PROGRAMMING IN C**	1	2	50	50	100

S.NO.	List of Programs
1	Program to solve quadratic equation.
2	Program to prepare salary calculation.
3	Program to calculate power function.
4	Program to perform text counting.
5	Program to find product of two matrices.
6	Program to find the binomial coefficient.
7	Program to convert decimal to binary numbers.
8	Program to check a word whether it is palindrome or not.
9	Program for sorting of integers.
10	Program to calculate the standard deviation.
11	Program to prepare electric bills.
12	Program for sorting of strings.
13	Program to illustrate recursion.
14	Program to find HCF and LCM of two numbers.
15	Program to generate the Fibonacci series.

CBCS Pattern for B.Sc., (Phy&Chem)- Ancillary Mathematics

Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
I	17U1MAC1	Allied Mathematics – I	6	3
II	17U2MAC2	Allied Mathematics – II	6	3
III	17U3MAC3	Allied Mathematics - III	4	2
	17U3MSA1	Ancillary Skill Based Elective : Laplace Transforms	2	2
IV	17U4MAC4	Allied Mathematics - IV	4	2

Course Code	Course Title	C	H	I	E	T
17U3MAC3	**Allied Mathematics - III**	2	4	25	75	100

LEARNING OBJECTIVES

- Enable the students to have a good foundation on Differential Equations and to understand the fundamental ideas of Partial differential equations.
- Enable the students to know the concepts of analytic functions and bilinear transformations.

LEARNING OUTCOMES

After successfully completing this course, students will be able to

- Explain the concepts of Differential Equation and Classify the Differential Equation with respect to their order and linearity.
- Solve First order Ordinary Differential Equation and Exact Differential equations.
- Classify Partial Differential Equation and solve the first order Partial Differential Equation.
- Find the function whether it is analytic or not and solving the bilinear transformation.

Unit I Exact differential Equations

Equations of first order and first degree – Variable separable – Homogenous equations – Non-homogeneous equations – Exact Differential Equations – Integrating factors.

Unit II Linear equations of Higher Order

Linear equations with constant coefficients – Methods of finding complementary functions – Methods of finding particular Integrals – Problems.

Unit III Partial differential Equations

Formation of partial differential equations – First order partial differential equations – Methods of solving First order partial differential equations – some standard forms – Charpit's method.

Unit IV Analytic Functions

Limits – Analytic functions– Cauchy Riemann Equations (C-R equations) – Alternate forms of C-R equations.

Unit V Bilinear Transformations

Elementary Transformations – Problems – Bilinear Transformations – Cross Ratio – Fixed points of a bilinear Transformation.

Text Book:

1. S. Arumugam and A. T. Isaac, Allied Mathematics Paper III, Edition 2012, New Gamma Publishing House.

Chapters: 1(1.2 - 1.4), 2, 4, 6, 7.

Reference Books:

1. S. Arumugam, A. T. Issac, A. Somasundaram, Complex Analysis, Reprint 2010, Scitech Publications (India) Pvt. Ltd.
2. P. R. Vital, Allied Mathematics,2009, Margam Publications.

Course Code	Course Title	C	H	I	E	T
17U3MSA1	**Ancillary Skill Based Elective : Laplace Transforms**	2	2	25	75	100

Learning Objectives

- To enable the students to study the Laplace Transforms, properties of Laplace Transform, inverse Laplace Transform and some applications to solve the differential equations and integral equations.

Learning Outcomes

After successfully completing this course, students will be able to

- Find the Laplace transform of a function and Inverse Laplace transform of a function using definition.
- Find the Laplace transform of derivatives, integrals and periodic functions.
- Use the Method of Laplace transforms to solve initial-value problems for linear differential equations with constant coefficients.

Unit I Laplace Transforms

Definition – Laplace Transform of some standard functions – Properties of Laplace transforms – Problems based on these properties – Some theorems on Laplace transforms – Problems based on these theorems.

Unit II Inverse Laplace transforms

Definition – Some theorems on Inverse Laplace transforms (without proof) – Simple problems – Method of finding Laplace transforms by partial fraction method – First shifting theorems – Problems.

Unit III Inverse Laplace transforms (Continued)

Finding inverse Laplace transforms of the types Log (F(s)), s F(s), F(s)/s, $\tan^{-1}(F(s))$, $\cot^{-1}(F(s))$, - Problems based on these types – Laplace transforms of derivatives.

Unit IV Application of Laplace transforms

Solving first order differential equations with constant coefficients- Solving second order differential equations with constant coefficients.

Unit V Application of Laplace transforms (continued)

Solving integral equations using the method of Laplace transforms – Evaluation of definite integrals using Laplace transforms - Finding Laplace transform of periodic functions.

Text Book:

1. P. Kandasamy and K. Thilagavathy, Allied Mathematics Paper – II (Second semester), Reprint 2013, S. Chand & Company private Ltd.

Chapter: 1 (Laplace Transforms).

Reference Books:

1. S. Arumugam, A.ThangapandiIssac and A. Somasundaram, Higher Engineering Mathematics Vol. II , Edition 2010, Scitech Publications.
2. T. K. ManikkavachagamPillai and S. Narayanan, Calculus Vol. III, Edition 2002, S. Viswanathan (Printers & Publishers) Pvt. Ltd.

Course Code	Course Title	C	H	I	E	T
17U4MAC4	**Allied Mathematics – IV**	2	4	25	75	100

Learning Objectives

- To impart Optimization Techniques.
- To make the Students become familiar with the basic Principle of LPP and enrich knowledge to formulate and solve an LPP using various methods.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Formulate the LPP for a real life Problems and give the solution for the problem using suitable optimization techniques.
- Solve LPP by using Graphical, Simplex and Big-M method.
- Find the IBFS of TP using North-west Corner Rule, Row Minima, Column Minima, Least cost Method and VAM.
- Find Optimal Solution of T Pusing Modi Method.
- Solve the Assignment and Travelling Salesman Problem using Hungarian Algorithm.
- Apply LPP in Various fields such as Science, Engineering, Industry, Business, etc.

Unit I Linear Programming Problems

Formulation of Linear Programming Problem – Mathematical Formulation of a Linear Programming Problem - Linear Programming Problem in summation Notation - Linear Programming Problem in Matrix Form – Canonical Form of a Linear Programming Problem – Standard Form of a Linear Programming Problem – Problems.

Unit II Linear Programming Problems (Continued)

Solution of Linear Programming Problem – Feasible Solution – Optimal Solution – Basic solution – Basic Feasible Solution – Graphical Method – Non Negativity Constraint – Constraint of the form $ax_1 + bx_2$ ($\leq$, $\geq$) c where a, b are not both zero – Optimizing Objective Function – Problems.

Unit III Linear Programming Problems (Continued)

Simplex Method – Big-M Method **–** Problems.

Unit IV Transportation Problems

Mathematical Formulation of Transportation Problems – North-west Corner Rule- Row Minima Method- Column Minima Method- Least Cost Method – Vogel Approximation Method – MODI Method.

Unit V Assignment Problems

Mathematical Formulation of Assignment Problems **–** Solution to Assignment Problems(Minimization & Maximization) – Travelling Salesman Problem**.**

Text Book:

1. S. Arumugam and A. T. Isaac, Topics in Operations Research Linear Programming , Edition 2015, New Gamma Publishing House.

Chapters: 3(3.1 – 3.6), 4, 5.

Reference Books:

1. KantiSwarup, P.K. Gupta and Man Mohan, Operations Research, 9th Edition 2001, Sultand Chand Publication.
2. V. Sundaresen, K.S.G. Subramanian and K. Ganesan, Resource Management Techniques (Operations Research) ,New Revised Edition 2000, A.R Publications.

CBCS Pattern for U.G- Non-Major Elective

Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
III	17U3MNM1	Mathematics for Competitive Exams	2	2
IV	17U4MNM2	Quantitative Aptitude	2	2

Course Code	Course Title	C	H	I	E	T
17U3MNM1	**Mathematics for Competitive Exams**	2	2	25	75	100

Learning Objectives

- The main aim of introducing "MATHEMATICS FOR COMPETITIVE EXAMS" for non-mathematics students is to develop skill to meet the competitive examinations for better job opportunity.
- To lay the foundation in the basic principles of Mathematics for other Major Students.

Learning Outcomes

After successful completion of this course, students will be able to

- Understand the basic concepts which will be helpful to them to clear the competitive exams for better job opportunity.
- Solve the problems easily by using Short-cut method with time management.

Unit I Highest Common factor (H.C.F) and Least Common factor (L.C.M) of Numbers.

Unit II Square roots and Cube roots – Average.

Unit III Profit& Loss.

Unit IV Ratio and Proportion.

Unit V Simple Interest and Compound Interest.

Text Book:

1. R. S. Aggarwal, Quantitative Aptitude, Reprint 2016, S. Chand & Company Pvt. Ltd.

Sections: 2, 5, 6, 11, 12, 21, 22

Reference Books:

1. G. K. Ranganath, C. S. Sampangiram and Y. Rajaram, A text Book of business Mathematics**,** 2008, Himalaya Publishing House.
2. R.V. Praveen, Quantitative Aptitude and Reasoning , 2nd Revised Edition 2013, Prentice-Hall of India Pvt. Ltd.

Course Code	Course Title	C	H	I	E	T
17U4MNM2	**Quantitative Aptitude**	2	2	25	75	100

Learning Objectives

- The main aim of introducing "Quantitative Aptitude"for non-mathematics studentsis to develop skill to meet the competitive examinations for better job opportunity.
- Effort has been made to accommodate fundamental, mathematical aspects to instill confidence among Non-major students.
- Enrich their knowledge and to develop their logical reasoning thinking ability.

Learning Outcomes

After successful completion of this course, students will have the knowledge and skills to

- Solve the problems easily by using Short-cut method with time management which will be helpful to them to clear the competitive exams for better job opportunity.
- Analyze the Problems logically and approach the problems in a different manner.

Unit I Time & Distance – Problems on Trains.

Unit II Logarithms – Properties of Logarithms – Common Logarithms.

Unit III Calender and Clocks.

Unit IV Permutations & Combinations and Probability.

Unit V True Discount - Banker's Discount.

Text Book:

1. R.S. Aggarwal, Quantitative Aptitude, Reprint 2016, S. Chand & Company Pvt. Ltd.

Sections: 17, 18, 23, 27, 28, 30, 31, 32, 33

Reference Books:

1. R.V. Praveen, Quantitative Aptitude and Reasoning, 2nd Revised Edition 2013, Prentice-Hall of India Pvt. Ltd.
2. G. K. Ranganath, C. S. Sampangiram and Y. Rajaram, A text Book of business Mathematics, 2008, Himalaya Publishing House.

COMPONENTS OF C.I.A AND QUESTION PATTERN FOR END SEMESTER EXAMINATIONS

Components of C.I.A

i) Test - 15 marks
ii) Assignment/Quiz/Seminar - 5 marks
iii) Attendance - 5 marks

Total - 25 marks

End Semester Exam Components for U.G.

Time: 3 Hours **Maximum Marks: 75**

Part –A (10 x 1 = 10 Marks)
(Answer ALL questions)

- **Objective type Questions.**
- **Two questions from each unit.**

Part –B (5 x 7 = 35 Marks)
(Answer ALL questions)

- **Either or pattern.**
- **One question from each unit.**

Part –C (3 x 10= 30 Marks)
(Answer any THREE questions)

- **Out of FIVE questions, THREE questions to be answered**
- **One question from each unit.**

Semester	Sub. Code	Title of the Paper	Hours	Credits
I	181MLM1	Research Methodology	6	6
	181MLM2	Analysis	6	6
II	182MLM1	Domination in Graphs	6	6
	182MLMDI	Dissertation		6
	182MLMVV	Viva – Vice		

The Madura College (Autonomous), Madurai – 625011

Department of Mathematics

CBCS Pattern for M.Phil., Mathematics – Course Structure

Course Code	Course Title	C	H	I	E	T
181MLM1	**Research Methodology**	6	6	40	60	100

Learning Objectives

- To enable the students to study the Research Methodology and some concepts of Rings and Ideals, Modules, Rings and Modules of Fractions & Primary Decomposition.

Learning Outcomes

On satisfying the requirement of this course, students will be able to

- Understand the basic concepts of research and its methodologies.
- Identify appropriate research topics, and Select &define appropriate research problem and its parameters.
- Design a good quantitative purpose statement and hypothesis.
- Write a good research article and thesis.
- Understand research ethics, author's right & responsibility and qualitative measures.
- Understand the advanced topics in Algebra and their role in modern mathematics and applied contexts.
- Demonstrate accurate and efficient use of advanced algebraic techniques.

Unit I Research methods verses methodology

Meaning of research – Objectives of research – Motivation in research – Types of research – Research approaches – Significance of research – Research methods verses methodology – Research and scientific methods – Importance of knowing how research is done – Research process – Criteria of good research – Problems encountered by research in India – What is a research problem – Selecting the problem.

Unit II Writing of Research articles and Quality Measures

How to write a scientific article – Language editing and quality – Choosing the right journal, article formatting and cover letter.After your article has been accepted –Authors' rights and responsibilities – Ethics and plagiarism – Online products – Science Direct, Scirus, Scopus and 2collab – Impact Factors and other quality measures – Helpful websites.

Unit III Rings and Ideals

Rings and Ring Homomorphism's – ideals and quotient rings – Zero-divisors, Nilpotent elements, Units – Prime ideals and Maximal ideals – Nilradical and Jacobson radical – Operations on Ideals – Extension and Contraction.

Unit IVModules

Modules and module Homomorphisms – Submodules and quotient modules – Operations on Submodules – Direct sum and product – Finitely generated modules – Exact sequences – Tensor product of modules.

Unit V Rings and Modules of Fractions &Primary Decomposition

Local Properties – Extended and Contracted Ideals in Rings of Fractions – Primary Decomposition.

Text Books:

1. C.R. Kothari, Research Methodology, 2004, New Age International publishers.
2. Author Pack -A guide to publishing in scholarly journals, Elsevier, 2008.
3. M. F. Atiyah and I. G. Mac Donald, Introduction to commutative algebra, Addison – Wesley, 1969.

Chapters:

Unit – I : Text 1 (Chapter 1, Chapter 2 First two sections)

Unit – II : Text 2

Unit – III, IV, V: Text 3 (Chapters 1, 2(up to tensor product of modules), 3, 4)

Reference Books:

1. R. Panneerselvam, Research Methodology, 2006, Prentice Hall of India Pvt. Ltd.
2. www.elsevier.com/authors.
3. N. S. Gopalakrishnan, Commutative algebra, 1984, Oxonian Press.
4. E. Kunz and Birkhauser, Introduction to commutative algebra and algebraic geometry, 1985.

Course Code	Course Title	C	H	I	E	T
181MLM2	**Analysis**	6	6	40	60	100

Learning Objectives

- To enable the students to have a good knowledge on advanced concepts of Analysis. This course covers the topics such as Abstract Integration, Positive Borel Measures, L^P - spaces,Complex Measure and Integration on Product SpacesandElementary theory of Banach Algebras.

Learning Outcomes

On satisfying the requirement of this course, students will be

- Familiar with the concepts on abstract integration and main properties of Borel measures, Lebesgue measure, sigma algebra, Banach algebras, etc.
- Able to formulate the main convergence theorems of the Lebesgue integral and to apply them.
- Familiar with Radon-Nikodym theorem, Riesz representation theorem and its applications.
- Understand the advanced concepts in analysis and its applications.

Unit I Abstract Integration

The concept of measurability – Simple functions - Elementary properties of measures – Arithmetic in $[0,\infty]$ – Integration of positive functions – Integration of complex functions – The role played by sets of measure zero.

Unit II PositiveBorel Measures

Vector spaces – Topological preliminaries – The Riesz representation theorem – Regularity properties of Borel measures – Lebesgue measure – Continuity properties of measurable functions.

Unit III L^P - spaces

Convex functions and inequalities – L^P - spaces – Approximation by continuous functions.

Unit IV Complex Measure and Integration on Product Spaces

Total variation – Absolute continuity – Consequences of Radon – Nikodym theorem – Measurability on Cartesian products – Product measures – The Fubini theorem.

Unit V Elementary theory of Banach Algebras

Introduction – The invertible elements – Ideals and homomorphism – Applications.

Text Book:

1. Walter Rudin, Real and Complex Analysis, 3rd edition, 1987, Tata McGraw - Hill Book Company.

Chapters: 1(1.2-1.41), 2(2.1 to 2.25), 3(3.1-3.17), 6(6.1 - 6.14), 8(8.1 - 8.8), 18(18.1-18.21).

Reference Books:

1. H.L. Royden, Real Analysis, 3rd edition,2004, Prentice – Hall of India Pvt. Ltd.
2. Walter Rudin, Functional Analysis, 2nd edition, 2006, Tata McGraw - Hill Book Company.

Course Code	Course Title	**C**	**H**	**I**	**E**	**T**

182MLM1	**Domination in Graphs**	6	6	40	60	100

Learning Objectives

- To enable the students to have a strong foundation in Domination theory which will enrich them to have a good knowledge to apply in real life problems.

Learning Outcomes

On satisfying the requirement of this course, students will be able to

- Understand the basic concepts in Domination and apply it in real world problems.
- Apply the theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory.
- Familiar with the graph theoretic ideas and obtain exposure in emerging areas of research.

Unit I Dominating Sets

Dominating Queens – Dominating sets in graphs – sets of representatives – School Bus Routing – Computer Communication Networks – (r, d) – Configurations – An introduction to NP – Completeness – NP- Completeness of the Domination Problem – Mathematical history of domination in graphs.

Unit II Bounds

Bounds in terms of order – Bounds in terms of order, degree and packing.

Unit III Bounds (Continued)

Bounds in terms of order and size – Bounds in terms of degree, diameter and girth – Bounds in terms of independence and covering – Product graphs and Vizing's conjecture – Grid Graphs.

Unit IV Independence and irredundance

Hereditary and Superhereditary Properties – Independent sets – Dominations sets – irredundant sets.

Unit V Conditions on dominations sets

Introduction – Independent dominations sets – Total (open) dominations sets – Connected domination sets – Dominating cliques.

Text Book:

1. Teresa W. Haynes, Stephen T. Hedetniemi, Peter J. Slater, Marcel Dekker, Fundamentals of domination in graphs, 1998, Inc.

Chapters: 1(1.1-1.6, 1.11-1.13), 2(2.1-2.6), 3(3.1-3.4), 6(6.1-6.5).

Reference Books:

1. S. T. Hedetneimi and R. Deskar(eds.), Topics on Domination, 86(1990), Discrete Math.
2. R.Balakrishnan and K.Ranganthan, A Text Book of Graph Theory Universitext, DOI 10 1007/978-1-4614-4529-6-2, Springer Science & Business Media, New York, 2012.

COMPONENTS OF C.I.A AND QUESTION PATTERN FOR END SEMESTER EXAMINATIONS

Components of C.I.A

iv) Test	-	20 marks
v) Assignment	-	10 marks
vi) Seminar	-	10 marks
		———
Total	**-**	**40marks**

End Semester Exam Components for M.Phil

Time: 3 Hours **Maximum Marks: 60**

Answer all Questions: **(5×12 = 60)**

Either or pattern: one question from each unit.

The Madura College (Autonomous), Madurai – 625011.

Department of Mathematics

Certificate Course Structure

Class	Title of the Paper	Hours	Credits
UG	Sampling Theory	2	2
PG	Random Processes	2	2

UG	Sampling Theory	C	H	I	E	T
Class	Certificate Course Title	2	2	25	75	100

Learning Objectives

- This course enables them to understand the concepts of Sampling Techniques which enhance them to analyze the data.

Learning Outcomes

On satisfying the requirement of this course, students will be able to

- Understand the different types of sampling methods.
- Discuss the relative advantages and disadvantages of each sampling methods.
- Apply the Sampling techniques to analyze the data.

Unit I Large Sample

Sampling – Types of sampling – Testing of hypothesis – Procedure for testing of hypothesis for large samples test for proportion – Single proportion – Difference of proportion.

Unit II Large Sample (Continued)

Significance of Means – Test of significance of single mean – Difference of sample means.

Unit IIISmall sample

Small sample test of significance based on t-test –Test of significance based on F-test – Test for significance of an observed sample correlation.

Text Book:

1. Dr. S. Arumugam& A. Thangapandi Isaac, Statistics , July 2011 , New Gamma publishing house.

Chapters: 14(14.1-14.4, 14.5(I,II(A,B)), 15(15.1-15.3)

Reference Books:

1. D.C. Sancheti, V.S. Kapoor, Statistics (Theory, Methods and Applications), 7th thoroughly Revised Edition, Sultan Chand Sons Publications.
2. S. P. Gupta, Statistical Methods, 40th Revised Edition 2011, Sultan Chand Sons Publications.

Class	Certificate Course Title	C	H	I	E	T
PG	**Random Processes**	2	2	25	75	100

LearningObjectives

- This course enables them to understand the concepts of Random Processes which will enrich them to apply in real life problems.

Learning Outcomes

After successful completion of this course, students will be able to

- Understand the fundamental concepts of Random Processes and determine Spectral density of stationary random processes.
- Familiar with autocorrelation and cross correlation functions.
- Think of random variables as an intrinsic need for the analysis of the random phenomena.
- Demonstrate the specific applications to Gaussian Process and representation of low pass and band pass noise models.
- Apply the concepts of random processes in real world problems.

Unit IAuto Correlation

Auto Correlation Function and its Properties – Cross Correlation Function and its Properties – Ergodicity – Mean-Ergodic Process – Mean-Ergodic Theorem – Correlation Ergodic Process – Distribution Ergodic Process – Problems.

Unit IIPower Spectral Density

Power Spectral Density Function and its Properties – Wiener-Khinchin Theorem –Linear Systems with Random Input – Systems in the form of Convolution – Unit Impulse response of the system – Properties – Problems.

Unit IIIGaussian Process

Definition of Gaussian Process – Process Depending on Stationary Gaussian Process – Band Pass Process – Narrow Band Gaussian Process – Quadrature Representation of a WSS Process – Noise in Communication Systems – Thermal Noise – Problems.

Text Book:

1. T. Veerarajan, Probability, Statistics and Random Processes, Third Edition, Tata McGraw-Hill.

Chapters: 6, 7

Reference Books:

1. N. Subramanian, Random processes, First Edition, Nov. 2005, SCM publisher.
2. K. Murugesan, P. Gurusamy, Probability, Statistics, Random Processes, Reliability and Queuing Theory, Third Edition, Reprint 2004, Anuradha Agencies.

COMPONENTS OF C.I.A AND QUESTION PATTERN FOR END SEMESTER EXAMINATIONS

Components of C.I.A

vii)	Test	-	15 marks
viii)	Assignment/Quiz/Seminar	-	5 marks
ix)	Attendance	-	5 marks

Total - 25 marks

End Semester Exam Components for U.G. & P.G. Certificate Courses

Time: 3 Hours **Maximum Marks: 75**

Part –A (10 x 1 = 10 Marks)
(Answer ALL questions)

- **Objective type Questions.**

Part – B (5 x 7 = 35 Marks)
(Answer ALL questions)

- **Either or pattern.**

Part – C (3 x 10= 30 Marks)
(Answer any THREE questions)

- **Out of FIVE questions, THREE questions to be answered**

Department of Physics

Department of Physics – Curriculum structure for B.Sc. Physics (Major)

Sem.	Subject Code	Course title	No. of hours	Credits	Paper type
I	17U1PMC1	Mechanics, properties of matter and sound*	5	5	Major Core
	17U1PSM1	Physics of electrical appliances*	2	2	SBE Major (Skill Based Elective)
II	17U2PMC2	Electricity and electromagnetism*	5	5	Major Core
	17U2PSM2	Numerical methods*	2	2	SBE Major (Skill Based Elective)
III	17U3PMC3	Optics	4	4	Major Core
IV	17U4PMC4	Introduction to classical mechanics	2	2	Major Core
	17U4PSM3	Energy conversion	2	2	SBE Major (Skill Based Elective)
V	17U5PME1	Relativity and quantum mechanics	5	6	Major Elective
	17U5PMC5	Analog electronics	5	5	Major Core
	17U5PMC6	Thermodynamics and statistical physics	5	5	Major Core
	17U5PMC7	Biomedical instrumentation	3	3	Major Core
VI	17U6PME2	Atomic and nuclear physics	6	7	Major Elective
	17U6PME3	Solid state physics	5	6	Major Elective
	17U6PMC8	Digital electronics and instruments	5	5	Major Core
	17U6PSM4	8085 µp Architecture and programming	2	2	SBE Major (Skill Based Elective)

*** Passed in AC meeting, 16th December, 2016**

NME papers being proposed by the department

Sem.	Subject Code	Course title	No. of hours	Credits	Paper type
III/IV	17U3PNM1/ 17U4PNM1	Communication systems	2	2	Non Major Elective (NME)
	17U3PNM2/ 17U4PNM2	Discovering physics	2	2	Non Major Elective (NME)

Department of Physics – Curriculum structure
For B.Sc. Mathematics with ancillary Physics*

Sem	Subject Code	Course title	No. of hours	Credits
I	17U1PAC1	Mechanics and properties of matter	4	2
II	17U2PAC2	Optics and electricity	4	2
II	17U2PAP1	Practical – I	4	2
III	17U3PAC3	Digital electronics and communication	2	1
III	17U3PSA1	Physics of electrical appliances	2	2
IV	17U4PAC4	Renewable energy sources	2	1
IV	17U4PAP2	Practical – II	4	2
		Total	22	12

*** Passed in AC meeting, 16th December, 2016**

Department of Physics – Curriculum structure
For B.Sc. Chemistry with ancillary Physics*

Sem	Subject Code	Course title	No. of hours	Credits
III	17U3PAC1	Digital electronics and communication	2	1
IV	17U4PAC2	Mechanics and properties of matter	4	2
IV	17U4PAP1	Practical – I	4	2
V	17U5PAC3	Renewable energy sources	2	1
V	17U5PSA1	Physics of electrical appliances	2	2
VI	17U6PAC4	Optics and electricity	4	2
VI	17U6PAP2	Practical – II	4	2
		Total	22	12

*** Passed in AC meeting, 16th December, 2016**

Department of Physics – Curriculum structure
For B.Sc. Physics with ancillary Electronics*

Sem	Subject Code	Course title	No. of hours	Credits
III	17U3EAC1	AC Circuits	2	1
IV	17U4EAC2	Semiconductor diodes and applications	4	2
	17U4EAP1	Anc. Electronics Practical – I	4	2
V	17U5EAC3	Electronics devices and circuits	2	1
	17U5ESM1	Electronic Instrumentation	2	2
VI	17U6EAC4	Linear Integrated Circuits	4	2
	17U6EAP2	Ancillary Electronics Practical – II	4	2
		Total	22	12

*** Passed in AC meeting, 16th December, 2016**

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
III	**17U3PMC3**	**Optics**	**4**	**4**	**Major Core**

Objectives:

(i). To make the students understand the concepts of rectilinear propagation of light and the ideas of geometrical optics. (ii). To introduce the wave properties of light and the optical phenomena associated with them to the students.

Learning outcome:

(i). The students will be able to appreciate the dual nature of light. (ii). Students will be able to solve problems in geometrical and physical wave optics.

Geometrical optics

Unit I: Lens & Prism

Fermat's principle of least time-Rectilinear propagation of light-Reversibility of light rays–Lenses-Introduction-Terminology-Sign convention-Lens maker's formula-Deviation by thin lens-Power-Equivalent focal length of two thin lenses-Cardinal points-Dispersion-Angular dispersion-Dispersive power-Deviations without dispersion-Dispersion without deviation-Direct vision spectroscope.

Unit II: Aberrations & Eye pieces

Aberrations–Spherical & chromatic aberrations-Longitudinal chromatic aberration for an object at infinity-Achromatic lenses - Condition for achromatism of two lenses placed in contact and separated by a finite distance-Objective & eye pieces-Ramsden's eye piece-Huygens's eye piece.

Physical optics

Unit III: Interference

Introduction–Light waves-Superposition of waves-Interference-Coherence-Conditions for interference-Thin film-Plane parallel film-Interference due to reflected light and transmitted light-Variable thickness (Wedge shaped film)-Michelson's Interferometer–Applications of Michelson's Interferometer–Measurement of wavelength only.

Unit IV: Diffraction

Introduction-Huygens's-Fresnel theory-Fresnel's assumptions-Rectilinear propagation of light-Zone plate-Fresnel & Fraunhofer diffraction-Fraunhofer diffraction at a single slit-Plane diffraction grating-Determination of wavelength using grating-Resolving power-Rayleigh's criterion-Resolving power of prism.

Unit V: Polarization and LASER

Introduction-Polarization-Unpolarized light & Polarized light-Polarizer & analyzer-Anisotropic crystals-Double refraction in calcite crystal-Phase difference between extraordinary ray & ordinary ray-Superposition of waves linearly polarized at right angles-Retarders-Quarter wave plate (QWP)-Half wave plate (HWP)-Optical activity-Optical rotation-Specific rotation. Introduction to spectroscopy : Regions of spectra – Representation of spectra – Basic elements of practical spectroscopy.

Text book(s):

1. A Text book of Optics by Dr.N.Subrahmanyam, Brijlal, & Dr.M.N.Avadhanalu, 25th revised edition, S.Chand & company (Pvt) Ltd., Reprint, New Delhi, (2014).

Unit I: 2.2-2.4, 4.1-4.3, 4.7-4.10 (excluding 4.10.1), 4.15-4.17, 5.2 (upto 5.2.3), 8.1-8.4, 8.6-8.8.

Unit II: 9.2, 9.5, 9.10, 9.11.A, 9.13, 10.8, 10.10 (excluding 10.10.1), 10.11 (excluding 10.11.1), 10.12.

Unit III: 14.1-14.4, (excluding 14.4.1 - 14.4.4), 14.6, 14.7, 15.1-15.3, 15.5, 15.5.1, 15.5.2, 15.7, 15.8, 15.8.1 only.

Unit IV: 17.1-17.5.1, 17.7, 18.1, 18.2 (excluding 18.2.1-18.2.2), 18.7, 18.7.1, 18.7.2, 18.7.6, 19.1, 19.2, 19.11.

Unit V: 20.1-20.3, 20.8, 20.10, 20.11(excluding 20.11.1-20.11.3), 20.17-20.19, 20.27-20.29.

2. Fundamentals of molecular spectroscopy by Vth Edn., Mc Graw Hill Education India Pvt. Ltd., New Delhi, 2013.

Unit V: 1.3, 1.4, 1.5

Books for reference:

1. Optics & Spectroscopy by R.Murughesan 5th revised edition, S.Chand & Co Ltd., New Delhi, (2005).
2. Modern optics by A.B.Gupta, II nd edition, Books & Allied (p) Ltd., (2010).
3. Fundamentals of Optics by Jenkins & White, 4th edition, Mc Graw Hill International Edition, 5th reprint (2014).

Websites:

1. https://spie.org
2. https://aty.sdsu.edu>physics

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
IV	17U4PMC4	Introduction to classical mechanics	2	2	Major Core

Objectives:

(i) To make the students understand the mechanics of system of particles, and (ii) The basics of Lagrangian dynamics. The formulation of Lagrangian equations of motion to different systems will help the students to understand the theory involved in motion of relatively massive bodies.

Learning outcome:

(i) The students will understand the mechanics of system of particles (ii) They will also understand the role of constraints in the formation of equation of motion (iii) They will understand the Lagrangian dynamics from D'Alembert's principle (iii) Acquiring the knowledge of formation of Lagrange's equation and applying it to systems like simple pendulum and compound pendulum (iv) They will understand the application of Lagrangian mechanics to two body central force problems.

Unit I: Mechanics of a system of particles

External and internal forces–Centre of mass–Conservation of kinetic energy–Conservation of potential energy–Conservation theorem–Examples–Box train–Atwood's machine–Harmonic oscillator.

Unit II: Constraints

Coordinate systems–Degrees of freedom–Holonomic constraints–Non holonomic constraints–Examples–Rigid body–Simple pendulum–Rolling disc–Forces of constraints–Difficulties introduced by the constraints and their removal.

Unit III: Lagrangian dynamics

Generalised coordinates–Principle of virtual work–D'Alembert's principle–Procedure for formation of Lagrange's equations from D'Alembert's principle–Formation of Lagrange's equations–Newton's equation of motion from Lagrange's equations.

Unit IV: Applications of Lagrangian dynamics

Equation of motion of simple pendulum–Atwood's machine–Compound pendulum–Langrange's equation for LC circuit–Motion under central force.

Unit V: Two body central force problem

Reduction of two body central force problem to equivalent one body problem–Central force and motion in a plane–Kepler's laws of planetary motion–Deduction of Kepler's first , second and third laws-Artificial satellites.

Text book(s):

1. Classical Mechanics, J.C. Upadhyaya, Himalaya Publishing House Pvt. Ltd., India, (2015).

Unit I: Chapters 1.7.1, 1.7.2, 1.7.8.
Unit II: Chapters 2.2, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5.
Unit III: Chapters 2.4, 2.5, 2.6, 2.7, 2.8.
Unit IV: Chapters 2.8 (Examples 1 to 8).
Unit V: Chapters 4.1, 4.2, 4.6, 4.8.

Books for reference:

1. Classical Mechanics, Leonard Susskind & George Hrabovsky, Penguin Books Ltd., USA, (2014).
2. Classical Mechanics, G.Aruldhas, Prentice - Hall of India Pvt. Ltd., India, (2008).
3. Classical Mechanics, S.L. Gupta, V.Kumar & H.V.Sharma, 21st edition, Pragati Prakashan Pvt. Ltd., India, (2003).
4. Classical mechanics, H. Goldstein, II nd Edn., Nagroga Publishing House, India (2001)

Websites:

1. https://ocw.mit.edu/courses/physics/8-09-classical-mechanics-iii-fall-2014/index.htm

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
IV	**17U4PSM3**	**Energy conversion**	**2**	**2**	**SBE Major (Skill Based Elective)**

Objectives:

(i). The students should be introduced to conventional energy sources and also about their drawbacks in present world. (ii) The students should be introduced to topics on solar radiation and its measurements, Wind energy, geothermal sources and ocean energy systems.

Learning outcome:

(i) The students will be able to compare new energy sources with older conventional energy systems (ii) They will understand how far new energy systems are better than older once. (iii) They will understand the various solar radiation measuring instruments, horizontal axis WECS machine, vapor dominated and liquid dominated and geothermal designs and ocean thermal energy conversion systems.

Unit I: Introduction to Energy Sources

General Introduction to energy sources–Conventional energy sources–Coal, oil, natural gas - Non-conventional source–Solar, wind, ocean and geothermal energy.

Unit II: Solar Energy

Solar Radiation and its measurements–Solar constant–Pyrheliometers–Angstrom compensation pyrheliometers–Pyranometer–Solar photovoltaics–Principle of solar cell–Solar distillation-Solar pumping- Solar Furnace-Working principle-Advantages and limitations

Unit III: Wind Energy

Wind energy–Basic principles of wind energy–Power in the wind-Basic components of WECS–Wind energy collectors–Horizontal axial machines.

Unit IV: Geothermal energy

Geothermal energy–Geothermal sources–Hydro thermal resources–Vapor dominated system–liquid dominated system-Flashed steam system.

Unit V: Ocean Energy

Energy from oceans–OTEC–Open cycle OTEC system–Energy from tides–Basic principle of Tidal power–Estimation of energy in a single basin tidal system.

Text Book(s):

1. Non- Conventional energy sources, G.D.Rai, Kanna Publishers, Vth Edn., 9th Reprint, (2013).
   Unit I: Pages 1–10, 15–24 ,26-30.
   Unit II: Page 47-53, 60-63, 178-183, 195-202.
   Unit III: Pages 227–235, 256–260, 262-266.
   UnitIV: Pages 439-447, 452-455.

Unit V: Pages 495-501, 510-513, 526-527.

Books for Reference:

1. Solar Energy Utilization, G.D.Rai, Khanna Pub., Vth Edn., (1995).
2. Solar energy, S. P. Sukhatme, TMH, IInd Edn., (1998).
3. Power Plant Technology, A.K. Wahil, MHI, (1993).

Websites:

1. https://www.cleanenergyresourceteams.org

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
IV	17U4PMP2	Practical - II	2+2	4	Major Practical

Objectives:

To introduce the students to practical skills in electricity, optics, heat and other aspects of physics.

Learning outcome:

The students will be able to appreciate practical methods of determining physical quantities, verify laws of physics and be able to develop experimental skills.

List of Experiments

(Any Sixteen)

No.	Experiment
1	Sonometer - Determination of AC frequency
2	Newton's Rings – Determination of radius of curvature and R.I.
3	Air wedge – Determination of thickness of a given material
4	Deflection and Vibration Magnetometers – Determination of M & B_H
5	TAN C- Determination of pole strength
6	Optic Bench – Biprism – Determination of Wavelength
7	Mirror Galvanometer - Figure of merit –current and voltage sensitivity
8	M.G. – thermo emf of a thermocouple
9	Long Focus convex lens – Determination of focal length
10	Long Focus concave lens – Determination of focal length
11	De Sauty's Bridge – Verification of laws of capacitance
12	Carey-Foster's Bridge – Determination of resistance and resistivity
13	Copper voltameter - Determination of e.c.e
14	Field along the axis of a circular coil – Determination of B_H
15	Spectrometer – refractive index of a prism
16	Spectrometer – Grating – Determination of wavelengths of prominent lines
17	Spectrometer – Grating – Determination of resolving power
18	Spectrometer – Dispersive power of a prism
19	Spectrometer – Narrow angled prism – Refractive index
20	Laurent's half shade polarimeter
21	Potentiometer - Calibration of ammeter
22	Potentiometer - Calibration of Low range Voltmeter
23	Hysteresis curve– ferromagnetic material
24	B.G. - Ammeter Calibration
25	B.G. – High resistance by leakage method

Books for Reference

1. A Text Book of Practical Physics by M.N.Srinivasan, S.Balasubramanian, R.Ranganathan-Sultan Chand &Sons, 2007
2. A Text Book of Practical Physics by Indu Prakash & Ramakrishna , Kitab Mahal Agencies, New Delhi, 2011
3. Practical Physics, S.R. Govinda Rajan, T. Murugaiyan S. Sundara Rajan, Rochouse & Sons

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
V	17U5PME1	Relativity and quantum mechanics	5	6	Major Elective

Objectives:

(i). To expose the undergraduate students to the basic concepts of quantum mechanics and their application to simple problems. (ii). To make the students to understand the laws of special and general theory of relativity.

Learning outcome:

(i). The students will be able to appreciate the world of quantum physics and understand the nuances of the relativistic phenomenon. (ii). The students will be able to find solution to simple quantum mechanical systems.

Unit I: Relativity

Special relativity–Frames of reference–Postulates of special relativity–Time dilation–Ultimate speed of light–Doppler effect–Expanding Universe–Length contraction–Twin paradox–Relativistic momentum–Relativistic mass–Mass and energy–Energy and momentum–General relativity–Gravity and light–Galilean transformation–Lorentz transformation–Velocity addition–Simultaneity.

Unit II: Particle properties of waves

Electromagnetic waves–Black body radiation–Ultraviolet catastrophe–Planck radiation formula –Photoelectric effect –Quantum theory of light–Compton effect–Pair production–Photon absorption–Photons and gravity–Gravitational red shift– Examples (Black holes, Quasars and galaxies).

Unit III: Wave properties of particles

de Broglie waves–Physical meaning of wave function–Phase velocity–Group velocity–Electron microscopes–Davission Germer experiment–Particle in a box–Uncertainty Principle–Energy and time–Interferometry with electron and atoms–Quantum interference with electron beams.

Unit IV: Time dependent Schrodinger equation

Wave Function–Wave equation–Schrodinger's time dependent and steady-state equations–Linearity and Superposition–Expectation value–Operators–eigen values and eigen functions–Operators and eigen values-Particle in a box (normalized wave function)–Momentum representation–Finite potential well–Tunnel effect–Scanning Tunneling Microscope –Harmonic Oscillator.

Unit V: Quantum theory of hydrogen atom

Schrodinger's equation for the hydrogen atom–Separation of variables–Quantum numbers–Designation of angular momentum states–Uncertainty principle and space quantization–Electron probability density–Probability of finding the electron–Selection rules–Fine structure–Spin-orbit coupling–Pauli exclusion principle–Symmetric and antisymmetric wave functions–Examples (Fermions and bosons).

Text Book(s):

1. Concepts of Modern Physics , Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, 7th Edn., Tata McGraw Hill Publishing Company, (2015).

Unit I : Chapter 1, Section 1.1–1.5, 1.7–1.9, 1.10, 1.11.1, Appendix I to chapter 1
Unit II : Chapter 2, Section 2.1 –2.3, 2.7–2.9.
Unit III : Chapter 3, Section 3.1– 3.6, 3.8 –3.10.
Unit IV : Chapter 5, Section 5.1– 5.3, 5.4 –5.11.
Unit V : Chapter 6, Section 6.1– 6.7.1, 6.9, 6.12, 6.13, 7.2, 7.3.

Books for Reference :

1. Modern Physics by R.Murugeshan &Er.Kiruthiga Sivaprasath , 17th Edn., S.Chand & Co Ltd (2004).
2. A Text book of Quantum Mechanics by P.M. Mathews & K. Venkatesan, 2nd Edn., McGraw Hill Publishing Company. (2010).
3. Quantum Mechanics by Leonard I Schiff , 4th Edn.,McGraw Hill Publishing Company. (2016).
4. Quantum mechanics, by G. Aruldhas, 2nd Edn., PHI Learning Pvt. Ltd., (2011)

Websites:

1. https://www.edx.org/course/quantum-mechanics--everyone-georgetownx-phynx-008-o1x
2. https://ocw.mit.edu/courses/physics/8-20-introduction-to-special-relativity-january-iap-2005//

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
V	17U5PMC5	Analog electronics	5	5	Major Core

Objectives:

(i) To introduce the students to basics of circuit theory (ii) To impregnate knowledge of active devices and their applications to the students.

Learning outcome:

(i) The student will be able to solve problems involving circuits and (ii) Design circuits for various physical applications.

Unit I: Network Theorem and Semiconductor diodes

Maximum power transfer theorem-Thevenin's theorem-Norton's theorem-Solving problems–Intrinsic Semiconductor–Extrinsic Semiconductor–N type and P type Semiconductor–Semiconductor diode-Crystal diode as a rectifier–Important terms-Half wave rectifier-Efficiency-Full wave bridge rectifier-Efficiency-Ripple factor-Comparison of rectifier-Filter circuits-Voltage stabilization-Zener diode -Zener as voltage stabilizer.

Unit II: Transistors

Transistor–Naming the transistor terminals-Action-Symbols-Transistor as an amplifier-Transistor connections(CB,CE,CC)-Characteristics (CE only)-DC load line analysis-Operating points-Methods of transistor biasing–Voltage divider bias.

Unit III: Hybrid Parameter and Transistor amplifiers

Hybrid parameter-Determination of h-parameter-Equivalent circuit-Performance of linear circuit in h parameter–The h-parameters of a transistor–Nomenclature for transistor h-parameters–Transistor circuit performance in h-parameters – Single stage transistor amplifier – Transistor amplification and its graphical demonstration-Practical circuits of transistor amplifier–RC coupled amplifier-Performance of power amplifier-Classification of power amplifier.

Unit IV: Oscillators and Multi-vibrators

Feedback–Principle of negative feedback amplifier-Advantages of negative feedback-Feedback circuit–Oscillators-Types of sinusoidal oscillations-Oscillatory circuits-Undamped oscillation from tank circuit-Explanation of Barkhausen criterion-Hartley oscillator–Multivibrators-Astable multivibrator.

Unit V: Field Effect Transistors

Introduction–Types of FETs–JFET–Working principle of JFET–Difference between JFET and Bipolar transistors–JFET as an amplifier–Output characteristics of JFET–Important terms–Expression for drain current–Advantages of JFET–Parameters of JFET–Relation among JFET parameter.

Text Book(s)

1. Principles of electronics, V.K.Mehta & Rohit Mehta, XIth Edn., S. Chand and Co. Ltd (2013)

Unit I: Sections 1.12-1.16,5.1,5.14-5.16,6.1-6.2,6.8-6.11,6.13-6.15,6.18,6.20,6.21,6.24,6.25,6.27

Unit II: Sections 8.1-8.8,8.10,8.12,8.13,8.17,8.18,9.6,9.7,9.12,24.1-24.7

Unit III: Sections 10.1 – 10.4, 11.1, 11.2,11.5, 12.5,12.6,13.1-13.5

Unit IV: Sections 14.1-14.4,14.7,14.1,18.10-18.12

Unit V: Sections 19.1-19.8,19.10-19.14

Books for Reference:

1. Basic Electronics:Solid State, B.L.Theraja, S.Chand & Co., New Delhi, (2006).
2. A Text Book of applied electronics, R.S. Sheda, S.Chand & Co., New Delhi, (2003).
3. Electronic principles by Albert Malvino & David Bates, 7th Edn., Mc Graw Hill Education Pvt. Ltd., 21st Reprint, (2017)

Websites:

1. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-101-introductory-analog-electronics-laboratory-spring-2007/

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
V	17U5PMC6	Thermodynamics and statistical mechanics	5	5	Major Core

Objectives:

(i). To make the students understand the influence of heat and thermodynamic applications of bodies. (ii). To make the students learn the principles in the production of low temperature and liquefaction of gases. (iii) To make the student to have the basic understanding of statistical mechanics.

Learning outcome:

(i). Students will be able to solve the problem in heat and thermodynamics. (ii). Students will be able to appreciate the quantum statistical procedure. (iii). Students will be able to understand the low temperature, liquefaction of gases and entropy concept.

Unit I: Transmission of heat and radiation

Introduction-Coefficient of thermal conductivity-Rectilinear flow of heat along a bar-Ingen Hausz experiment-Lee's disc method of determination of thermal conductivity of bad conductor -Radiation-Black body-Wien's displacement law, Rayleigh-Jeans law and Planck's Radiation law (no derivation)-Stefan's law-Derivation of Stefan's law and its experimental verification-Solar constant and experimental determination of Solar constant (Angstrom's Pyrheliometer &Water flow Pyrheliometer).

Unit II: Laws of thermodynamics

Reversable and irreversible processes-Heat Engines-Definition of efficiency, Carnot's ideal heat engine-Carnot's cycle-Effective way to increase efficiency-Carnot's engine and refrigerator-Coefficient of performance-Second law of thermodynamics (various statements)-Carnot's Theorem-Carnot's cycle and its applications-Petrol engine and diesel engine.

Unit III: Entropy

Concept of entropy–Change in entropy in adiabatic process–Change in entropy in reversible cycle-Principle of increase of entropy-Change in entropy in irreversible process-T-S Diagram-Physical significance of entropy-Entropy of a perfect gas- Kelvin's thermodynamics scale of temperature-Third law of thermodynamics-Zero point energy-Negative temperature-Heat death of Universe- Four Maxwell's thermodynamic relations-Relation between thermodynamic variables.

Unit IV: Change of state

Joule-Thomson's effect-Porous plug experiment-Liquefaction of gases-Linde's method-Principle of Cascaded cooling-Liquefaction of Helium-Helium I and Helium II-Some peculiar properties of Helium II-Production of low temperatures-Adiabatic demagnetization working and theory-Refrigeration and air conditioning system (factors affecting comfort air conditioning, air conditioning system and equipments used in air conditioning system)

Unit V: Statistical mechanics

Probability-Macro state and microstate-Thermodynamic probability- Phase space-Elements of phase space-Fundamental postulates of statistical mechanics-Entropy and probability–Need for quantum statistics-Maxwell-Boltzmann energy distribution law-Bose-Einstein law-Fermi-Dirac distribution law.

Text Book(s):

1. Heat, Thermodynamics and Statistical Physics by Brijilal, N.Subramininan and P.S.Hemne, S. Chand & Co. Revised Edition, New Delhi, (2014)

Unit I: 15.1, 15.2, 15.6, 15.10, 8.6, 8.12, 8.14, 8.15, 8.17, 8.26, 8.28 & 8.29
Unit II: 4.20- 4.29, 4.32, 4.33
Unit III: 5.1–5.11, 5.15–5.18 & 6.3
Unit IV: 7.5-7.9, 7.11-7.13, 7.15-7.16, 7.21, 16.7, 17.1, 17.2. &17.3
Unit V: 9.2, 9.7, 9.8, 10.4, 10.8, 10.15, 11.3, 12.1, 12.5, 12.8

Books for Reference:

1. Heat and Thermodynamics, Mark Zemansky, Richard H Dittman, 8th ED McGraw Hill Education, (2011).
2. Thermodynamics and Statistical Physics, J. K. Sharma, K. K. Sarkar, Himalaya Publishing House, (1988).
3. Fundamental of Statistical mechanics, B.B.Laud, New Age International publishers, New Delhi, (2012).

Websites:

1. https://www.khanacademy.org> physics
2. web.mit.edu/16.unified/www/FALL/thermodynamics

Sem.	Subject code	Course title	No. of hours	Credits	Paper type

V	17U5PMC7	Biomedical instrumentation	3	3	Major Core

Objectives:

To enable the students to understand the physics and theory behind the bio sensitive system like (i) bioelectric signal recording, (ii) physiological assist devices, (iii) equipments, (iv) biotelemetric devices and their safety measures.

Learning outcome:

To make the students to familiarize the physical design and maintenance of different biomedical instruments used in medical field.

Unit I: Biopotential electrodes and transducers

Cell structure-Nature of cancer cells-Transport of ions through cell membrane-Resting and action potential-Half cell potential-Bioelectric potential-Design and components of medical instruments-Electrodes - Surface, needle, depth electrodes-Electrical circuits.

Unit II: Bioelectric signal recording

Introduction-Characterstics of recording systems-Electrodcardiography (ECG) - Electroencephalograph (EEG)-Electromyograph (EMG)-Electroneurograph (ENG)-Recording units.

Unit III: Physiological assist device

Cardiac pacemakers-Natural and artificial pacemakers-Pacemaker batteries-Defibrillator–A.C./D.C. Synchronized defibrillator-Stimulators-Bladder Stimulators-Heart lung machine-Various types of oxygenators-Kidney machine–Hemodialysing units-Peritoneal dialysis.

Unit IV: Clinical and operation theater equipments

Flame photometer-Spectroflurometer-pH meters-Audiometer-Endoscopes-Electromagnetic and laser blood flow meters-Ventilators-Diathermy units-Ultrasonic, microwave and short wave diathermy–Types and their applications–Surgical diathermy.

Unit V: Biotelemetry and safety instrumentation

Principles of a biotelemetry system: Dadiotelemetry with subcarrier-Multiple channel telemetry systems-Problems in implant telemetry-Uses of biotelemetry-Physiological effects of 50 Hz current-Microshock and macroshock–Electrical accidents in hospitals-Devices to protect against electrical hazards.

Text book(s):

1. Biomedical Instrumentation, M. Arumugam, Anuradha Publishing Co., Kumbakonam, Tamilnadu, (2004).

Unit I: Chapter 1.1-1.7, 2.2–2.4, 2.41, 2.4.6, a, b, 2.4.7.
Unit II: 4.2–4.8
Unit III: 5.2,5.2.1,5.2.2,5.2.3,5.3,5.5,5.5.1,a,b,5.7, 5.7.3,5.8, 5.8.3, 5.8.4
Unit IV: 6.2.6.3, 6.4, 6.5, 6.8, 6.10, 6.10.1, 6.14.1, 7.5.2, 7.5.3, 7.7, 10.4
Unit V: 8.2, 8.4.3, 8.4.4, 8.5, 8.6, 9.3, 9.4, 9.5, 9.6

Books for reference:

1. Handbook of biomedical instrumentation, R. S. Khandpur, Tata McGraw Hill, New Delhi, (1990).
2. Principles of biomedical instrumentation and measurements, Richad Aston, Merrill Publishing Co., London, (1990).
3. Biomedical instrumentation, Marvin D. Weiss, Chilton Book Co., (1973).
4. Biomedical Instrumentation and Measurements, Leslie Cromwell, Fred J. Weibell, Erich A. Pfeiffer, Prentice-Hall, (1980).
5. B.Jacobson and J.G.Webster, Medicine and clinical Engineering, Prentice Hall of India, New Delhi, (1979).

Websites:

1. www.accessengineeringlibrary.com/browse/handbook-of-biomedical-instrumentatio-third-edition

Sem.	Subject code	Course title	No. of hours	Credits	Paper type

VI	17U6PME2	Atomic and nuclear physics	6	7	Major Elective

Objectives:

(i) The student will be introduced to classical and quantum ideas of atomic structure of elements (available in periodic table) to have a better understanding of modern experimental results pertaining to Stern - Gerlach experiment, Zeeman, Paschen - Back and Stark effects. (ii) A topic on "Cosmic rays" has been introduced to make the students understand the past and future of our universe. (iii) The structure and basic properties of nucleus are introduced for the understanding of the nuclear reactions and transformations.

Learning outcome:

(i) The students will be able to understand the different spectra obtained with different experimental techniques (like Zeeman, Paschen - Back and Stark effect) and they will acquire knowledge to solve related problems in that area.

(ii) The students will acquire the knowledge of the basic structure and properties of nucleus and understand the nuclear transformations and the properties of alpha, beta and gamma rays.

(iii) The students will understand the working principles of detectors of nuclear reactions, particle accelerators and nuclear reactors.

(iv) The topic on cosmic rays, will make the students to think about the past and future of the universe. The students will identify the elementary particles in the nucleus and will understand their properties.

Unit I: Atomic Structure – I

The nuclear atom–Thomson's atom model–Rutherford atom model–Electron orbits–Bohr atom model–Energy levels and spectra-Origin of line spectra–Atomic excitation–Frank Hertz experiment–Vector atom model–Quantum numbers–Coupling schemes.

Unit II: Atomic Structure – II

Pauli's exclusion principle–Periodic table–Electronic configuration–Magnetic dipole moments due to orbital motion of electron and spin of electron–Stern and Gerlach experiment–Spin orbit coupling–Zeeman effect–Larmor's theorem–Quantum mechanical explanation of normal Zeeman effect–Anomalous Zeeman effect–Paschen-Back effect–Stark effect.

Unit III: Nuclear Structure and nuclear transformations

Nuclear composition–Atomic masses–Nuclear properties–Spin and magnetic moment–Binding energy–Binding energy per nucleon–Liquid drop model–Radioactive decay–Half life–Alpha decay–Tunnel theory of alpha decay–Beta decay–Gamma decay.

Unit IV: Detectors, accelerators, and nuclear reactors

Ionisation chamber–Geiger Muller counter–Wilson cloud chamber–The cyclotron–The synchrocyclotron–The betatron–Nuclear fission– Energy released in fission–Chain reaction–Nuclear reactors–Nuclear fusion–Source of stellar energy–Thermonuclear reactions .

Unit V: Cosmic rays and elementary particles

Discovery of cosmic rays–Latitude effect–East west effect (azimuth effect)–Altitude effect–Primary cosmic rays–Secondary cosmic rays–Cosmic ray showers–Discovery of positron–mesons–Van-Allen belts–Origin of cosmic rays–History of the universe–Hubble's law–Future of the universe–Classification of elementary particles–Particles and antiparticles–The fundamental interactions–Quantum numbers–Conservation theory–Quark model.

Text book(s):

1. Concepts of Modern physics, Arthur Beiser, Shobhit Mahajan, Rai Choudhury, 7th Edition, McGraw Hill Education Pvt. Ltd., India, (2015).
2. Modern physics, R. Murugeshan and S. Kiruthiga, 17th revised Edition, S. Chand & Co. Pvt. Ltd., India, (2014).

Unit I: Book 1: 4.1, 4.2, 4.5, 4.6, 4.6.1, 4.9, 4.9.1.
Book 2: 6.12 – 6.14.
Unit II: Book 2: 6.15 – 6.21, 6.23 – 6.28.
Unit III: Book 1: 11.1, 11.2, 11.2.1, 11.4, 11.5, 12.1, 12.2, 12.4, 12.4.1, 12.5, 12.6.
Unit IV: Book 2: 29.3, 29.6, 29.7, 30.4 – 30.6, 35.2 to 35.9.
Unit V: Book 2: 37.1-37.15, 38.1, 38.2, 38.4 – 38.7.

Books for reference:

1. Hugh D. Young, Roger A. Freedman, Sears and Zemansky's University Physics with Modern Physics, 14th edition, Pearson Pvt. Ltd., India, (2017).
2. Max Born, Atomic physics, The English language book society, UK, (1989).
3. Shatendra K. Sharma, Atomic and Nuclear Physics, Dorling Kindersley, India, (2005).
4. D.C. Tayal, Nuclear Physics, Himalaya Publishing House, India, (2007).
5. S.B.Patel, Nuclear Physics an introduction, New Age international Pvt.Ltd., India, (2011).

Websites:

1. https://www.nuclear-power.net/
2. https://ocw.mit.edu/courses/physics/8-942-cosmology-fall-2001/
3. https://ocw.mit.edu/courses/materials-science-and-engineering/3-091sc-introduction-to-solid-state-chemistry-fall-2010/structure-of-the-atom/

Sem.	Subject	Course title	No. of	Credits	Paper

	code		hours		type
VI	**17U6PME3**	**Solid state physics**	**5**	**6**	**Major Elective**

Objectives:

(i) To introduce the students to bonding in solids, crystal structures and symmetry in crystals. (ii) To inculcate basic understanding of the electrical, thermal and magnetic properties of solid state systems.

Learning outcome:

(i) The student will understand the bonding in solids. (ii) They will acquire knowledge about the crystal structure and X-ray diffraction analysis of crystals. (iii) They will understand the physics that influences the presence of charge carriers in semiconductors. Learn the factors that influence the superconductivity in solids. (iv) They will gain knowledge of electrical, thermal and magnetic properties of solids. (v) They will know how to apply appropriate laboratory techniques to measure properties of semiconductors and metals.

Unit I: Bonding in solids

Bonding in solids–Ionic bonding–Bond energy of NaCl molecule–Calculation of lattice energy of ionic crystals–Calculation of Madelung constant of ionic crystals–Properties of ionic solids–Covalent bond–Directional nature of covalent bond–Hybridization–Properties of covalent compounds–Metallic bond–Properties of metallic crystals– Hydrogen bond.

Unit II: Crystal physics

Unit cells and lattice parameters–Unit cell versus primitive cell–Crystal systems–crystal symmetry–Twenty three elements in a cubic crystal–Non compatibility of five fold rotation axis with a lattice–Combination of symmetry elements–Rotation inversion axis–Translation symmetry elements–Bravais lattices–Metallic crystal structure–Other cubic structures–ZnS, NaCl, CsCl–Directions, planes and Miller indices–Important features of miller index crystal planes–X-ray Diffraction–Bragg's law– Bragg's X-ray Spectrometer.

Unit III: Electrical Properties of materials

Introduction–A survey of superconductivity–Mechanism of superconductors–Effect of magnetic field–Flux exclusion: the Meissner effect–Type I and type II superconductors–Physics of semiconductors–Introduction–The band structure of semiconductors–Semiconductors–Intrinsic semiconductors–Electrical conductivity–Extrinsic semiconductors–Hall effect–Advantages of semiconductor devices.

Unit IV: Thermal Properties of materials

Lattice specific heat–Classical theory (Dulong and petit's law)–Einstein's theory of specific heat–Debye's theory of specific heat.

Unit V: Magnetic Properties of materials

Introduction–Magnetic permeability–Magnetization–Bohr magneton–Electron spin and magnetic moment– Diamagnetism– Langevin theory- Paramagnetism–Ferromagnetism– Domain model-Magnetic hysteresis.

Text book(s):

1. Solid state Physics, S.O. Pillai, Rev. 7th edition, New Age International Pub.,India, (2015).

Unit I: Chapter 3: V-IX, XIIII, XIV, XVII – XX, XXIV.
Unit II: Chapter 4: IV-XII, XIV, XV, XVII, XVIII, XIX.
Chapter 5: VII, VIII, IX.
Unit III: Chapter 8: I to IV, VII, XIII.
Chapter 10: I to IV, VII, VIII, XIV, XV.
Unit IV: Chapter 7: (full).
Unit V: Chapter 9: I to IV, VII, IX, XI, XIX, XXVII.

Books for reference:

1. Solid state Physics, Kakani & Hemaranjani, Reprint, S.Chand & Co. India, (2005).
2. Solid state Physics, R. L. Singhal, VIth Edn., Kedarnath Ramnath & Co., India, (2006).
3. Solid state Physics, C. Kittel, VIIth Edn., Wiley & Sons, India, (2007).

Websites:

1. http://www.physics.udel.edu/~bnikolic/teaching/phys624/lectures.html
2. https://ocw.mit.edu/courses/physics/8-231-physics-of-solids-i-fall-2006/index.htm

Sem.	Subject code	Course title	No. of hours	Credits	Paper type

VI	17U6PMC8	Digital electronics and instruments	5	5	Major Core

Objectives:

(i) To introduce the students to discrete electronics and to make them study the basic building blocks of memory and arithmetic circuits which are the back bone of modern computers (ii) To introduce the students to measuring instruments and their working principle.

Learning outcome:

(i) The student will be able to design digital circuits for various physical applications.

Unit I: Number Systems

Binary number system–Binary to decimal conversion–Decimal to binary conversion–Octal numbers–Hexadecimal numbers–ASCII code–Basic gates-Boolean algebra–NOR gates–NAND gates–Boolean laws and theorems–Sum of products method– Truth table to Karnaugh map–Pairs, Quads, and Octets–Karnaugh simplifications–Product of sums method–Product of sums simplification .

Unit II: Binary arithmetic and Flip-flops

2's complement representation–2's complement arithmetic–Arithmetic building blocks–The Adder-Subtractor–RS Flip-Flops–Gated Flip-Flops–Edge-Triggered JK Flip-Flops–JK Master-slave Flip-Flops.

Unit III: Registers and combination circuits

Types of registers–Serial in serial out–Serial in parallel out–Asynchronous counters–Synchronous counters–Variable-resistor Networks–Binary ladders–A/D converter-simultaneous conversion.

Unit IV: Operational Amplifier

Introduction–Operational amplifier Symbol–Polarity Conventions–Ideal Operational amplifier–Virtual ground and summing point–Operational amplifier applications–Linear amplifier–Unity follower–Adder–Subtractor–Integrator–Differentiator.

Unit V: Oscilloscope

Introduction– Basic Principle –CRT Features–Block diagram of oscilloscope–Simple CRO–Vertical amplifier–Horizontal deflecting system–Trigger sweep CRO–Delayed in trigger CRO–Dual beam CRO–Dual trace oscilloscope block description–Measurement of frequency by Lissajou's method –Checking of diodes–Use of Lissajou's figure for phase measurement.

Text Book(s):

1. Digital Principles and Applications, D.P.Leech, A.P. Malvino, G.Saha, 8th Edition, McGraw Hill, (2016).

Unit I: 5.1-5.8, 2.1-2.2, 3.1-3.5, 3.7-3.8.

Unit II: 6.1– 6.8, 8.1–8.2, 8.5, 8.8,12.1-12.2,12.5

Unit III: 9.1-9.3, 10.1, 10.3, 11.1, 11.2, 11.5

2. Basic Electronics Solid State, B.L.Theraja, S.Chand & Co., (2001).

Unit IV: 31.18-31.30

3. Electronic Instrumentation – H.S. Kalsi – Tata McGraw Hill, 15th Reprint (2003).

Unit V: 7.1-7.8, 7.9, 7.10, 7.14, 7.15 upto 7.15.1 (only), 7.20, 7.23, 7.26, 7.30

Books for Reference:

1. Modern electronic instrumentation and measurement techniques, Albert D.Helfrick, William D.Cooper, PHI Learning Private Limited, (1990)
2. A Text Book of applied electronics, R.S. Sheda, S.Chand & Co., (2003).

Websites:

1. http://ocw.uc3m.es/technologia-electronica/digital-electronics

Sem.	Subject code	Course title	No. of hours	Credits	Paper type

VI	17U6PSM4	8085 µp Architechture and programming	2	2	SBE Major (Skill Based Elective)

Objectives:

(i). The students should be introduced to architectural details of 8085 microprocessor (µP).
(ii) To make the students understand the topics on instruction set, looping counting and advanced instructions, counters and time delays and stack and sub-routine etc.

Learning outcome:

(i) The students will have a through vision of hardware part of 8085 microprocessor (µP) (ii) They will be able to write assemble language programs with the instruction available in instruction set (software part) by his own for different practical applications.

Unit I: 8085 µP architecture

Microprocessor initiated operations and bus organization–pins and signals–Architecture

Unit II: Instruction set

8085 Instruction–Data transfer instruction–Addressing modes–Arithmetic and Logic instruction –Branch instruction.

Unit III: Looping, counting and advanced instructions

Looping counting and Indexing–16 bit arithmetic instruction–Arithmetic operations related to memory–Logic operations – Simple programs

Unit IV: Counter and time delays

Counters and time delays–Time delay using one register–Loop within a loop technique–Counter design with time delay– Simple programs

Unit V: Stack and subroutine

Stack–Subroutine-traffic signal control program– Simple programs

Text book(s):

1. Microprocessor Architecture, Programming, and Applications with the 8085, Ramesh S Gaonkar, VI th Edition, Penram International Publishing (India) Private Limited, (2016)

Unit I: Sections 3.1, 3.1.1, 3.1.2, 4.1, 4.1.1-4.1.3, 4.1.5
Unit: II: Sections 6.1, 6.1.1, 6.2, 6.2.1, 6.2.2, 6.3, 6.3.1-6.3.3, 6.4, 6.4.1-6.4.4
Unit III: Sections 7.1, 7.2, 7.2.1-7.2.4, 7.2.6, 7.3, 7.3.1, 7.4, 7.4.1, 7.5, 7.5.1, 7.5.3
Unit IV: Sections 8.1, 8.1.1, 8.1.3, 8.1.5
Unit V: Sections 9.1 (Pages 296-302), 9.2, 9.2.1(Upto page 314)

Book for reference:

1. Fundamentals of microprocessor and microcomputer, B. Ram, Danpatrai publications, New Delhi, (2007).

Sem.	Subject code	Course title	No. of hours	Credits	Paper type

VI	17U6PMP3	Practical - III	3+3	6	Major Practical

Objectives:

To introduce the students to practical skills in electricity, optics, heat and other aspects of physics.

Learning outcome:

The students will be able to appreciate practical methods of determining physical quantities, verify laws of physics and be able to develop experimental skills.

List of Experiments – Non-Electronics

(Any Sixteen only)

No.	Experiment (Non-Electronics)
1	LCR- series resonance
2	i-d curve - Spectrometer
3	Owen's bridge – Determination of 'L'
4	Absolute value of C – BG
5	i_1-i_2 curve -Spectrometer
6	Mutual inductance – BG
7	Low pass filter
8	Conversion of G into V-Potentiometer
9	LCR- parallel resonance
10	High pass filter
11	Cauchy's constants - Spectrometer
12	Bi-prism - Spectrometer
13	Thermo emf using -MG
14	Calibration of high range voltmeter-Potentiometer
15	Anderson's bridge – Determination of 'L'
16	Hydrogen spectrum-Spectrometer
17	Determination of Plank's constant-h using photo cell
18	Determination of energy band gap of a given thermister
19	Characteristics of the given thermocouple (Fe-Cu)
20	e/m – Thomson's experiment
21	Charge of an electron - Millikan's experiment
22	Determination of Stefan's constant
23	Magnetic susceptibility – Quinke's method
24	Verification of Brewster's law using Nicol's prism – Spectrometer

Books for Reference

1. A Text Book of Practical Physics by M.N.Srinivasan, S.Balasubramanian, R.Ranganathan-Sultan Chand &Sons, 2007
2. A Text Book of Practical Physics by Indu Prakash & Ramakrishna – Kitab Mahal Agencies
3. Practical Physics : S.R. Govinda Rajan, T. Murugaiyan S. Sundara Rajan – Rochouse & Sons

Sem.	Subject	Course title	No. of	Credits	Paper

	code		hours		type
VI	**17U6PMP4**	**Practical - IV**	**3+3**	**6**	**Major Practical**

Objectives:

To introduce the students to practical skills in electronic devices and components along with their applications.

Learning outcome:

The students will be able to appreciate practical methods of determining physical quantities, verify laws of physics and be able to develop experimental skills.

List of Experiments – Electronics
(Any Sixteen only)

No.	Experiment (Electronics)
1	Half-Adder and Full Adder
2	Hartley Oscillator
3	Full-Wave Rectifier with capacitance filter
4	Transistor Characteristics – CE mode
5	Phase-shift oscillator
6	Zener Regulated Power supply (with Bridge Rectifier)
7	Logic gates using discrete components
8	IC Regulated power supply
9	C++ programming – Matrix operation and sorting
10	Universality of NAND gate
11	Universality of NOR gate
12	Op-Amp applications - Adder, Subtractor, Integrator and Differentiator
13	Monte-carlo simulation (value of pi) using MS-Excel
14	C++ programming : Curve-fitting by Least squares method
15	FET characteristics
16	De-Morgan's theorems
17	Half-subtractor and Full-subtractor
18	Microprocessor – 8085 – Simple programs
19	Single-stage amplifier – discrete components
20	Astable multivibrator
21	Bistable multivibrator
22	Colpitt's oscillator
23	FET amplifier
24	UJT Characteristics
25	UJT Relaxation Oscillator

Books for Reference

1. A Text Book of Practical Physics by M.N.Srinivasan, S.Balasubramanian, R.Ranganathan-Sultan Chand &Sons, 2007
2. A Text Book of Practical Physics by Indu Prakash & Ramakrishna – Kitab Mahal Agencies
3. Practical Physics : S.R. Govinda Rajan, T. Murugaiyan S. Sundara Rajan – Rochouse & Sons
4. Relevant references from internet

NME

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
III and IV	**17U3PNM1/ 17U4PNM1**	**Communication systems**	**2**	**2**	**Non-Major Elective (NME)**

Objectives:

(i). To make the students understand the various principles involved in radio communication systems, TV communication, etc. (ii). To make the students understand various measuring systems like voltmeter, ammeter, multimeter, etc.

Learning outcome:

(i). The students will be enriched with the knowledge of various communication systems used today for communication purposes.

Unit I: Radio Communication

EM spectrum – Radio wave – Microwave- Wavelengths – Uses.

Unit II: Modulation

Signal wave – Carrier wave - Amplitude modulation- Frequency modulation.

Unit III: TV transmission

TV transmission and reception –Picture tube – Analog communication– Digital communication.

Unit IV: Communication electronics

RADAR – Principle – Uses – Satellite communication.

Unit V: Electronic measuring systems

CRO – Principle – Voltmeter – Ammeter – Multimeter – Applications (Only one application for each).

Book(s) for reference:

1. Basic electronics: Solid state, B.L. Theraja, S.Chand Publishing Co., New Delhi, (2006).
2. Electronic communication systems,George Kennedy, Bernard Davis, S.R.M. Prasanna, Mc Graw Hill education, (2011).

NME

Sem.	Subject code	Course title	No. of hours	Credits	Paper type
III and IV	**17U3PNM2/ 17U4PNM2**	**Discovering physics**	**2**	**2**	**Non-Major Elective (NME)**

Objectives:

(i) To introduce the students (other than physics major) to the amazing world of physics and the time evolution of the theories and ideas.

(ii) To introduce the students to the various popular phenomena happening around us and to appreciate the physics behind those phenomena.

Learning outcome:

(i) The students will be able to appreciate, admire and then contribute whatever they can, to enhance everyday aspects of daily life.

Unit I: Introduction to Physics

Introduction–Measurements at various scales–Scientific contributions (Galileo, Copernicus and Newton)–Falling apple–Newton's gravitational equation–Technology and scientific principles behind them.

Unit II: Colors, Rainbows and the blue sky

Why do we see colors?–Idea of Rutherford–Contributions of Planck and Bohr–How does sun make light? (Einstein's mass-energy relation)–Formation of rainbow.

Unit III: Objects in Motion

Aristotle's philosophy of motion–Galileo's contribution–Inertia and Newton's first law of motion-Newton's second law of motion–Newton's third law of motion–Kepler's laws of planetary motion.

Unit IV: Expanding Universe

Hubble's law–Dark energy–Doppler's red shift–Big bang theory– Einstein's theory of relativity –Outcome of Michelson-Morley experiment.

Unit V: World of atoms

Atoms and charges–Plum-pudding model– Alpha particle scattering experiment–Bohr's picture of atom–Heisenberg's uncertainty principle.

Book for Study:

(1). Vedang Sati, Let Us discover physics, Createspace Independent Publishers, (2014).

Unit I: Chapter 1;
Unit II: Chapter 2;
Unit III: Chapter 3;
Unit IV: Chapter 4,7;
Unit V: Chapter 6.

Course title	No. of hours	Paper type
Bio-medical instrumentation	**2/week (Total 30 hrs)**	**Certificate course**

Objectives:

(i). To make the students understand the various bio medical potentials in the human body. (ii). To make the students aware of the instrumentation techniques to measure the potentials as a diagnostic tool.

Outcome:

(i) Tthe students will be able to appreciate the bio medical potentials as useful tool in medical diagnostics. (ii) They will understand devise instruments for measuring those potentials.

Unit I: Bio-potential electrodes

Bio potentials-Design of Medical instruments-Componenents of bio medical instrumentation system-Electrodes.

Unit II: Transducers

Transducers-Performance of characteristics of transducers-Active and passive transducers.

Unit III: Bio-Potential Recorder-I

Characteristics of basic recording system-Electro cardiograph (ECG)-Block diagram- ECG leads-ECG recording set up.

Unit IV: Bio-Potential Recorder-II

Electro Encephalo Graph (EEG)-Origin-block diagram of EEG unit-Electro Myograph (EMG)-Block diagram of EMG records

Unit V: Specialized Medical Equipments

Digital thermometer-Computer Tomography (CT) principle-Block diagram of CT scanner.

Book(s) for study:

1. Bio-medical instrumentation, II Edition, M. Arumugam, Anuradha agencies, Chennai, (1994)

Department of Chemistry

ANCILLARY CHEMISTRY SYLLABUS (SF)

Sem	Course Code	Course Title	C	H	I	E	T
I	17U1CAC1 *(For I Mic Bio)*	ANCILLARY CHEMISTRY – I	4	4	25	75	100
II	17U2CAC2 *(For I Mic Bio)*	ANCILLARY CHEMISTRY – II	4	4	25	75	100
III	17U3CAC3 *(For II Mic Bio)*	ANCILLARY CHEMISTRY – III	2	2	25	75	100
III	17U3CSA1 *(For II Mic Bio)*	APPLIED CHEMISTRY	2	2	25	75	100
IV	17U4CAC4 *(For II Mic Bio)*	ANCILLARY CHEMISTRY – IV	2	2	25	75	100
III	18U3CAC1 *(For II Mat, II Phy and II Bio Tech)*	ANCILLARY CHEMISTRY – I	2	2	25	75	100
IV	18U4CAC2 *(For II Mat, II Phy and II Bio Tech)*	ANCILLARY CHEMISTRY – II	4	4	25	75	100
V	18U5CAC3 *(For III Mat, III Phy and III Bio Tech)*	ANCILLARY CHEMISTRY – III	2	2	25	75	100
V	18U5CSA1 *(For III Mat, III Phy and III Bio Tech)*	APPLIED CHEMISTRY	2	2	25	75	100
VI	18U6CAC4 *(For III Mat, III Phy and III Bio Tech)*	ANCILLARY CHEMISTRY – IV	4	4	25	75	100
II	17U2CAP1 *(For I Mic Bio)*	QUALITATIVE ANALYSIS	2	2	50	50	100
IV	17U4CAP2 *(For II Mic Bio)*	VOLUMETRIC ANALYSIS	2	2	50	50	100
IV	18U4CAP1 *(For II Mat, II Phy and II Bio Tech)*	QUALITATIVE ANALYSIS	2	2	50	50	100
VI	18U6CAP2 *(For III Mat, III Phy and III Bio Tech)*	VOLUMETRIC ANALYSIS	2	2	50	50	100

Course Code	Course Title	C	H	I	E	T
17U1CAC1	**ANCILLARY CHEMISTRY – I** *(For I Mic Bio)*	4	4	25	75	100

OBJECTIVES

To empower the students to

(i) study the models of an atom, electronic configuration, shapes of orbitals,
(ii) know the classification, importance and types of organic reactions,
(iii) study the types of bonds and hybridization,
(iv) understand the types of adsorption, process and factors affecting it,
(v) study the types of catalysis and applications.

LEARING OUTCOME

- Understanding the basics of organic, inorganic and physical chemistry.
- Skill and applicability of knowledge in pharma and analytical industries.

UNIT I ATOMIC STRUCTURE 12 Hrs

Brief introduction to structure of atom - Rutherford and Niels Bohr's model of an atom and their defects - Sommerfeld's modification of atomic structure Electronic configuration and quantum numbers - Orbitals-shapes of s, p and d orbitals. - Pauli's exclusion principle - Hund's rule of maximum multiplicity - Aufbau principle - Heisenberg's uncertainty principle.

UNIT II INTRODUCTION TO ORGANIC CHEMISTRY 12 Hrs

Importance of organic compounds in daily life – Classification of organic compounds. Functional groups – definition – various functional groups - General formula and examples for the following: Alcohols, Alkyl Halide, Carbonyl compounds, Carboxylic acids and Amines. Types of organic reactions – Substitution, Addition and Elimination reactions (examples only, not mechanism)

UNIT III CHEMICAL BONDING 12 Hrs

Types of Bonds – electrovalent, ionic, covalent, co-ordinate covalent, metallic and H-bonding. Characteristics of electrovalent and covalent compounds. VB Theory - Types of overlapping (s-s, s-p and p-p overlapping), Sigma and pi bonds, Hybridisation- sp^3, sp^2 and *sp*hybridisation in methane, ethylene & acetylene only.

UNIT IV SURFACE CHEMISTRY 12 Hrs

Definition of adsorption, occlusion, absorption, adsorbent, adsorbate – Types of adsorption: Physisorption and chemisorption – differences between physisorption and chemisorption – applications of adsorptions – factors influencing adsorption process.

UNIT V CATALYSIS 12 Hrs

Definition, Characteristics of catalysts - Types of catalyst (Homogeneous and heterogeneous) – Acid base catalysis – Enzyme catalysis with example only: positive, negative and auto catalysis – catalytic promoters – catalytic poison.

Reference books:

1. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
2. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
3. SathyaPrakash, Tuli, Basu& Madan, 1999, Advanced Inorganic Chemistry. Vol. II , 17th Revised Edition, S. Chand and Co. Ltd., Ram Nagar., New Delhi.
4. Puri. B.R., Sharma. L.R., 1989, Principles of Inorganic Chemistry, ShobhanLalNagin Chand and Co., Jalandar.

Course Code	Course Title	C	H	I	E	T
17U2CAC2	**ANCILLARY CHEMISTRY – II** *(For I Mic Bio)*	4	4	25	75	100

OBJECTIVES

To empower the students to

(i) study the classification of elements and their periodic properties,
(ii) understand the modern concepts of acids and bases,
(iii) study the types of organic compounds,
(iv) understand ideas of monosachharides,
(v) study the types and properties of polysaccharides.

LEARING OUTCOME

- Understanding concepts of periodicity and classification of elements.
- Skill and applicability of knowledge in sugar and pharma industries.

UNIT I PERIODIC TABLE AND ATOMIC PROPERTIES 12 Hrs

Modern periodic law - Long form of periodic table –classification of elements based on valence shell electronic configuration - s, p, d,& f blocks – Periodic properties – Atomic and ionic radii – Ionization energy – Electron affinity – Electro negativity.

UNIT II ACIDS AND BASES 12 Hrs

Modern concepts of acids and bases – strong and weak acids and bases – acidity and basicity. Concept of pH – common ion effect – applications - buffer solutions – definition - theory of buffer action and applications – Henderson's Equation - Strength of solutions - calculation of equivalent weights – normality- molarity – molality – mole fraction – ppm – preparation of standard solutions.

UNIT III STUDY OF ORGANIC COMPOUNDS 12 Hrs

Alkane: Introduction – preparation and properties of ethane. Alkene: Introduction – preparation and properties of ethylene. Alkyne: Introduction – preparation and properties of acetylene. Alcohol: Introduction – preparation properties of methanol and ethanol. Ethers: Introduction – preparation and properties of dimethyl ether.

UNITIV CARBOHYDRATES – I 12 Hrs

Monosaccharides: Definition – classification of carbohydrate – monosaccharides – properties and uses of glucose and fructose – configuration of glucose – Mutarotation - conversion of glucose to fructose and viceversa.

UNIT V CARBOHYDRATES – II 12 Hrs

Colour reactions of carbohydrates - Disaccharides: Sucrose – manufacture – properties and uses – distinction between sucrose, glucose and fructose.

Polysaccharides: Starch: Structure, properties and uses.

Referencebooks:

1. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
2. Puri. B.R., Sharma. L.R., 1989, Principles of Inorganic Chemistry, ShobhanLal Nagin Chand and Co., Jalandar.
3. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
4. Soni, P.L., 1998, Text book of Organic Chemistry, Sultan Chand and Co. Ltd.,New Delhi.
5. Morrison, R.T., and Boyd, R.N., 1999, Organic Chemistry, Prentice-Hall of India, Pvt. Ltd., New Delhi.

Course Code	Course Title	C	H	I	E	T
17U3CAC3	**ANCILLARY CHEMISTRY – III** *(For II Mic Bio)*	2	2	25	75	100

OBJECTIVES

To empower the students to

(i) study about vitamins and its classification,
(ii) understand the structure and sources of harmones,
(iii) know about basic ideas of aminoacids and proteins,
(iv) study the concept of nuclear chemistry and applications of radioactivity,
(v) understand the ideas of photochemistry and its applications.

LEARING OUTCOME

- Understanding concepts and sequence of DNA in protein molecules.
- Skill and awareness of radioactive treatments in various field.
- Applicability of phosphorescence and fluorescence.

UNIT I VITAMINS 6 Hrs

Vitamins: Definition, classification, sources, function and deficiency of vitamins A, B-complex, C, D, E and K (structure and synthesis not expected).

UNIT II HARMONES 6 Hrs

Structure, Source and importance of Androsterone, Estrosterone, Estrone,Testosterone, Progesterone-thyroxin.

UNIT III AMINO ACIDS AND PROTEINS 6 Hrs

Amino acids – Definition, general methods of preparation, properties and uses – Glycine and Alanine.

Proteins – Definition, Classification, general properties – colour reactions and relationship of aminoacidwith proteins.

UNIT IV NUCLEAR CHEMISTRY 6 Hrs

Fundamental particles: Nuclear isotopes, Isobars, Isotones and Isomers- Difference between chemical reactions and nuclear reactions - Group displacement law -Concept and applications of nuclear fission and fusion - Applications of radioactivity in medicine, agriculture and industry - as tracer elements in the investigation of reaction mechanism - carbon dating.

UNIT V PHOTOCHEMISTRY 6 Hrs

Introduction to photochemistry- Difference between thermal and photo chemical reaction statement of Grothuss-Draper Law, Stark-Einstein's Law, Quantum yield, Jablonski diagram-Phosphorescence, Fluorescence, Chemiluminescence-Definition with examples. Photosynthesis, Photosensitization.

Reference books:

1. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
2. I.L. Finar, "Organic Chemistry", Vol. I and II, 6thedn., ELBS, Singapore, 1994.
3. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
4. Morrison, R.T., and Boyd, R.N., 1999, Organic Chemistry, Prentice-Hall of India, Pvt. Ltd., New Delhi.

Course Code	Course Title	C	H	I	E	T
17U3CSA1	**APPLIED CHEMISTRY** *(For II Mic Bio)*	2	2	25	75	100

OBJECTIVES

To empower the students to

(i) study about the hardness of water and their removal,
(ii) know the need of plant growth using fertilizers,
(iii) study about polymers and their properties
(iv) study aout the day today application of polymers and resins
(v) understand the ideas of corrosion and its prevention methods.

LEARING OUTCOME

- Understanding need of plant growth using fertilizers,
- Useful in metallurgical, polymer and water purifying industries.

UNIT I WATER TREATMENT 6 Hrs

Hardness of water: Degree of hardness - Temporary and permanent hardness - disadvantages of hard water- softening of hard water using Zeolite process, demineralization process and reverse osmosis.

UNIT II FERTILIZERS 6 Hrs

Definition**:** role of various elements in plant growth-classification i) natural and chemical ii) According to nature of the elements present-functions of the following: ammonium Sulphate, urea, calcium cyanmide, super phosphate of lime, triple super phosphate, potassium Sulphate, potassium chloride, potassium nitrate.

UNIT III CHEMISTRY OF POLYMERS 6 Hrs

Introduction: Definition of monomer and polymers - classification of polymers based on micro structures (Chemical and Geometrical). General mechanism of polymerization- mechanism of radical polymerization

UNIT IV INDIVIDUAL POLYMERS 6 Hrs

General methods of preparation, properties and uses of the following polymers: polyethylene, polystyrene, polyacrylonitrile, polyesters (Kevlar), polyurethanes, poly vinyl chloride and phenol-formaldehyde resins.

UNIT V CORROSION AND PREVENTION 6 Hrs

Definition – Types of corrosion – Factors affecting corrosion process - Corrosion control - cathodic protection – anodic protection - Corrosion inhibitors – electroplating and passivity.

Reference books:

1. Sharma, B.K., 1989, Polymer Chemistry, Goel Publishing House, Meerut.
2. Mukhopathyay. R and Datta. S, Engineering Chemistry, New Age international PVL, Publishers, New Delhi.
3. Sharma, B. K., Industrial chemistry, GoelPuplisihing House, 1994.

Course Code	Course Title	C	H	I	E	T
17U4CAC4	**ANCILLARY CHEMISTRY – IV** *(For II Mic Bio)*	2	2	25	75	100

OBJECTIVES

To empower the students to

(i) study about the purification methods of organic compounds,
(ii) know the separation techniques for identification of compounds,
(iii) study the basic concepts of bio-inorganic chemistry,
(iv) study aout the types of colloids and their properties
(v) understand the ideas of emulsion

LEARING OUTCOME

- Understanding the concepts of separation and purification of organic compounds,
- Useful in pharma industries in analytical division.

UNIT I PURIFICATION OF ORGANIC COMPOUNDS 6 Hrs

Purification techniques of organic compounds- Distillation – fractional distillation – distillation under reduced pressure – crystallization – sublimation.

UNIT II SEPARATION OF ORGANIC COMPOUNDS 6 Hrs

Chromatography: Definition, principles-Adsorption and partition- applications of chromatography.

A brief study of thin layer chromatography (TLC) and column chromatography.

UNIT III BIOINORGANIC CHEMISTRY 6 Hrs

Biological functions and toxicity of elements – chromium, copper and Arsenic - Role of alkali and alkaline earth metal ions in biological systems: Role of Na^+ and K^+ ions – Sodium pumping – Role of Mg^{2+} and Ca^{2+} ions.

UNIT IV COLLOIDS 6 Hrs

Colloidal state of matter – various types properties of colloids- Tyndall effect-Brownian movement-Lyophpbic and Lyophilic sols, difference between them – Purification of colloids - dialysis – electro osmosis – electrophoresis.

UNIT V EMULSION 6 Hrs

Emulsion – types of emulsions with examples: oil in water and water in oil - Gels: classificationand preparation by cooling of sols, double decomposition and by change of solvents. Application of colloids in the following fields: foods, medicine, industrial goods, rubber plating, chrome tanning, Cottrell precipitator and detergent action of soap.

Reference books:

1. Bhal, B.S. andArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
2. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
3. Madan, R.D., 2005, Modern Inorganic Chemistry, S. Chand and Co. Ltd., New Delhi.
4. Soni, P.L., 1998, Text book of Organic Chemistry, Sultan Chand and Sons, New Delhi.

Course Code	Course Title	C	H	I	E	T
18U3CAC1	**ANCILLARY CHEMISTRY – I** *(For II Mat, II Phy and II Bio Tech)*	2	2	25	75	100

OBJECTIVES

To empower the students to

(vi) study the models of an atom, electronic configuration, shapes of orbitals,
(vii) know the classification, importance and types of organic reactions,
(viii) study the types of bonds and hybridization,
(ix) understand the types of adsorption, process and factors affecting it,
(x) study the types of catalysis and applications.

LEARING OUTCOME

- Understanding the basics of organic, inorganic and physical chemistry.
- Skill and applicability of knowledge in pharma and analytical industries.

UNIT I ATOMIC STRUCTURE – I 6 Hrs

Brief introduction to structure of atom - Rutherford and Niels Bohr's model of an atom and their defects - Sommerfeld's modification of atomic structure and quantum numbers – Hydrogen spectra.

UNIT II ATOMIC STRUCTURE – II 6 Hrs

Electronic configuration and Orbitals-shapes of s, p and d orbitals. - Pauli's exclusion principle - Hund's rule of maximum multiplicity - Aufbau principle - Heisenberg's uncertainty principle.

UNIT III INTRODUCTION TO ORGANIC CHEMISTRY 6 Hrs

Classification of organic compounds. Functional groups – definition – various functional groups - General formula and examples for following: Alcohols, Alkyl Halide, Carbonyl compounds, Carboxylic acids and Amines. Types of organic reactions – Substitution, Addition and Elimination reactions (examples only, not mechanism)

UNIT IV CHEMICAL BONDING 6 Hrs

Types of Bonds – electrovalent, ionic, covalent, co-ordinate covalent, metallic and H-bonding. Characteristics of electrovalent and covalent compounds.Hybridisation- Introduction, sp^3, sp^2, and *sp*hybridisation in methane, ethylene & acetylene only.

UNIT V SURFACE CHEMISTRY 6 Hrs

Definition of adsorption, occlusion, absorption, adsorbent, adsorbate – Types of adsorption: Physisorption and chemisorption – differences between physisorption and chemisorption – applications of adsorptions – factors influencing adsorption process.

Reference books:

1. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
2. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
3. Madan, R.D., 2005, Modern Inorganic Chemistry, Sultan Chand and Co. Ltd., New Delhi.
4. SathyaPrakash, Tuli, Basu& Madan, 1999, Advanced Inorganic Chemistry. Vol. II , 17th Revised Edition, S. Chand and Co. Ltd., Ram Nagar., New Delhi.
5. Puri. B.R., Sharma. L.R., 1989, Principles of Inorganic Chemistry, ShobhanLal Nagin Chand and Co., Jalandar.

Course Code	Course Title	C	H	I	E	T
18U4CAC2	**ANCILLARY CHEMISTRY – II** *(For II Mat, II Phy and II Bio Tech)*	4	4	25	75	100

OBJECTIVES

To empower the students to

(vi) study the classification of elements and their periodic properties,
(vii) understand the modern concepts of acids and bases,
(viii) study the types of organic compounds,
(ix) understand ideas of monosachharides,
(x) study the types and properties of polysaccharides.

LEARING OUTCOME

- Understanding concepts of periodicity and classification of elements.
- Skill and applicability of knowledge in sugar and pharma industries.

UNIT I PERIODIC TABLE AND ATOMIC PROPERTIES 12 Hrs

Modern periodic law - Long form of periodic table –classification of elements based on valence shell electronic configuration - s, p, d,& f blocks – Periodic properties – Atomic and ionic radii – Ionization energy – Electron affinity – Electro negativity.

UNIT II ACIDS AND BASES 12 Hrs

Modern concepts of acids and bases – strong and weak acids and bases – acidity and basicity. Concept of pH – common ion effect – applications - buffer solutions – definition - theory of buffer action and applications – Henderson's Equation - Strength of solutions - calculation of equivalent weights – normality- molarity – molality – mole fraction – ppm – preparation of standard solutions.

UNIT III STUDY OF ORGANIC COMPOUNDS 12 Hrs

Alkane: Introduction – preparation and properties of ethane. Alkene: Introduction – preparation and properties of ethylene. Alkyne: Introduction – preparation and properties of acetylene. Alcohol: Introduction – preparation properties of methanol and ethanol. Ethers: Introduction – preparation and properties of dimethyl ether.

UNITIV CARBOHYDRATES – I 12 Hrs

Monosaccharides: Definition – classification of carbohydrate – monosaccharides – properties and uses of glucose and fructose – configuration of glucose – Mutarotation - conversion of glucose to fructose and viceversa.

UNIT V CARBOHYDRATES – II 12 Hrs

Colour reactions of carbohydrates - Disaccharides: Sucrose – manufacture – properties and uses – distinction between sucrose, glucose and fructose.

Polysaccharides: Starch: Structure, properties and uses.

Reference books:

1. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
2. Puri. B.R., Sharma. L.R., 1989, Principles of Inorganic Chemistry, ShobhanLal
3. Nagin Chand and Co., Jalandar.
4. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
5. Soni, P.L., 1998, Text book of Organic Chemistry, Sultan Chand and Co. Ltd.,New Delhi.
6. Morrison, R.T., and Boyd, R.N., 1999, Organic Chemistry, Prentice-Hall of India, Pvt. Ltd., New Delhi.

Course Code	Course Title	C	H	I	E	T
18U5CAC3	**ANCILLARY CHEMISTRY – III** *(For III Mat, III Phy and III Bio Tech)*	2	2	25	75	100

OBJECTIVES

To empower the students to

i. study about vitamins and its classification,
ii. understand the structure and sources of harmones,
iii. know about basic ideas of aminoacids and proteins,
iv. study the concept of nuclear chemistry and applications of radioactivity,
v. understand the ideas of photochemistry and its applications.

LEARING OUTCOME

- Understanding concepts and sequence of DNA in protein molecules.
- Skill and awareness of radioactive treatments in various field.
- Applicability of phosphorescence and fluorescence.

UNIT I VITAMINS 6 Hrs

Vitamins: Definition, classification, sources, function and deficiency of vitamins A, B-complex, C, D, E and K (structure and synthesis not expected).

UNIT II HARMONES 6 Hrs

Structure, Source and importance of Androsterone, Estrosterone, Estrone,Testosterone, Progesterone-thyroxin.

UNIT III AMINO ACIDS AND PROTEINS 6 Hrs

Amino acids – Definition, general methods of preparation, properties and uses – Glycine and Alanine.

Proteins – Definition, Classification, general properties – colour reactions and relationship of aminoacidwith proteins.

UNIT IV NUCLEAR CHEMISTRY 6 Hrs

Fundamental particles: Nuclear isotopes, Isobars, Isotones and Isomers- Difference between chemical reactions and nuclear reactions - Group displacement law -Concept and applications of nuclear fission and fusion - Applications of radioactivity in medicine, agriculture and industry - as tracer elements in the investigation of reaction mechanism - carbon dating.

UNIT V PHOTOCHEMISTRY 6 Hrs

Introduction to photochemistry- Difference between thermal and photo chemical reaction statement of Grothuss-Draper Law, Stark-Einstein's Law, Quantum yield, Jablonski diagram-Phosphorescence, Fluorescence, Chemiluminescence-Definition with examples. Photosynthesis, Photosensitization.

Reference books:

1. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
2. I.L. Finar, "Organic Chemistry", Vol. I and II, 6thedn., ELBS, Singapore, 1994.
3. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
4. Morrison, R.T., and Boyd, R.N., 1999, Organic Chemistry, Prentice-Hall of India, Pvt. Ltd., New Delhi.

Course Code	Course Title	C	H	I	E	T
18U5CSA1	**APPLIED CHEMISTRY** *(For III Mat, III Phy and III Bio Tech)*	2	2	25	75	100

OBJECTIVES

To empower the students to

i. study about the hardness of water and their removal,
ii. know the need of plant growth using fertilizers,
iii. study about polymers and their properties
iv. study aout the day today application of polymers and resins
v. understand the ideas of corrosion and its prevention methods.

LEARING OUTCOME

- Understanding need of plant growth using fertilizers,
- Useful in metallurgical, polymer and water purifying industries.

UNIT I WATER TREATMENT 6 Hrs

Hardness of water: Degree of hardness - Temporary and permanent hardness - disadvantages of hard water- softening of hard water using Zeolite process, demineralization process and reverse osmosis.

UNIT II FERTILIZERS 6 Hrs

Definition**:** role of various elements in plant growth-classification i) natural and chemical ii) According to nature of the elements present-functions of the following: ammonium Sulphate, urea, calcium cyanmide, super phosphate of lime, triple super phosphate, potassium Sulphate, potassium chloride, potassium nitrate.

UNIT III CHEMISTRY OF POLYMERS 6 Hrs

Introduction: Definition of monomer and polymers - classification of polymers based on micro structures (Chemical and Geometrical). General mechanism of polymerization- mechanism of radical polymerization

UNIT IV INDIVIDUAL POLYMERS 6 Hrs

General methods of preparation, properties and uses of the following polymers: polyethylene, polystyrene, polyacrylonitrile, polyesters (Kevlar), polyurethanes, poly vinyl chloride and phenol-formaldehyde resins.

UNIT V CORROSION AND PREVENTION 6 Hrs

Definition – Types of corrosion – Factors affecting corrosion process - Corrosion control - cathodic protection – anodic protection - Corrosion inhibitors – electroplating and passivity.

Reference books:

1. Sharma, B.K., 1989, Polymer Chemistry, Goel Publishing House, Meerut.
2. Mukhopathyay. R and Datta. S, Engineering Chemistry, New Age international PVL, Publishers, New Delhi.
3. Sharma, B. K., Industrial chemistry, GoelPuplisihing House, 1994.

Course Code	Course Title	C	H	I	E	T
18U6CAC4	**ANCILLARY CHEMISTRY – IV** *(For III Mat, III Phy and III Bio Tech)*	4	4	25	75	100

OBJECTIVES

To empower the students to

i. study about cocept of thermodynamics and entropy,
ii. know the types of conductance and electrochemical study,
iii. study about types of colloides and its application
iv. study aout the structure and properties of alkaloides
v. understand structure & source of terpenoids and classification of dyes .

LEARING OUTCOME

- Understanding concept of thermoelectric materials,
- Applicability of electrochemical process,
- Application of dyes in textile and leather industries

UNIT I THERMODYNAMICS 12 Hrs

Scope - Terminology used in thermodynamics - Thermodynamic properties - Zeroth law of thermodynamics - First law thermodynamics. Limitation of first law of thermodynamics.Need for the II law of thermodynamics – Spontaneous and non-spontaneous processes - Entropy - Gibb's free energy - Third law of thermodynamics.

UNIT II ELECTROCHEMISTRY 12 Hrs

Introduction – Difference between metallic conductor and electrolytic conductor - Faraday's law of electrolysis – specific resistance – specific conductance – Equivalent conductance – Molar conductance.

Electrochemical cell – electrode potential – standard – Hydrogen electrode - EMF – determination. Reference electrodes – calomel electrode – Nernst equation.

UNIT III COLLOIDS 12 Hrs

Colloidal state of matter – various types – Sols – dialysis – electro osmosis – electrophoresis.Emulsion – types of emulsions with examples. Gels: classification and preparation by cooling of sols, double decomposition and by change of solvents. Application of colloids in the following fields: foods, medicine, industrial goods, rubber plating, chrome tanning, Cottrell precipitator and detergent action of soap.

UNIT IV ALKALOIDS 12 Hrs

Definition, extraction of alkaloids and general properties structure and biological actions of Conine, Piperine and Nicotine.Extraction of piperine from peper.

UNIT V TERPENOIDS & DYES 12 Hrs

Introduction - Isoprene rule -Classification and occurrence- isolation - Structure and source of Citral, Geraniol and Menthol. (Structural discussion and synthesis are not expected).
Definition and classification- preparation of Methyl Orange, Bismark brown, crystal violet and Malachite green.

Reference books:

1 Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
2 I.L. Finar, "Organic Chemistry", Vol. I and II, 6thedn., ELBS, Singapore, 1994.
3 Bhal, B.S. andArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.

M.Phil, CHEMISTRY

SEMESTER - I

Course Code	Course Title	C	H	I	E	T
18M1CMC1	**RESEARCH METHODOLOGY**	**6**	**6**	**40**	**60**	**100**
18M1CMC2	**PHYSICAL & ORGANIC CHEMISTRY**	**6**	**6**	**40**	**60**	**100**

Internal Exam

Test – 20 Marks

Seminar – 10 Marks

Assignment – 10 Marks

Total – 40Marks

Test

Part – A - 5 x 2 = 10 Marks (Each unit carries 1 question)

Part – B - 3/5 x 10 = 30 Marks (Answer any three from five, each unit carries 1 question)

External Exam

Answer all questions with either or pattern, two questions from each unit. (5 x 12 = 60)

Total – 60 Marks

SEMESTER - II

Course Code	Course Title	C	H	I	E	T
18M2CME1	INDEPTH STUDY	6	6	40	60	100
18M2CPR1	DISSERTATION &VIVA-VOCE	12	-	100	100	200

Indepth study

The syllabi will be framed by the guide concerned for 18M2CME1– Indepth study

Answer all questions with either or pattern, two questions from each unit. (5 x 12 = 60)

Total – 60 Marks

Dissertation/Viva-voce – 12 Credits; Marks – 100 + 100 = 200

Course Code	Course Title	C	H	I	E	T
18M2CME1	DISSERTATION	12	-	50	50	100
18M2CPR1	VIVA-VOCE			50	50	100

COURSE SCHEME AND SCHEME OF EXAMINATIONS

Course Code	Core/Elective	Course Title	Credits	Hrs/ week	Exam Hrs	Marks		
						Internal	External	Total
Semester - I								
18M1CMC1	Core	Research Methodology	6	6	3	40	60	100
18M1CMC2	Core	Physical & Organic Chemistry	6	6	3	40	60	100
Semester - II								
18M2CME1	Elective	Indepth Study	6	6	3	40	60	100
18M2CPR1	Core	Dissertation/Viva-voce	12		-	100	100	200
Grand Total			**30**					**500**

Course Code	Course Title	C	H	I	E	T
18M1CMC1	RESEARCH METHODOLOGY	6	6	40	60	100

Objectives

To enable the students to

- be familiar with the primary and secondary sources in literature survey
- understand the applications of various detectors in GC and HPLC
- realize the kinetics of polymerization and their characterization
- learn the need of various tests in error analysis
- understand the concept of documentations in thesis writing

Learning outcome

- Employment opportunity in PG teachers level and college level
- Analytical skill oriented jobs in pharma industry and R & D organizations

UNIT – I. ANALYTICAL CHEMISTRY

Principles of chromatography - Gas Chromatography: Instrumentation - sample injection system – pyrolysis – liquid phases and column selection. Detectors for GC: TCD, FID and ECD

HPLC: Instrumentation – mobile phase – delivery system – sample introduction – separation columns. Normal phase chromatography – reverse phase chromatography - HPLC detectors.

Cyclic Voltammetry: Principle and applications of CV – atmospheric photochemistry – artificial photosynthesis and solar energy conversion – photoelectrochemical cells – water splitting.

UNIT – II. POLYMER CHEMISTRY

Classification and IUPAC Nomenclature of Polymers. Kinetics of Polymerization: Condensation, Free-Radical and Ionic Polymerisations. Physical Characterization: Molecular weight of polymers. Spectroniccharacterization : UV, IR, Raman and NMR Spectral studies of polymers. Surface Analysis by SEM and TEM. Thermal Analysis : TGA and DTA Glass Transition Temperature (T_g).

UNIT – III. ERROR AND DATA ANALYSIS

Types of errors, accuracy, precision, significant figures - frequency, binomial, Poisson and normal distributions - different methods to reduce systematic errors - mean and standard deviation - Q-test, students t-test, paired t test, F-test and Analysis of Variance (ANOVA). Comparing the means of two samples - correlation and regression – curve fitting, fitting of linear equations, r-values and simple linear cases - Pearson's correlation coefficient –sigmaplot andoriginplot.

UNIT – IV. LITERATURE SURVEY

Literature Survey: Primary sources – journals, research papers, periodicals, patents, abstracts. Secondary sources including listing of titles, reviews, monographs and text books, dictionaries, encyclopedia and catalogue.Impact factor of journals – science citation index - h-index – i10 index– abbreviation of chemistry journals. Popular websites in chemistry for survey of literature - databases in chemistry – downloading/uploading the attachment/PDF files. Online literature searching.

UNIT – V. THESIS WRITING

Thesis layout - format of title page, certificates, declaration, preface, acknowledgements and table of contents. Text of the thesis: Use of centered, side and paragraph headings. Quotations: When, what and how to use quotations, interpolation of quotations. Footnotes, Tables and Figures: format, conventions and referencing. Guidelines for writing a research paper. Writing methods - Writing the first draft, revising the first draft on content and structure, revising the second draft on style, writing a thesis, writing review article and book reviews, preparing research proposals for grants.

Reference Books

1. Abdul Rahim, F., "Thesis Writing – A Manual for Researchers", New Age International(P) Ltd., New Delhi, 1996.
2. Allcock, H.R., Lampe, F.W. and Mark, J. E. "Contemporary Polymer Chemistry" ThirdEdition, Pearson, Prentice Hall, New Delhi, 2005.
3. Gowariker, V.R., Viswanathan N.V. and Sreedher, J., "Polymer Science", New AgeInternational (P) Ltd., New Delhi. 2012.

4. Gupta, S. C., “Fundamentals of Statistics”, Sixth Edition, Himalaya Publishing House,New Delhi, 2006.
5. Laurie, R., “Guide to Writing Great Research Papers”, McGraw Hill, New York, 1999.
6. Mendham, J., Denney, R.C., Barenes, J.D. and Thomas, M.J.K., “Vogel’s Text Bookof Quantitative Chemical Analysis”, Sixth Edition, Pearsons Education, New Delhi,2004.
7. Skoog, D.A., West, D.M., Holler, J.F. and Crouch S.R., “Fundamentals of AnalyticalChemistry”, Eighth Edition, Thomson Asia Pvt. Ltd., Singapore, 2006.
8. Smith, M.B., March. J., “Advanced Organic Chemistry: Reactions, Mechanisms andStructure”, Sixth Edition, John Wiley & Sons, New York, 2013.
9. Stevens, Mac. P., “Polymer Chemistry: An Introduction”, First Edition, OxfordUniversity Press, New York, 2011.
10. Willard, H.H., Jr. Merritt, L.L., Dean. J.A. and Jr. Settle, F.A., “Instrumental Methodsof Analysis”, Seventh Edition, CBS Publishers & Distributors, New Delhi, 2008.

Course Code	Course Title	C	H	I	E	T
18M1CMC2	**PHYSICAL & ORGANIC CHEMISTRY**	**6**	**6**	**40**	**60**	**100**

Objectives

To enable the students to

- know the principles of various adsorption methods& isotherms
- acquire knowledge about the photochemical reactions of coordination compounds
- understand the role of cyclodextrins in catalytic remediation process.
- acquire knowledge about the nanochemistry and applications
- study the importance of retrosynthetic analysis
- know the principles and applications of NMR and EPR

Learning outcome

- Employment opportunity in PG teachers level and college level
- Skill oriented jobs in pharma, textile industries and R & D organizations

UNIT- I. SURFACE CHEMISTRY

The Solid-Liquid Interface.Adsorption from solution - adsorption of polymers. Adsorption in binary liquid systems: Adsorption at the solid – solution interface – heat of adsorption at the solid – solution interface. Adsorption of electrolytes: Stern-Layer adsorption – counter ion adsorption – ion-exchange. Photo physics and photochemistry of the adsorbed state.Photochemistry at the solid-solution interface.

UNIT – II. PHOTOCHEMISTRY AND PHOTOPHYSICS

*Organic Photochemistry***:** Methods of generating electronic excited states – Energy Transfer and Electron Transfer. Excitation sources and properties.Excimers and exciplexes.

Inorganic Photochemistry: Solar energy conversion – Photochemical reactions of Coordination compounds: Ligand field excited states: Cr(III) and Ru (II) Complexes. Charge transfer states: metal to ligand and ligand to metal.

Physical Photochemistry: Photochemical primary processes**:** Classification of photochemical reactions. Photochemicalcells – water splitting – semiconductor solar cell - band gap energies of semiconductors.

UNIT III.NANOCHEMISTRY AND ITS APPLICATIONS

a) **Properties of nanomaterials:** Physical properties – metallic – magnetic – optical properties – Chemical properties surface area – surface energy – catalytic properties.

b) **Preparation of nanomaterials:** Physical methods – LASER methods – Physical Vapour Deposition methods (PVD) – Lithography – Chemical methods – Chemical Vapour Deposition methods (CVD) –Atomic layer deposition methods (ALD) – Gel-sol method – synthesisinside micelles – aerosol synthesis – spray.

c) **Characterization of nanomaterials:**Microscopic techniques for the characterization of nanomaterials – UV-Visible and fluorescence spectroscopy, AFM, SEM, TEM, X-ray diffraction.

d) **Applications of nanoparticles:** Semiconductors – catalysis – biosensors.

UNIT IV.RETROSYNTHETIC ANALYSIS

Synthetic analysis and planning – control of stereochemistry.Functional group interconversion. The disconnection approach – basic principles – one group C – X disconnection – two group C – X disconnection. Two group disconnections – Diels-Alder reactions – 1,3-difunctionalised compounds and α, β-unsaturated carbonyl compounds – 1,5-difunctionalised compounds, Michael addition and Robinson Annulation – 1,2-, 1,4- and 1,6-difunctionalised compounds. Illustrative syntheses of Juvabione and Longifolene.

UNIT-V.RESONANCE SPECTROSCOPY

^{1}H and ^{13}C Nuclear Magnetic Resonance Spectroscopy – Theory, AB, ABC, AB2, ABX Systems. Pulsed Fourier transform (FT) techniques, Homonuclear and Heteronuclear decoupling, Proton decoupling techniques –NOE, 2D NMR - COSY, HETCOR, NOESY, ROESY and DEPT.

Electron Spin Resonance Spectroscopy – Principle, Instrumentation, Hyperfine splitting, Zero field splitting and Kramers degeneracy. Isotropic and anisotropic system – the triplet state, g-factor - ESR applications of transition metal complexes.

Reference Books

1. Adamson, A.W. and Gast A.P., "Physical Chemistry of Surfaces", Sixth Edition, Wiley India Pvt. Ltd., New Delhi, 2012.
2. Skoog, D.A., West, D.M., Holler, J.F. and Crouch S.R., "Fundamentals of Analytical Chemistry", Eighth Edition, Thomson Asia Pvt. Ltd., Singapore, 2006.
3. Willard, H.H., Jr. Merritt, L.L., Dean. J.A. and Jr. Settle, F.A., "Instrumental Methods of Analysis", Seventh Edition, CBS Publishers & Distributors, New Delhi, 2008.
4. Gutsche, C.D., "Calixarenes", (Monograph) First Edition, Royal Chemisty of Chemistry, London, 1988.
5. RohatgiMukerjee, K.K. "Fundamentals of Photochemistry", New Age International Pvt. Ltd., New Delhi, 2009.
6. Viswanathan, B. and AuliceScibioh, M., "Photoelectrochemistry – Principles and Practices", Narosa Publishing House, New Delhi, 2014.
7. C.N. R.Rao, A. Muller and A.K. Cheetham, The Chemistry of Nanomaterial, Wiley-VCH, 2004.
8. C.P. Poole and J.F. J.Owens, Introduction to Nanotechnology, John Wiley &Sons, 2006.
9. A.N. Shipway, E. Katz and I. Willner, Nanoparticle Array on Surface for Electronic,Optical and Sensor Application,*Chemphyschem*(*Review*) **1**, 2000,18 – 52.
10. ReinhardBruckner, Advanced Organic Chemistry – Reaction Mechanism, Academic Press, 2003.
11. Stuart Warren, Organic Synthesis – The Disconnection Approach, John Wiley & Sons (ASIA) Pte. Ltd., 2002.
12. W.Carruthers, Some Modern Methods of Organic Synthesis, Second Edition, Cambridge University Press, 1978.
13. H.O.House, Modern Synthetic Reactions, Second Edition, Benjamin, Menlo Park, 1972.
14. R.S. Drago, Physical Methods in Chemistry, W.B. Saunders Co., London, 1977.
15. Organic Spectroscopy – William Kemp

16. E.A.V.Ebsworth, David, W.H.Ranklin and Stephen Cradock, Structural methods ininorganic chemistry, Black well Scientific Publ., 1987.
17. Donald L.Pavia& Gary M Lampman, Introduction to Spectroscopy, Cengage LearningIndia Pvt Ltd, New Delhi, 5th Edition.
18. C.N.Banwell, Fundamentals of molecular spectroscopy, McGraw Hill, NewYork,1966.
19. J.R.Dyer, Applications of absorption spectroscopy of organic compounds, PrenticeHall of India Pvt. Ltd., New Delhi, 1974.

Department of Botany

DEPARTMENT OF BOTANY
CBCS PATTERN FOR B.Sc., BOTANY
(2017 - 18 Onwards)

Year	Semester	Course Code	Course Title	Hours	Credits
I	I	17U1BMC1	Cryptogams	5	5
		17U1BSM1	SBE - Horticulture	2	2
		17U1BES1	Environmental Science	2	2
			Practical	3	*
	II	17U2BMC1	Anatomy and Embryology	5	5
		17U2BSM1	SBE - Biodiversity	2	2
		17U2BVE1	Value Education	2	2
		17U2BMP1	Practical -I	3	6
II	III	17U3BMC1	Cell biology and Biochemistry	4	4
			Practical	2	*
	IV	17U4BMC1	Ecology	2	2
		17U4BSM1	SBE – Crop Diseases	2	2
		17U2BMP1	Practical - II	2	4
III	V	17U5BME1	Elective – Phanerogams #	5	6
		17U5BMC1	Genetics, Breeding and Biostatistics **	5	5
		17U5BMC2	General Microbiology **	5	5
		17U5BMC3	Applied Microbiology **	3	3
			Practical	6	*
	VI	17U5BME1	Elective – Physiology #	6	7
		17U5BME2	Elective – Biotechnology **	6	7
		17U5BMC1	Molecular Biology and Bioinformatics **	4	4
		17U5BSM1	SBE - Forestry	2	2
		17U2BMP1	Practical – III #	6	6
		17U2BMP2	Practical - IV **	6	6

*** Exams will be conducted at the end of every academic year.**

Course code	Course Title	C	H	I	E	T
17U3BMC3	**CELL BIOLOGY AND BIOCHEMISTRY**	**4**	**4**	**25**	**75**	**100**

Objective:

To comprehend the life-forms in terms of their cellular structures and general chemicals that are present in them.

Learning Outcome:

Provided an advanced understanding of the core principles of cell functions and topics of biochemistry and their experimental basis

UNIT-I (10 hr)

Cell as a basic unit. Cell theory. Differences between Prokaryotic & Eukaryotic cells. Ultra structure of plant and animal cell. Structure, chemical composition and functions of plant cell wall, plasma membrane (fluid mosaic model) and cell inclusions (Cystolith and Raphides).

UNIT-II (20hr)

Structure and functions of chloroplast, mitochondrion, ribosome and nucleus. Cell cycle, cell divisions (mitosis and meiosis) and their significance.

UNIT –III(10hr)

Basic concepts - chemical bonds (hydrogen, ionic and co-valent). Physico-chemical properties and biological significance of Carbohydrates – mono-eg: glucose, di- eg: Sucrose & polysaccharides eg.Starch.

UNIT –IV(10hr)

Proteins-primary, secondary, tertiary and quaternary levels of organization . Enzymes-classification and mechanism of action (Lock and Key model).

UNIT-V(10hr)

Lipids: simple (Fats and Oils), compound (Phospholipids) and derived (Cholesterol).

Nucleic acids: Structure and functions of DNA (Watson and Crick model) and RNA (Clover leaf model of tRNA)

REFERENCES:

1.Gerald karp, 1984. Cell biology ,International student edition , McGraw-Hill book company.

2. De Robertis, E.D.P and De Robertis ,E.M.P.2006. Cell and molecular biology 8th edition ,Lippincott.Willams and Wilkins Philadelphia.

3. Rastogi, S.C.1992.,Cell biology,Tata McGraw-Hill,NewDelhi.

4. Satyanaryana and Chakrapaani, U. 2006 Biochemistry Books and Ailled(P) Ltd.

5. Stryer, L. 1988. Biochemistry, WH Freeman & co.,NY.

6. https://WWW.britannica.com .

7. https://WWW.biochemistry.org

PRACTICALS:

1. Cell division – Mitosis (*Allium cepa*) root.
2. Meiosis- Rheo sp flower bud Meristem.
3. Electron Micrographs of various cell organelles-Spotters.
4. Paper Chromatography.
5. Complementary colour.
6. Estimation of Starch.
7. Estimation of Protein.
8. Spotters.

Course code	Course Title	C	H	I	E	T
17U4BMC4	**ECOLOGY**	**2**	**2**	**25**	**75**	**100**

Objective:

To unravel the myth and mysteries of nature by way of studying structure and dynamism of different organisms with their respective environments.

Learning Outcome:

Provided a scientific basis for the aims of environmentalism

UNIT I (5 Hr)

Ecology – Definition and subdivisions; Factors of environment: Abiotic – Light, temperature and edaphic factors (Soil types and profile)

UNIT II (5 hr)

Biotic interactions : positive – (Symbiosis and Commensalism). Negative-(Parasitism & Allelopathy).

UNIT III (10 hr)

Ecosystem – Definition, structure and functions of Pond ecosystem, Role of producers, consumers and decomposers. Energy flow, food chain and food web. Ecological pyramids and succession (hydrosere).

UNIT IV (5 hr)

Ecological resources and risks: depletion & sustainability. Renewable and non-renewable sources of energy. Climate change & global warming. Plastic wastes.

UNIT V (5 hr)

Environmental Pollution: Air & Water Pollution - Definition, causes, effects & control measures.

References:

1. Odum, E.P. 1991. Fundamentals of Ecology, III Edition, Saunders & com.
2. Dash, M.C. 1993. Fundamentals of Ecology. Tata McGraw Hill, New Delhi.
3. Sharma, J.P. 2004. Environmental studies. Laxmi publications (P) Ltd., New Delhi.
4. Gopal, B. and Bharadwaj, B. 1979. Elements of Ecology, Vikas Publishing House Pvt. Ltd.
5. Willings, W. D. 1964. Plants and Ecosystem. Wasworth Publishing Co.,

6. www.web-ecology.net
7. www.ecology.com

Practicals:

1. Vegetation study – quadrate method.
2. Study of the morphological and anatomical adaptations of locally available hydrophytes, xerophytes, mesophytes and halophytes to correlate their habitat.

Course code	Course Title	C	H	I	E	T
17U4BSM3	CROP DISEASES	2	2	25	75	100

Objectives:

To analyze various agents responsible for disease development on crops

Learning Outcome:

Students learned the impact of diseases on crop yield and the management of crop diseases to achieve maximum yield. This will pave the way for the students to adopt the agriculture practices efficiently

UNIT I (5hr)

Introduction-major and minor crops – Productivity and loss - Diseases and disorders. Classification of diseases (Endemic, Epidemic, Sporadic) – Symptoms (Hypertrophy, Hypotrophy & Necrotic).

UNIT II (5hr)

Fungal diseases: symptoms, etiology, disease cycle and control measures of Paddy blast and Red rot of sugar-cane.

UNIT III (5hr)

Bacterial diseases: symptoms, etiology, disease cycle and control measures of Angular leaf spot of Cotton and Citrus canker.

UNIT IV (10hr)

Symptoms, etiology and disease cycle of Bunchy top of Banana (Viral disease) an Little leaf of Brinjal (Mycoplasma disease).

UNIT V (5hr)

Disease management – cultural practices - Chemical methods (copper fungicides) - Biological methods.

References:

1. Singh, R. S. 1998. Plant diseases. Oxford & IBH Publishing Co Pvt. Ltd. New Delhi.pp.1-680
2. Arumugam, N.,Kumaresan,V and Ragland, A. 2016. Fungi & Plant Pathology. Saras Publication, Kottur, Nagerkoil, Kanyakumari Dist.
3. Bhatarchia,U.K.2006.Plant Pathology.Kalyani Publishers. New Delhi.pp1-323.
4. WWW.health247.com.

5. https://WWW.agric.Wa.gov.au.

DEPARTMENT OF BOTANY

CBCS PATTERN FOR M.Sc., BOTANY
(2017 - 18 Onwards)

Year	Semester	Course Code	Course Title	Hours	Credits
I	I	17P1BMC1	Cryptogams	6	5
		17P1BMC2	Phanerogams	6	5
		17P1BMC3	Mycology & Pathology	6	5
		17P2BMP1	Practical I	4	2
		17P2BMP2	Practical II	4	2
		17P2BMP3	Practical III	4	2
	II	17P2BMC4	Developmental Botany	6	5
		17P2BMC5	Environmental Biology	6	5
		17P2BMC6	Biochemistry	6	5
		17P2BMP4	Practical IV	4	2
		17P2BMP5	Practical V	4	2
		17P2BMP6	Practical VI	4	2
II	III	17P3BMC7	Genetics, Cell and Molecular Biology	6	5
		17P3BMC8	Microbiology	6	5
		17P3BME1	Forestry and Economic Botany	6	5
		17P3BNM1	NME Food Science	4	4
		17P3BMP7	Practical VII	4	2
		17P3BMP8	Practical VIII	4	2
	VI	17P4BME2	Plant Physiology	6	6
		17P4BME3	Biotechnology	6	5
		17P4BMC9	Biostatistics and Bioinformatics	6	5
		17P4BMP9	Practical IX	4	3
		17P4BMP10	Practical X	4	3
		17P4BMP11	Practical XI	4	3

Total number of **theory** papers and marks : 13 x 100 = **1,300** (Int. 25 + Ext. 75)
Internal 25 = Test 15 + Assignment 05 + Seminar 05 marks.
Total number of **practical** papers and marks : 11 x 100 = **1,100** (Int. 50 + Ext. 50)

Grand total of marks : 2,400

Course code	Course Title	C	H	I	E	T
17P3BMC7	**GENETICS, CELL AND MOLECULAR BIOLOGY**	**5**	**6**	**25**	**75**	**100**

Objectives:

To understand the basic tenets of inheritance and variations of traits of organisms from one generation to other.

Learning Outcome:

Learners can accomplish principles of inheritance, functional compartmentalization of a cell and expression aspects of genes

Unit I (20 hr)

Meiosis and its significance in inheritance. Mendelian laws: law of segregation and law of independent assortment with examples. Multiple alleles. Pleiotropy. Gene interactions – complementary genes and epistasis. Linkage and crossing over. Chromosome mapping. Sexlinkage, sexlimited and sexinfluenced traits. Population genetics: gene pool and gene frequency – Hardy-Weinberg law.

Unit II (15 hr)

Structure and chemistry of plant cell organelles. Organelle genetics – leaf varigation in plants, cytoplasmic male steritilty in maize. Metabolic defects in yeast.

Unit III (20 hr)

Central dogma of molecular biology. DNA as the genetic material – experimental proofs. Topology of nucliec acids, chromosome structure in prokaryotes and eukaryotes. C- value paradox, DNA denaturation kinetics. Replication of DNA in prokaryotes and eukaryotes.

Unit IV (20 hr)

Gene structure and Gene expression – transcription in prokayotes and eukaryotes. Post transcriptional modifications, translation in prokayotes and eukaryotes. Regulation of gene expression in prokaryotes (Operon concept – lac, ara and trp) and eukaryotes – (rbcl gene in plants), RNAs in gene regulation – RNAi, siRNA and miRNA.

Unit V (15 hr)

Mutation and its types – mutagens and molecular basis of mutation, DNA repair mechanisms. Natural gene transfer mechanisms in bacteria – Transformation, Transduction and Conjugation. Recombination mechanisms – homologous, site specific and transposition.

Reference

1. Deroberties E.D and De Robertis E.M.F. 2002. Cell and molecular biology 8th edition. Lee and Fab international edition, Philadelphia.
2. Lewin B. 2000. Gene VII, Oxford University Press, Newyork, USA.
3. Karp, G. 1999. Cell and molecular biology. Concept and experiments. John Wiley and Sons, Inc, USA
4. Powar C.B. 2003. Cell Biology. Himalaya Publishing House.
5. Verma P.S and Agarwa, V.K,Genetics. 2004. S.Chand Publications
6. Monroe Strickburger. 1985. Genetics, 3rd Edition, Macmilan Publishers
7. Gardener EJ *et al.*,2008. Principles of Genetics. 8th Edition. Wiley-India student edition.
8. David Friefieder.2002. Essentials of Molecular biology, 4th Edition, Jones and Barlett Publishers, Massachusetts.
9. https://WWW.news-medical.net.
10. https://WWW.elsevier.com.

Practicals

1. Solving problems in genetics given in the syllabus
2. Chromosome mapping in eukaryotes.
3. Population genetics
4. Illustration of different types of microscopes
5. Illustration of specimen preparations for Electron microscope observations.
6. Illustration of cell organelles
7. Karyotyping and Idiograms
8. Bacterial transformation and conjugation

Course code	Course Title	C	H	I	E	T
17P3BMC8	MICROBIOLOGY	5	6	25	75	100

Objectives:

To perceive the structure and reproduction of organisms and to gauge their influence on the standard of living of human beings.

Learning Outcome:

It enables the graduates with high knowledge and research abilities to further develop various techniques related with microbial world

UNIT I (20hr)

Bacteria : Salient features, Ultrastructure and Exomorphology. Structure of cell wall and capsule.

Viruses: – General characteristics, classification of viruses based on nucleic acids –structure and reproduction of Bacterial viruses (T7 and lambda phages) plant viruses (TMV &CaMV). Brief account on phycoviruses and mycoviruses.

UNIT II (20 hr)

Bacterial growth phases –generation time – synchronous growth –diauxy growth.

Respiratory metabolism : ED pathway –reverse TCA—gluconeogenesis.

Fermentation –homo and hetero lactic. Bacterial photosynthesis –photobacteria –pigments—

Oxygenic and anoxygenic –C3 cycle.

UNIT III (10 hr)

Control of microbes Physical and chemical methods –chemotherapuetic agents –antibiotics (chemical nature and Mode of action) –mechanism of resistance to antibiotics.

UNIT IV (15hr)

Aquatic microbiology : Microbial flora –sewage treatment (primary ,secondary and tertiary)

Agricultural microbiology : Bio fertilizers –nitrogen fixation (symbiotic and asymbiotic)

– phosphate solubilization –mycorrhizae (Ecto-, Endo- and VAM). Biopesticides (bacterial , fungal and viral).

UNIT V (15hr)

Food –Microbial flora- contamination and spoilage of vegetables, meat and milk – methods

of food preservation. Pasteurization.

Fermentor – design and operations; production of cheese, ethanol, citric acid and penicillin.

Clinical features- symptoms, lab diagnosis, prophylaxis and treatment of Tuberculosis and AIDS.

REFERENCES:

1. Purohit ,S.S.2012. Microbiology and applications. Student edition, Jodhpur, India.
2. Dubey, R.C. and Maheswari, D.K. 2010. A text book of microbiology. S. Chand & company, New Delhi.
3. Pelezar, M.J., Chan,E.C.S and Kreig,N.R.1993. Microbiology – concepts and applications . McGraw Hill, Inc. Newyork.
4. Powar ,C.B. and Daginawala ,H.F.2001.General microbiology, Himalaya publishing house, Mumbai. Vol.II
5. Sharma ,P.D. 2005. Environmental biology. Narosa publishers , New Delhi.
6. Rao, A.S.2001. Introduction to microbiology. Prentice Hall of India, New Delhi.
7. Casida ,L.E. 1997. Industrial microbiology. New publishers, New Delhi.
8. Kumar ,H.D and Swati kumar .1999. Modern concepts of microbiology,Vikas publishing House ,New Delhi.
9. Subha Rao,N.S. 2000. Soil microbiology. Oxford & IBH publishers ,New Delhi.
10. https://en.m.wikipedia.org.
11. WWW.highveld.com.

PRACTICALS:

1. Cleaning of glasswares.
2. Sterilization methods .
3. Preparation of media.
4. Culturing of microbes.
5. Ubiquitos nature of microbes.
6. Bacterial staining –a) Simple b) Differential c) Capsule d) Spore.
7. Growth curve of bacteria (turbidity measurement)
8. Identification of microorganisms by biochemical tests a) Catalase test b) Indole test.c) MR-VP test d) Starch hydrolysis e) Gelatin hydrolysis.
9. Antibiosis.
10. Isolation of Rhizobium from root nodules.
11. Milk dye reduction test-Methylene blue and Risazurin.
12. Potable water quality test –MPN method.

Course code	Course Title	C	H	I	E	T
17P3BME1	**FORESTRY AND ECONOMIC BOTANY**	**5**	**6**	**25**	**75**	**100**

Objectives:

1.To understand the various concepts and procedures of forestry

2. To prepare students to face competitive exams.

Learning Outcome:

Ensured minimum requirement of forest covers on the earth by either grooming students to take part in the NGOs or as implementing officers in forest department.

UNIT - I (20hr)

Introduction- Forests: definitions and types in India. Afforestation, reforestation and regeneration. Silviculture: General principles; physical, physiological and ecological factors influencing vegetation. Natural and artificial regeneration of forests; Nursery beds, polybags, water budgeting, grading and hardening of seedlings, establishment and tending.

Systems: Clear felling, uniform shelter wood selection, copices and conversion systems. Management of temperate and subtropical forests with reference to choice of species, enrichment methods, intensive mechanized methods, aerial seeding and thinning.

UNIT- II (20hr)

Mangrove and cold desert characteristics and management of species. General concept of tree improvement methods and techniques. Traditional and recent advances in tropical silvicultural research and practices. Silviculture of *Casuarina equisetifolia* and *Tectona grandis*.

UNIT- III (20 hr)

Agroforestry and Social / urban forestry: Objectives, Scope, necessity, selection of species and utillisation as food, fodder and fuel security. Watershed management.

Forest management: Objectives, principles and techniques. Stand structure and dynamics, sustained yield and regulation of yield. Site-specific planning and strategic planning, monitoring and governance. A brief account on forest working plan. Impact of forest fires, human activities

like mining, construction and developmental projects. Forest protection against fire, insects-pests and landslides. A brief account on tribology and participation of tribes on forestry programmes.

UNIT-IV (20hr)

Forest utilization and Legislation: Direct and indirect benefits of forests; Timber and Non-Timber forest produces (NTFPs). Timber: Forest harvesting practices, logging and extraction principles and techniques. Wood seasoning, storage and sale. General account on plywoods, pulp-paper and rayon. NTFP's: gums, resins, oil seeds, bamboos and medicinal plants.

Forest Laws, necessity and general principles. Indian Forest policy of 1894, 1952 and 1990. National forest policy, 1988; Indian Forest Act, 1927, Forest conservation Act, 1980; Wildlife protection Act, 1972. Biological diversity act, 2002; national biodiversity authority rules, 2003.

UNIT V(10hr)

Economic botany:- Botanical name, Tamil name, English name, Family, morphology of the useful parts and uses of the following:

1. Cereals: paddy, pearl millet and finger millet.
2. Pulses: pigeon pea, cow pea and black gram.
3. Nuts: Almonds, Cashew and ground nut.
4. Vegetables: Root: Tapioca, radish &carrot.
   Stem: potato, onion& tomato
5. Fruits: Mango, sour orange &guava.
6. Fibres: Cotton, flak and jute
7. Wood: Teak, Indian rosewood & Red sandalwood
8. Fatty oils : Sunflower, gingely & coconut
9. Essential oils: Sandal wood, khus & eucalyptus.
10. Spices & condiments: Pepper, cardamom & chilli.
11. Beverages: non -alcoholic: Coffee, tea& cocoa

REFERENCES:

1. Sagreiya, K.P. 1967. Forest and Forestry 1967, National book trust, India.
2. Negi, S.S. 1966. Hand book of forestry. International book distributors, New Delhi.
3. Negi, S.S. 1988. Elements of general silviculture. International book distributors, New Delhi.
4. Sageriya, K.P. 1982. Forests and Forestry. National book trust, New Delhi.
5. Gupta, R. 2018 Popular master guide, Indian forest service, Forestry paper I & paper II, Main guide Edition.
6. Bala kathiresan, S. Essential of forest management, Natraj publishers, Dehradun.

7. Pandey, B.P. 1978. Economic botany. S. Chand & company Ltd, New Delhi.
8. Verma.V.2009. Text book of Economic botany. Ane books Pvt. Ltd, New Delhi.
9. https:// WWW.forestry.ubc.ca
10. https:// WWW.botany.org.

PRACTICALS

Forest mensuration & remote sensing: methods of measuring diameter, girth, height and volume of trees; yield calculation, forest cover monitoring through remote sensing; geographic information systems for management & modeling. Forest surveying, maps & map reading. Collection of plant products as per the syllabus.

Course code	Course Title	C	H	I	E	T

17P3BNM1	**FOOD SCIENCE** **Non-major elective**	**4**	**4**	**25**	**75**	**100**

Objective:

To make the available knowledge of various food items and their importance to students whose major study of interest is not botany.

Learning Outcome:

Prepared the students to be competitive for the entry level food science positions in private and public sectors and also for an advanced degree in a food science and technology programmes.

Unit I (15 hr)

a. Definitions: Food **-** food science – nutrients – nutrient status – mal nutrition – under nutrition – over nutrition – balanced diet – calorie – hunger – hidden hunger – appetite **--**obesity – health – organic food – junk food. Importance of food to stay fit for a healthy life.

b. Nutritional classification of foods – energy yielding – body building – protective foods.

c. Cooking methods**:** Moist and dry heat methods – merits and demerits.

Unit II (20 hr)

a. Cereal and cereal products: Composition and nutritive value of rice, wheat, maize and locally available millets – e.g., kambu, raagi, thinai, saamai and varagu.

b. Pulses and Nuts: Composition and nutritive value – factors affecting cooking quality of pulses. Germination of whole grams (sprouts).

c. Fats and oils: Types and sources (plant and animal), nutritive value of common fats and oils, reuse of oils, smoking temperature, rancidity of fat, LDL – HDL – transfats – omega 3 fats. Importance of oil extraction through traditional methods (marasekku oils)

d. Dietary fibre – sources and nutritional significance.

e. Minerals, vitamins and trace elements: Sources, deficiency and excess of the following: Sodium (Na), Potassium (K), Phosphorous (P), Iron (Fe), Zinc (Zn), Selenium (Se), Iodine (I); Vit. A, B, C, D, E and K.

f. Water – Need, daily requirements and water balance.

Unit III (15 hr)

a. Vegetables and Fruits: Classification, nutritive value and general account of changes during cooking of vegetables and storage.

b. **Milk and milk products:** Composition and nutritive value, milk products – butter, cheese, curd, ghee, paneer and ice cream

c. **Egg and fleshy foods:** Composition and nutritive value of egg, fish and poultry (chicken).

d. **Beverages**: Composition and nutritive value, Non- alcoholic e.g: coffee and tea, aerated drinks and alcoholic beverage - wine .

e. **Spices and condiments** used in Indian cookery and their medicinal uses – spices - turmeric, tamarind, black cumin, pepper, fenu greek, ginger, coriander, mint and condiments - asafoetida, cardamom, cinnamon, cloves, nutmeg, fennel, mace, poppy seeds (kasa kasa).

Unit IV (5 hr)

Preparation of : 1. Raagi halwa 2. Ulundankali 3. Kambu porridge 4. Sesame balls 5. Peanut chikkies.

Unit V (5 hr)

a. Basic concepts of diet therapy: Therapeutics adaptations of normal diet – palaeo and warrior diet.
b. Healthy foods for weight management and food guide pyramid.
c. Importance of proper sleep.
d. Sanitation and hygiene in food and kitchen.

References

1. Srilakshmi, B. 2018. Food science. New age international publishers.
2. Sunetra Roday. 2012. Food science and nutrition. Oxford Publishers.
3. Srilakshmi, B. 2010. Nutrition Science. New Age International Private Limited.
4. Subhangini A Joshi.1992. Nutrition and Dietetics. Hill Publishing company.
5. Deepak Mudgil and Sheweta Barak Mudgil. 2015. Objective food science and technology. Scientific publishers. Jodhpur
6. Vaclavik, V. and Christian E.W. 1998. Essentials of food science. Springer publications, US. p 417.
7. https:// www.wholehealthsource.blogspot.com
8. https:// www.foodsciencesecrets.com

Course code	Course Title	C	H	I	E	T
17P4BME2	**PLANT PHYSIOLOGY**	**6**	**6**	**25**	**75**	**100**

Objectives:

1.To thoroughly understand the various principles governing the functional aspects of plants.

2. To help students to think, design and execute and experiment

Learning outcome:

Ensured that the students can achieve an upto date level of understanding and competence that will serve as a lasting and practical basis for the carrier (research, industry etc.) as well as teaching.

Unit I (15 hr)

Thermodynamic concept – free energy and driving force – Active and passive modes.

Basic processes: Diffusion – simple and facilitated. Osmosis – Active systems – pumps, ATPases. Water potential – components, cell water potentials and its value. Water uptake, root hair, passive and active modes, relative water potentials of roots and soil; rainy days vs dry season.

Unit II (20 hr)

Mineral nutrition: Essential and non-essential elements - major, minor and trace elements – deficiency symptoms. Mechanism of mineral salt absorption; active – cytochrome pump theory; passive – Donnan's equilibrium. Mycorrhizae and their role in absorption of mineral salts. Translocation of organic solutes – Munch's mass flow hypothesis. Mechanism of loading and unloading of phloem. Source and sink relationship and determining factors.

Unit III (25 hr)

Metabolism. **Photosynthesis**: Chloroplast as a photosynthetic machinery. Light reactions – Light harvesting complexes, photolysis, non-cyclic and cyclic electron transport, photophosphorylation. Hill reaction – NADP reduction. Dark reactions – Calvin cycle (C3), significance and tracing the path of C in C3. Hatch and slack (C4) pathway, Kranz anatomy,

RUBISCO. CAM pathway. Alternative to C4 pathway – NAD^+ - ME and PCK type. Light and CO_2 compensation point.

Respiration. Site, types and phases of respiration. Glycolysis, Citric acid cycle (TCA), mitochondrial electron transport and ATP synthesis; oxidative phosphorylation (chemi-osmotic theory). Alternative oxidases, photorespiratory pathway. Energy budget of glucose metabolism.

Nitrogen metabolism. Nitrate and ammonium assimilation and amino acid biosynthesis.

Unit IV (15 hr)

Stress and reproductive biology: Response of plants to abiotic stress - heat, water, salinty and metal. Discovery and role of growth hormones – auxins, gibberellins, cytokinins, ABA and ethylene.

Unit V (15 hr)

Sensory photobiology: Structure, function and mechanism of phytochromes, cryptochromes and phototropins - tropic movement – thigmotropism; nastic – nyctinastic. Photoperiodism - circadian rhythm - biological clock – Vernalization. Senescence and seed dormancy.

References

1. Malik, C. P. 2014. Plant Physiology. Kalyani publishers.
2. Barton, W. 2007. Recent Advances in Plant Physiology. Read books publishers.
3. Verma, J. and Verma, K. 2005. A text book of Plant Physiology. Emkay publications.
4. Mukherji, S. and Ghosh, A. K. 2009. Plant Physiology. New central book agency publications.
5. Salisbury, F. B. and Ross, C.W. 2006. Plant Physiology. CBS publishers, New Delhi.
6. Taiz, L. and Zeiger, E. 2006. Plant Physiology. Sinauer Assoicates Inc., Publishers. Sunderland, U.S.A.
7. Bajracharya, D. 1998. Experiments in Plant Physiology. A laboratory manual. Narosa Publishing house.
8. Devlin, R. M. 1969. Plant Physiology, Holt, Rinehart & Winston & Affiliated East West Press (P) Ltd., New Delhi.
9. Noggle, R. and Fritz. J. 1989. Introductory Plant Physiology. Prentice hall of india.
10. https://www.plantphysiol.org;
11. https://www.academic.oup.com

Practicals:

1. Cell as an osmotic system.
2. Determination of water potential of plant tissue by tissue weight method.
3. Demonstration of mechanism of opening and closing of stomata.
4. Effect of different organic solvents on the permeability of plasma membrane.
5. Selective ion uptake by roots.
6. Selective ion uptake by plants.
7. Plant nutrition and mineral deficiencies.

8. Estimation of total chlorophyll and carotenoids.
9. Estimation of anthocyanins.
10. Separation of chloroplast pigments by paper chromatography.
11. Demonstration of starch formation during photosynthesis.
12. Evidence for the presence of chlorophyll in non-green leaves.
13. Light microscopic method to see flourscence emission from chlorophyll a.
14. Experiment on $C_3$and C_4 plants by leaf anatomy.
15. Experiment on $C_3$and C_4 plants by Starch test.

Course code	Course Title	C	H	I	E	T
17P4BME3	**BIOTECHNOLOGY**	**5**	**6**	**25**	**75**	**100**

Objectives:

1. To impart current knowledge with recent developments in recombinant DNA technology and crop improvement of biotechnology.
2. To impetus students to give training to inculcate advanced technical skills in Plant Tissue Culture and Molecular Cloning experiments.

Learning outcome:

The significance of the course is to emphasize the students to apply the explored knowledge and skills in applied fields of biotechnology.

Unit I (15 hr)

An introduction and a brief history- Origin and Definition- Scope- Inter and Multidisciplinary approaches and avenues of biotechnology - important areas- National and International Institutions.

Plant tissue culture- Concept of Cellular Totipotency, Nutritional requirements- Media- Lab design- Cell Suspension Culture and Biotransformation- Callus Culture.

Unit II (20 hr)

Micropropagation, stages, pros and cons- Production of virus free plants- Organogenesis- Somatic embryogenesis and embryoids production- Somaclonal variations- Somatic hybridization- Anther Culture and Haploid production- Synthetic Seeds- Cryopreservation.

Unit III (20 hr)

Recombinant DNA technology- Molecular tools- Nomenclature and Characteristics of Restriction Enzymes, DNA Polymerase and DNA Ligases- Cloning Vectors Plasmids, pBR 322, and Blue script vectors- M13 vectors and Lambda vectors- YACs.

Genomic Library and cDNA Construction- Cloning of *Insulin* gene in *E. coli*- Forensic Sciences- Antisense RNA technology- Plant edible vaccines- Plantibodies- Biodegradable plastics- Gene knockouts and Gene therapy.

Unit IV (15 hr)

Cloning Methodologies, Insertion of Foreign DNA into Host Cells; Transformation- Gene isolation and characterization-Thermo Cycler and Principle reactions of PCR, Thermostable enzymes- PCR and its types, Significances- RAPD & RFLP- Primer Designing- Probe preparation and Radioactive DNA labeling - Southern, Northern and Western blotting.

Unit V (20 hr)

Biology of *Agrobacterium* species- Basis for Crown gall formation- Ti Plasmid and Ri Plasmid features- Structure of Transferred DNA- Process of T-DNA transfer, integration and expression- Disarming of *Agrobacterium*- Construction of Co-integrate vectors and salient features of Binary vectors- Use of 35S and Ubiquitin promoters, Genetic markers, Reporter genes.

Production of Transgenic plants for pest resistance (*Bt* genes) - Fungal resistance (Chitinase genes) and Herbicide resistance (*ppt* genes). Physical methods of gene delivery, Particle bombardment- Metabolic Engineering (Golden rice) - Gene Silencing and Targeting- Bioethics and Bio-safety of GM crops. Intellectual Property Rights, Patents– GATT and TRIPs.

Reference:

1. Slater, A., Scott N.W. and Fowler, M.R. 2003. Plant Biotechnology, The Genetic Manipulation of Plants. Oxford University Press, New York.
2. Gupta, P.K.1999. Elements of Biotechnology. Rastogi Publishers, India.
3. Chawla, H.S.2000. Introduction to plant biotechnology. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Gamborg, O.L and Phillips, G.C. 2005. Plant Cell Tissue & Organ Culture. Narosa Publishing House, New Delhi.
5. Kalyan Kumar, D.2008. An Intoduction to Plant Tissue Culture. New Central Book Agency, Kolkata.
6. Old, R.W and Primrose, S.B .1985. Principles of Gene Manupulation-An introduction to genetic engineering. Blackwell Scientific Publication. London.
7. Brown, T.A.2001. Gene cloning and DNA analysis. Blackwell Science Ltd. USA.
8. Reece, R.J.2004. Analysis of Genes and Genomes. John Wiley & Sons, Ltd. UK.
9. Citovsky *et al*., 2004. *Agrobacterium* T-DNA integration molecules and models- A review. Trends in Genetics Vol. 20(8).
10. https://WWW.bio.org
11. https://WWW.ncbi.nlm.nih.gov

Practicals:

1. Isolation of Chromosomal DNA (Lysis method) & Plasmid DNA (Minipreparation method) from bacteria
2. Extraction of total genomic DNA from Plants (CTAB method).
3. Agarose Gel Electrophoresis & Staining, Visualization of DNA.
4. Transfer of pUC in to *E. coli* and selection of blue and white colonies on X-gal IPTG substrate.
5. Demonstration of Triparental mating and Cloning experiments
6. Medium preparation-Surface Sterilization and Explants Preparation- Inoculation

7. Micropropagation (Nodal and Shoot tips), Callus Culture & Somatic Embryogenesis using carrot explants.
8. Cell Suspension Cultures using Friable callus
9. Demonstration- Protoplast isolation(physical and enzymatic) and *in- vitro* cultures
10. Demonstration -Synthetic seeds production *in-vitro*
11. *Agrobacterium*- mediated genetic transformation of tobacco leaf disc (Agroinfection- Co-cultivation- GUS Histochemical assay- Molecular Characterization)
12. Demonstration of PCR, RAPD, RFLP & Blotting techniques.
13. Vector genomic maps: pBR322,pUC18, pOK 233, pCAMBIA 2300, 2301 & 1301)

Course code	Course Title	C	H	I	E	T
17P4BMC9	**BIOSTATISTICS AND BIOINFORMATICS**	**5**	**6**	**25**	**75**	**100**

Objective:

1. **To focus statistical techniques to analyze the biological data**
2. **To apply information technology to analyze the biological information**

Learning outcome:

Equipped the students to carry out research projects in the field of biology

UNIT-I (15hr)

Introduction; definition , characteristics, scope, importance and limitations . Terms of statistics: population ,sample ,data ,parameters, attributes and variables. Descriptive and inferential statistics. Steps in designing an experiment ; sampling methods in the collection of data ; frequency distribution ; Tabulation , diagrammatical and graphic presentation of data.

UNIT-II (30hr)

Measures of central tendency (Arithmatic mean ,mode and median) Measures of dispersion (mean deviation and standard deviation). Probability, definition ,importance , explanation and application in biology. Probability distribution (Normal & Binomial).Correlation :types and scatter diagram method .Regression : Aim, equation and co –efficient; Tests of significance F and x2 tests; A brief account on test of hypothesis.

UNIT III(5hr):

Definition and objectives of bioinformatics; Basic components of computers (CPU, RAM,ROM, Processes) –Internet, website.

UNIT IV (20hr):

Genome organization - Genome analysis ---gene sequencing methods (Maxam & Gilbert; Sanger method) ; proteome analysis (2D PAGE, MALDI-TOF); Biological Data bases --- types----- classification ---- Nucleic acid data bases (GenBank, EMBL, DDBJ) ----Protein data bases (SWISS-PROT, TrEMBL, PIR, GSDB,SCOP, CATH) ---- literature data bases (PUBMED, AGRICOLA) ; Bioinformatics servers ---- NCBI, GENOMENET

UNIT V (20hr):

Sequence analysis tools (FASTA, BLAST) ----- Sequence alignment (Local & Global; Pair wise & Multiple) ----Genetic algorithm (Needleman—Wunch ; Smith & Waterman) ---Scoring matrices (PAM & BLOSUM) ---- Phylogenetic analysis --- phylogenetic trees (Clustal W); Molecular visualization tool (RASMOL) --- prediction of protein structure. A brief account on drug designning

Refernces:

1. Rajadurai,M. 2010.Bioinformatics- a practical manual. PBS Book Enterprises. pp.158
2. Mani,K and Vijayaraj,N. 2002. Bioinformatics for beginners. Kalaikathir Achchagam. Coimbatore. Tamil Nadu. India.pPp275.
3. Attwood,T.K., Parry-Smith, D.J. and Phukan,S.2008. Introduction to bioinformatics.. Pearson Education Pvt.Ltd.,. New Delhi. India.pp218
4. Attwood,T.K.and Parry-Smith, D.J.2002. Introduction to bioinformatics..Pearson Education Pvt.Ltd.. New Delhi. India.pp1-237
5. Malcom Campbell,A and Heyer,L.J.2004. Discovering, Genomics, Proteomics and Bioinformatics. Pearson Education Pvt.Ltd.. New Delhi. India.pp352
6. Gomase,V.S and Chokhale,N.J. 2009. Proteomics. Himalaya Publishing House.pp360
7. Bal, H.P.2007. Bioinformatics-Principles and Applications . Tata MaGraw-Hill Publishing Company Ltd. New Delhi. India.pp217
8. Arumugam, N, Gopi,A, Meena,A, Sunderalingam,R and Kumaresan,V.2014. Biostatistics, Computer applications and Bioinformatics.Saras Publication . Nager koil, Tamil Nadu, India. pp 458
9. Khan, I.A. and Khanum, A 1994. Fundamentals of Biostatistics ,Ukaaz publications , Hyderbad , Andhrapradesh –India .
10. Pranab kumar Banerjee,2004, Introduction to Biostatistics (A Text book of Biometry). S. Chand & Company Ltd.Ram nagar , New Delhi.
11. https://WWW.biostat.washington.edu
    https://WWW.omicsonline.org.

Practicals:

1. Calculation of standard deviation for different plant sample –leaf length& pod length.
2. Chi –square test and students “t” test.
3. Problems on probablity
4. Graphic representation of data.Bioinformatics:
5. Component of computer.
6. Creation of table & graph using Ms office.
7. Sequence aligniment using BLAST.
8 Analysis structure of nucleic acid & protein using Rasmol.
9 Construction of phylogenetic tree.

Department of Zoology

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3ZMC3	**BIOCHEMISTRY AND BIOCHEMICAL TECHNIQUES**	4	4	25	75	100

OBJECTIVES

- To understand the importance of biochemical components.
- To explore and learn the biochemical techniques.

LEARNING OUTCOME

1. Acquire knowledge on biomolecules, bioenergetics, metabolism and biological techniques.
2. Provides applications in various fields like medicine and agriculture.

UNIT – I

Classification, structure and function of carbohydrates, protein and lipids. Vitamins – Water soluble and fat soluble vitamins, occurrence, functions and deficiency diseases.

UNIT– II

Enzymes – Classification, Properties, Chemical nature and mechanism of enzyme action, Factors affecting enzyme action, Enzyme inhibition.

UNIT – III

Metabolic pathways of Carbohydrates – Glycogenesis, Glyconeogenesis, Glycolysis, Kreb's cycle, Oxidative phosphorylation pentose and HMP shunt. Protein metabolism – Deamination, Transamination. Lipid metabolism – Beta oxidation of fatty acids.

UNIT – IV

Separation techniques – Types of Chromatography – Paper, Thin Layer, .Electrophoresis (PAGE). Principles and application of Centrifugation, Analytical techniques – pH meter, Spectrophotometer.

UNIT – V

Principles and applications of tracer techniques in biology, radioactive isotopes, Dosimetry

TEXT BOOKS

1. N.Gurumani - Research Methodology for Biological Sciences (2008) MJP Publishers, Chennai.
2. Ambika Shanmugam – Fundamentals of Biochemistry (2004) Ambika Shanmugam Publishers, Chennai.

3. Sathyanarayanan – Essentials of Biochemistry (2002), Arunabha Sen Publishers, Kolkota.

REFERENCE BOOKS

1. Jayaraman, J. – Lab manuals in Biochemistry, New age International (p) Ltd, Mumbai.
2. Plummer – An introduction to practical biochemistry, Tata Mc Graw Hill. Bombay.
3. Instrumental methods of Chemical analysis B.K. God Publishing House, Meerut.
4. Slater – Radiomoliques in Biology. IRL Press Oxford.
5. David – Handbook of Histological and Histochemical techniques – CBSPublishers.
6. Barron Chapman and Hail London – Using the Microscopes
7. W. H. Freeman & Co – Lodish *et al* (1999) Molecular Cell Biology, New York.
8. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007). *Biochemistry*, VI Edition, W.H. Freeman and Co., New York.
9. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and
10. Well, P.A. (2009). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw- Hill Companies Inc.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZMC4	**CELL & MOLECULAR BIOLOGY**	2	2	25	75	100

OBJECTIVES

- To understand and explore cell structure and functions.
- To understand the molecular structure & functions of cellular components and its biological importance.

LEARNING OUTCOME

1. Adopting knowledge in cell structures and molecular functions will be useful in getting jobs in pharma companies.
2. Waves path for self employment.

UNIT: I

Microscopy – Principles of light and electron microscope. Plasma membrane: Ultra structure – Chemical composition and functions.

UNIT: II

Endoplasmic reticulum: morphology, structure, types and functions. Golgi complex: morphology, structure, types and functions. Mitochondria: structure, chemical compositions & functions. Nucleous: structure and functions.

UNIT: III

Chromosomes: Structure of chromosome, Giant chromosomes, Chromosomal aberrations.

Cancer cells, cell aging, Apoptosis.

UNIT: IV

Nucleic acids: Structure, types and functions of DNA & RNA, replication.

UNIT: V

Protein synthesis: Transcription, Translation (Activation of amino acids, Initiation, Elongation & Termination of polypeptide chains), Lac operon, Central Dogma of Molecular Biology.

TEXT BOOKS

1. Verma, S. and Agarwal, V.K. 2000 – Cytology, S. Chand & Co- New Delhi.
2. Gupta P.K .2003. Cell and Molecular Biology, IInd Edition, Rastogi Publication, India

REFERENCE BOOKS

1. Karp, G.(2010). Cell and Molecular Biology: Concepts and experiments. VI Edition. John Wiley and Sons.Inc.
2. Cooper, G. M and Hausmen, R.E (2009). The Cell: A Molecular Approach. V Edition. ASM Press and Sunderland, Washington.D.C,: Sinauer Associates, MA.
3. Balinsky, B.I., 1981. An Introduction to Embryology, Holt Saunders, New Yo rk.
4. Berrill, N.J., 1986. Developmental Biology, Mc Graw Hill, New Delhi.
5. De Robertis, E. D. P., 2010. Cell and Molecular Biology, Lippincott Williams & Wilkins.

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COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZSM3	**ORNAMENTAL FISH CULTURE**	2	2	25	75	100

OBJECTIVES

- To learn the basic principles and techniques of Ornamental fish culture.
- To study the features of popular ornamental fishes.
- To get an exposure on setting up and maintenance of aquarium.

LEARNING OUTCOME

1. Acquire knowledge on principles, designing and maintenance of an aquarium.
2. Motivation for entrepreneurship through ornamental fish culture.

UNIT-I

Ornamental fish culture: Introduction - Indian and world scenario - Advantages of ornamental fish culture - Setting up home aquarium and marine aquarium - Aquarium tank: types (Metal framed glass tank, All glasses tank, Bonded glass tank, Acrylic tank, Laminated glass tank) - Materials required for the construction of tanks - Features of Aquaponics.

UNIT-II

Water quality management - Heating – Lighting – Aeration - Filtering (mechanical, chemical and biological) - Aquarium equipments - Aquarium plants-hydroponics.

UNIT –III

Salient features of Goldfish, Fighter fish, Molly fish, Parrot fish Butterfly fish, clownfish, Marine angelfish,

UNIT-IV

Food & Feeding: Nutritional requirements for fish, live feed, artificial feed, composition of ideal fish feed - Parasites & Diseases: Fish louse, Ligula, Fin rot disease, Carp pox and Velvet disease.

UNIT-V

Ornamental fish Transportation and packing : Methods (open and closed packing), starvation and sedation, factors to be considered for packaging (Density, temperature, dissolved gases, salinity, anaesthetics).

TEXT BOOKS

1. Tharadevi, C.S. and K.V. Jayashree. 2009. Home Aquarium, Saras Publications, Nagercoil.
2. Arumugam, N. 2010. Aquaculture. Saras Publications, Nagercoil.

REFERENCE BOOKS

1. Shukla, J.P. 2012. Fish and Fisheries. Rastogi Publications. New Delhi.
2. Zade, S.B., C.J. Khune, S.R. Sitre and R.V. Tijare. 2011. Principles of Aquaculture. Himalaya Publishing House. Mumbai.
3. Srivastava, C.B.L. 2006. Aquarium-Fish Keeping. Kitab Mahal, Allahabad.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3ZAC3	**ESSENTIALS OF PHYSIOLOGY AND MICROBIOLOGY**	2	2	25	75	100

OBJECTIVES

- ❖ To learn the importance of physiology and microbiology.
- ❖ To study the growth of microbes and their role in human.

LEARNING OUTCOME

1. Creates awareness in human and animal systems.
2. Helps in identifying the nature of living beings.
3. Exploring knowledge in physiology and microbiology motivates the students to be placed in research and clinical laboratories.

UNIT-I

Digestive system – Structure of Alimentary canal, Digestive glands - salivary glands, liver, pancreas (Secretions and functions).

UNIT-II

Excretory system of Man – Structure of Kidney, nephrons, Formation of urine, urinary infections (Glomerulo nephritis, renal stones).

UNIT –III

Reproductive system – Reproductive system - Hormones, menstrual cycle, Oestrogen, Androgen, Prolactin, Relaxin, birth control methods & test-tube baby.

UNIT-IV

Introduction to microbiology: Sterilization - Autoclave – structure and functions. Culture medium (Solid, Liquid and its composition, types of culture medium, bacterial growth, growth rate, growth curve, preservation-pasteurization of milk.

UNIT-V

Microbial Diseases: Cholera, Tuberculosis, Rabies and AIDS – causative organism, pathogenecity, mode of transmission, symptoms and their preventive measures.

TEXT BOOKS

1. Rastogi, S.C. 2007. Essentials of Animal Physiology, New Age International Publishers
2. Baveja, C.P. 2017. Textbook of Microbiology, Arya Publications

REFERENCE BOOKS

1. Richard.W Hill, Gordon A. Wyse & Margaret Anderson. 2012. Animal Physiology

2. Surinder Kumar, 2012, Textbook of Microbiology. Jaypee Brothers Medical Publishers P (Ltd), New Delhi.

3. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. W.B. Saunders Company.

4. Vander A, Sherman J. and Luciano D. (2014). Vander's Human Physiology: The Mechanism of Body Function. XIII Edition, McGraw Hills

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZAC4	**MOLECULAR BIOLOGY AND IMMUNOLOGY**	1	2	25	75	100

OBJECTIVES

- To learn the basic concepts of molecular biology and immunology.
- To understand the importance of DNA, protein synthesis and gene expression.
- To study the role of immune system in animal.

LEARNING OUTCOME

1. Gain knowledge on basics and essentials of molecular biology and immunology.
2. Create awareness on the mechanisms of human body.

UNIT-I

Nucleic acids, DNA structure - Watson and Crick model, Significance of DNA, RNA- structure, types of RNA- mRNA, tRNA and r RNA-structure and functions.

UNIT-II

DNA replication- mechanism, Protein synthesis- transcription, translation- initiation, elongation and termination, processing of post-translation processing.

UNIT –III

Operon Hypothesis, structure of Operon model, mechanism of Lac operon .

UNIT-IV

Immunology: Types of Immunity – Natural (Physical, Biochemical, Cellular, Genetic & other factors). Acquired (Humoral and Cell Mediated). Lymphoidal organs – Primary (Thymus and Bursa of Fabricius), Secondary (spleen and Lymphnode). Lymphocytes – T and B Cells.

UNIT-V

Immunoglobulin – Structure and Functions and types. Immune Response. Antigen – antibody reaction (Agglutination & Precipitation).

TEXT BOOKS

1. Gupta, P. K. 2011. Molecular Biology and Genetic Engineering, Rastogi Publications, Meerut, India.
2. Benjamin et al . 2004. Immunology, 4th Edition, A John Wiley & Sons INC Publication.

REFERENCE BOOKS

1. Burton E. Tropp, 2012. Principles of Molecular Biology, Jones & Bartlett Learning.
2. Kuby, J. 1997. Immunology. W.H. Freeman & Company, New York.
3. Karp, G.(2010). Cell and Molecular Biology: Concepts and experiments. VI Edition. John Wiley and Sons.Inc.
4. Cooper, G. M and Hausmen, R.E (2009). The Cell: A Molecular Approach. V Edition. ASM Press and Sunderland, Washington.D.C,: Sinauer Associates, MA.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3ZNM1	**ECONOMIC ZOOLOGY**	2	2	25	75	100

OBJECTIVES

- ❖ To learn the economic importance of Economic Zoology.
- ❖ To implement this practice for self employment.

LEARNING OUTCOME

1. Gain knowledge in different culture systems.

2. Waves path for self employment in sericulture, pisciculture, apiculture and poultry farming.

UNIT-I

Income and employment & trade generation. APICULTURE: Organization of bee colony-Queen, worker, Droner, rearing of bees-Newtons beehive, problems in Apiculture .Natural enemies.

UNIT-II

SERICULTURE: Life cycle of Mulberry Silkworm, Rearing of Silkworm – appliances.

UNIT-III

PISCICULTURE: Cultivable fishes (fin Fishes & Shell Fishes), Culture of Carps, Economic Importance of Fishes.

UNIT-IV

PEARL CULTURE: Types of Pearls & Culture methods. POULTRY: Breeds of Poultry (Indigenous Breed, American Class, English Class, Asiatic Class, Mediterranean Class), Housing, Management, Nutrition, Disease & Control.

UNIT-V

Economically important cattle (Draft Breeds, Dairy Breeds, Dual Purpose Breeds & Exotic Breeds of Cattle), Principles of Dairy farming. Economically important dairy products (Powdered milk, Processed cheese, Ice cream, Ghee)

TEXT BOOKS

1. Ravindranathan, K.R. 2003. Economic Zoology. Dominant Publishers & Distributors. New Delhi.
2. Tomar, B.S. 2011. Introduction to Economic Zoology, Emkay Publications, Delhi.

REFERENCE BOOKS

1. Johnson, J. & Kesary, M. 2008. Sericulture.
2. Ahsan, J. & Sinha, S. P. 2009. A Handbook on Economic Zoology, S. Chand & Company Ltd, New Delhi.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZNM2	**ESSENTIALS OF ZOOLOGY**	2	2	25	75	100

OBJECTIVES

- To learn the essentials of Zoology.
- To study basic concepts on classification of animal kingdom.
- To understand the importance of DNA, blood and common diseases.

LEARNING OUTCOME

1. Basic knowledge of the subject- Zoology.
2. Acquire the importance of DNA and Human blood.
3. Create awareness on communicable and non communicable diseases.

UNIT-I

Principles of classification, Rules of nomenclature, Binomial Nomenclature, General characters of invertebrates and vertebrates with an example.

UNIT –II

Nucleic acids –DNA & RNA- structure, functions and significance, DNA Finger Printing

UNIT-III

Components of Blood, Blood groups- ABO Blood grouping, Rh factor, Blood pressure, Blood clotting.

UNIT- IV

Communicable Diseases: Vector borne (Malaria, Dengue), Airborne (Tuberculosis, Influenza), Waterborne (Cholera, Typhoid).

UNIT- V

Non-communicable Diseases- Obesity, Cancer, Diabetes and Hypertension – causative agent, mode of transmission, symptoms, prevention and control.

TEXT BOOKS

1. Rajapandiyan, K. & Shanthi, S. 2011. Molecular Biology & Microbial Genetics. PBS Book Enterprises, Chennai.
2. Lal, S. S. & Kumar, S. 2012. Immunology, Rastogi Publications, Meerut, India

REFERENCE BOOKS

1. Kotpal, R. L. Modern text book of Zoology, Invertebrates, Rastogi Publications, Meerut.
2. Kotpal, R. L. Modern text book of Zoology, Vertebrates, Rastogi Publications, Meerut.
3. Vaman Rao, C. Immunology, Narosa Publishing House, New Delhi.
4. Arora, P. and Sandhu, S. Genetics, Himalaya Publishing House, Delhi.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZAC2	**APPLIED ZOOLOGY**	2	4	25	75	100

OBJECTIVES

- To learn the economic importance of animals.
- To create awareness among the students about the applied aspects of Zoology.
- To motivate the students for self employment by learning the applications of zoology.

LEARNING OUTCOME

1. Gain knowledge on applied aspects of zoology.
2. Motivation for entrepreneurship.
3. Inculcate awareness about the importance of animal in day today life.

UNIT-I

AQUACULTURE: Definition, Scope-Aquaculture in India - Culturable organisms: Fin fishes, Shell fishes, Feed organisms, Algae, Daphnia and Seaweeds - Integrated fish farming: Paddy cum fish culture, Poultry cum fish culture.

UNIT – II

Culture of Indian major carps: seed collection, culture practices, feeding, pond fertilization, weed, predator control - Culture of marine prawn: seed collection, culture method (Pokkali, pond, pen, cage culture), harvesting, Preservation - Oyster farming: biology, pearl formation, farming operation (spat collection, culture methods (on bottom, off bottom), harvesting, cleaning, preservation) - Sea weed culture – uses, culture methods (pond culture, field culture),

UNIT – III

APICULTURE: Definition, Scope - Bee colony - Types of honey bees - Bee keeping (primitive hives and modern hives) - Bee keeping equipments - Honey: Chemical composition, Nutritional and Medicinal values – Bee wax - bee venom.

UNIT –IV

DAIRY FARMING: Definition, Scope - Livestock in India - Dairy animals: Gir, Red sindhi, Jersy , Buffaloes, Goat - Management of model dairy farm - Livestock diseases: Foot and mouth diseases, Rinder pest. - Nutritive value of milk - Milk products- Powdered milk, Processed cheese, Ice cream, Ghee

UNIT -V

POULTRY: Definition, scope - Nutritive value of eggs - Commercial layers – Sexing (vent, colour and Feather sexing) - Poultry house: Types, construction of poultry house - Deep litter system – Feeder -

Cage system - Layer rearing (Chick, Growers, Layers) - Poultry diseases: Ranikhet, Fowlfox and polyneuritis.

TEXT BOOKS

1. Ahsan, J. and Sinha, S.P. 2009. A Handbook on Economic Zoology. S. Chand & Company Ltd., New Delhi.
2. Tomar, B.S. and Singh, N. 2011. Economic Zoology. Emkay Publications. New Delhi.

REFERENCE BOOKS

1. Shukla, G.S. and V.B. Upahyay. 2011. Economic Zoology. Rastogi Publications. Meerut.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3ZSA1	**FISHERY SCIENCE**	2	2	25	75	100

OBJECTIVES

- ❖ To understand the need and scope of fishery science.
- ❖ To study its economic importance, culture practices, management and participation of Government organization
- ❖ To promote students interest in the field for self employment.

LEARNING OUTCOME

1. Acquire knowledge on fisheries science with a particular emphasis on types of culture system, feeding, preservation and fish diseases

2. Motivates the students to enter a career in fisheries.

UNIT-I

Fisheries- Definition, scope of fisheries, scenario of Indian fisheries, economic importance of fishes, types of fisheries- inland, brackish water and coastal.

UNIT-II

Cultivable organisms- qualities, types- fin and shell fishes

Culture practices- extensive, semi-intensive, intensive, monoculture, monosex culture, poly culture, cage culture, pen culture, race way culture.

UNIT –III

Integrated fish farming types - paddy cum fish culture-, fish cum poultry culture

Fish feed- live feed, artificial feed- simple and compound, composition of ideal fish feed, qualities of good artificial feed

UNIT-IV

Feeding- feeding rates, feeding schedule, FCR

Fish spoilage- preservation of fishes- drying and canning

UNIT-V

Fish Diseases-protozoan (white spot) bacterial (Erythroderma), viral (Epizootic ulcerative syndrome) , fungal (gill rot)

TEXT BOOKS

1. Arumugam, N. 2010. Aquaculture. Saras Publications, Nagercoil.

REFERENCE BOOKS

1. Shukla, J.P. and Pandey 2012. Fish and Fisheries. Rastogi Publications. New Delhi.
2. Rath, R.K. 1993. Freshwater Aquaculture, Scientific Publishers, Jodhpur.
3. Zade,S.B., Khune, C.J., Sitre, S.R and Tijare, R.V. Himalaya Publishing House, New Delhi.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3ZAC1	**ESSENTIALS OF INVERTEBRATES & CHORDATES**	2	2	25	75	100

OBJECTIVES

- ❖ To learn the essentials of Invertebrates and chordates.
- ❖ To study vital adaptations of animal kingdom.

LEARNING OUTCOME

1. Acquire basic knowledge on invertebrates and chordates.
2. Create awareness to conserve and protect the living system.

UNIT - I

Parasitic protozoa (Life history of Plasmodium in detail), Organization of Polyp and Medusa, Parasitic adaptations -Tapeworm and *Ascaris*.

UNIT - II

Mouth parts in insects, Metamorphosis in insects, Respiration in arthropods, Water vascular system in starfish.

UNIT - III

.
Migration in fishes, Developmental stages of Frog. Parental care in amphibians, Golden age of reptiles

UNIT - IV

Identification of poisonous and non-poisonous snakes, Poisonous snakes of South India, Flight Adaptation in birds, Migration in birds.

UNIT-V

Adaptive radiation in mammals, Exoskeleton in fishes, birds and mammals, Marsupials.

Text book:

Nair, N.C., S. Leelavathy, N. Soundarapandian, T. Murugan, and N. Arumugam. 2006. A text book of Invertebrates, Saras Publication, Nagercoil.

Thangamani, A., S. Prasanakumar, L.M. Narayanan and N. Arumugam. 2005. A text book of Chordates. Saras publication, Nagercoil.

Reference books:

Kotpal, R.L. 2012. Modern Text Book of Zoology Invertebrates, Rastogi Publications, Meerut.

Parker & Hashwell, Textbook of Zoology Vol. I (Invertebrates) A.Z.T.B.S. Publishers & Distributors, New Delhi.

Jorden, E.L. and P.S.Verma. 2013. Invertebrate Zoology, S. Chand & Co. Ltd. New Delhi.

Hickman C. P. Jr., Hickman & L.S. Roberts. Integrated principles of zoology, Mosby college publication. St. Louis.

Iyer, E.K., And T.N. Ananthakrishnan, Manual of zoology Vol. I, Invertebrata, Part I and II S.Viswanathan (Printers and Publishers) Pvt. Ltd. Madras.

Thangamani, A., S. Prasanakumar, L.M. Narayanan and N. Arumugam. 2005. A text book of Chordates. Saras publication, Nagercoil.

Kardong, K.V. (2005) Vertebrates Comparative Anatomy, Function and evolution. IV Edition. McGrawHill Higher Education.

Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies.

Young, J.Z. (2004). The life of vertebrates. III Edition. Oxford university press.

Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers, Inc.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZMP2	MAJOR PRACTICAL 2	4	2	25	75	100

CELL AND MOLECULAR BIOLOGY, BIOCHEMISTRY AND BIOCHEMICAL TECHNIQUES

Cell Biology

1. Microscopy - Cell Observation

   - Cell Measurements

2. Preparation of Cells and tissues

   a) Squamous epithelium

   b) Striated, Smooth and Cardiac Muscle.

3. Cell division

   a) Mitosis — Root tips

   b) Meiosis — Grass hopper testis

4. Cell Counts

   a) Total count RBC & WBC - Human

   b) Differential Count.

Biochemistry and biochemical techniques

1. Estimation of Proteins, carbohydrate and lipids.

2. Qualitative analysis of protein, carbohydrates and lipids.

Instrumentation:

Principle and uses of

1. Electrophoresis

2. Chromatography

3. Spectrophotometer/ Colorimeter

4. Centrifuge

Molecular Biology and Genetics

1. Isolation of DNA
2. Mounting polytene chromosomes
3. Observation of chromosomal variation from permanent slides or pictures provided

Spotters: Holiday structure, Twins, genetic disorders, Structure of DNA& RNA, Replication model, Mendelian traits in Man.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4ZAP2	ANCILLARY ZOOLOGY PRACTICAL 2 (CHEM)	2	2	25	75	100

Ancillary Practical II (4/6 AZ, 2017 on - for papers 3/5 AZ 4/6 AZ)

1. Estimation of oxygen consumption of fish with reference to body weight.
2. Estimation of oxygen consumption of fish with reference to temperature
3. Estimation of O_2 and
4. Estimation of CO_2
5. Isolation of DNA
6. Isolation of RNA
7. Lymphoid organs in Chick.
8. Blood grouping - Man.
9. Simple staining and Gram staining
10. Hanging drop method.

Spotters: Sphygmomanometer, Kymograph, Warburg Respirometer, DNA, RNA and its types, Double immunodiffusion, Antibody structure, Gene cloning, DPT vaccines, Ecological pyramids, Alpha, Beta and Gamma diversity, Red Data Book, National Parks, Green house effect

Department of Computer Science

B.Sc. Computer science Syllabus (CBCS Pattern) with effect from JUNE 2017 onwards.

Sem	Course	Title	Hours/ Week	Credits	Int.	Ext.	Total
III	Course Core-5	Data Structures and Computer Algorithms	5	5	25	75	100
	Course Core-6	Visual Programming	4	4	25	75	100
	Course Core-7	Operating systems	4	4	25	75	100
	Allied Paper-3	Financial Accounting	3	3	25	75	100
	Allied Paper-4	Statistics and Numerical Methods	4	3	25	75	100
	Core Lab	LAB -5 : Visual Programming Lab	4	2	50	50	100
	SBE	LAB – 6 : Data Structures Lab	4	2	50	50	100
	Non-Major Elective-1	Computer fundamentals	2	2	25	75	100
		TOTAL	**30**	**25**			

Sem	Course	Title	Hours/ Week	Credits	Int.	Ext.	Total
IV	Course Core-8	Computer Networks	4	4	25	75	100
	Course Core-9	Linux programming	5	4	25	75	100
	Course Core-10	Programming in JAVA	4	4	25	75	100
	Course Core-11	Computer Security	5	4	25	75	100
	Allied Paper -5	Resource Management Technique	4	2	25	75	100
	Core Lab	LAB-7: JAVA Programming Lab	3	2	50	50	100
	SBE	LAB-8: LINUX Programming Lab	3	2	50	50	100
	Non-Major Elective-2	Introduction to Internet	2	2	25	75	100
		TOTAL	**30**	**24**			

Course Code	Course Title	H	C	I	E	T
17U3DMC5	DATA STRUCTURES AND COMPUTER ALGORITHMS	5	5	25	75	100

Objectives:

- To impart the knowledge of computer programming with algorithmic approach.
- Learning the concept of data structures and its operations.

UNIT I : Stacks and Queues **(15 hours)**

The Stack & Queue abstract data type– A Mazing Problem – Evaluation of Expressions– Multiple Stacks and Queues. **Linked Lists:** Singly Linked Lists –Circular list- Linked Stacks and Queues – Polynomials- Doubly Linked List.

UNIT II : Trees **(15 hours)**

Basic Terminology – Binary Trees- Properties - Representations - Binary Tree Traversal – Additional Binary tree operations-Threaded Binary Trees.

UNIT III : Graphs **(15 hours)**

Definitions and Representations – Elementary Graph operations-Minimum Cost Spanning Trees – Shortest Path and Transitive Closure – Activity Networks.

UNIT IV: **Divide and Conquer** **(15 hours)**

The General Method – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort – Selection Sort.

UNIT V:**The Greedy Method** **(15 hours)**

The General Method – Knapsack problem-Tree vertex Splitting-job sequencing with deadlines-Minimum cost spanning trees-optimal storage on tapes-optimal merge patterns-single source shortest path.

Text Books:

1. Ellis Horowitz , Sartaj Sahni & Dinesh Mehta – "Fundamentals of Data structures in C++" - 2nd Edition - Universities Press 2007.
2. Ellis Horowitz , Sartaj Sahni & Sanguthevar Rajasekaran- "Fundamentals Of Computer Algorithms"- 2nd Edition- Universities Press 2007.

Reference Books:

1. Yedidyah langsam, Moshe J.Augenstein and Aaron- "Data structures using C "– PHI.
2. Seymour Lipschutz – "Data Structures" - TataMcGrawhill – Year 2006.
3. Jean Paul Tremblay and Paul G Sorenson – "An Introduction to Data structure with Application" - THM, II Edition – 1991.

Course Code	Course Title	H	C	I	E	T
17U3DMC6	VISUAL PROGRAMMING	4	4	25	75	100

Objectives:

- To impart the knowledge of computer programming with GUI approach.
- Learning the concept and controls of a front-end tool.

UNIT I : Introduction (12 hours)

Overview of the IDE - Managing forms in Visual Basic - The Visual Basic Language: Declaring Constants, Variables – Selecting variable types-Converting between data types - setting variable scope- verifying data types – declaring arrays & Dynamic arrays – Declaring Subroutines – Declaring functions – Handling strings – Converting strings to numbers and back again – Handling operators & operator precedence – Using if-else statements- Using select case – Looping – Handling higher math- Handling Dates and Times.

UNIT II : Controls (12 hours)

Text Boxes and Rich text Boxes- command buttons – checkboxes & option buttons – list boxes and combo boxes – picture boxes and image controls – The timer control – The frame control – the label control – the shape control.

UNIT III: Menus & Toolbars (12 hours)

Visual Basic Menus: adding a menu to a form – modifying & deleting menu items – creating sub menus – using Visual Basic predefined menus-Handling MDI forms & MDI child menus-creating & displaying popup menus – Adding & deleting menu items at runtime-– Toolbars, status bars, progress bars and coolbars.

UNIT IV : Files & Data Base Concepts (12 hours)

File handling and File Controls – Using DAO,RDO and ADO : Creating and managing databases with the visual data manager – creating a table - Adding a Data control – opening a database with the data control, Remote data control, ADO data control – connecting a databases using controls- working with database objects in code.

UNIT V : Active-x controls & Documents (12 hours)

Creating an Active-x control – Designing Active-x control- Adding controls to an Active-x control- Registering an Active-x control – Creating an Active-x Document – Active-x Document Dll vs EXEs – Testing an Active-x Document.

Text Book:

Steven Holzner – "Visual Basic 6 Programming Black Book" - 16th Reprint Edition -Dreamtech Press Publications

Reference Books:

1. Petroutsos.E – " Mastering Visual Basic 6" – Fifth edition, BPB Publications
2. Jerke .N - " Visual Basic 6.0 – The Complete reference" – Nineteenth Reprint 2004, Tata-McGraw Hill Publishing.
3. Gary Cornell- "VB 6 from the Ground up" – Second Reprint 1999-Tata-McGraw Hill Private Ltd.

Course Code	Course Title	H	C	I	E	T
17U3DMC7	OPERATING SYSTEMS	4	4	25	75	100

Objectives:

- To impart the knowledge of system software.
- Learning the concept and operations of operating systems.

Unit - I: Introduction **(12 hours)**

Operating system basics – Computer System organization – Computer system architecture – operating system structure – Operating system operations – Distributed systems – Open source operating systems. **System structures**: Operating system services – User operating system interface – System calls – Operating system structure.

Unit - II: Process Management **(12 hours)**

Process concepts – Process scheduling – Inter-process communication. **Multithreaded programming:** Overview – Multithreading models. **Process Scheduling:** Basic concepts – Scheduling criteria – Scheduling algorithms.

Unit - III: Memory Management **(12 hours)**

Memory management strategies – Background – Swapping – Contiguous memory allocation – Paging – Structure of the page table – Segmentation. **Virtual memory management:** Background – Demand paging – Copy-on-write – Page replacement – Thrashing.

Unit - IV: Storage Management **(12 hours)**

File system: File concepts – Access methods – File sharing – Protection. **Secondary storage structures:** Overview of Mass-storage structure – Disk structure – Disk scheduling – Disk management - RAID structure. **I/O systems:** Overview – I/O hardware.

Unit - V: Process Coordination **(12 hours)**

Synchronization: Background – The Critical-Section problem – Semaphores. **Deadlocks:** System model – Deadlock characterization – Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance.

Chapters:

Unit – I : 1.1 -1.5, 1.10, 1.13, 2.1-2.3, 2.7.

Unit – II : 3.1, 3.2, 3.4, 4.1, 4.2, 5.1-5.3.

Unit – III : 8.1-8.6, 9.1-9.4, 9.6.

Unit – IV : 10.1, 10.2, 10.5, 10.6, 12.1, 12.2, 12.4, 12.5, 12.7, 13.1, 13.2.

Unit – V : 6.1, 6.2, 6.5, 7.1-7.5.

Text Book:

Abraham Silberschatz, Peter B.Galvin, Greg Gagne - "Operating System Concepts " – Wiley Student Edition – 8th Edition - 2010.

Reference Books:

1. D.M.Damdhere - "Operating systems – A concept based approach" – 2nd Edition – TMH.
2. William Stalings – " Operating system, Internals and design principles" – 2008 – PHI.

Course Code	Course Title	H	C	I	E	T
17U3DAC3	FINANCIAL ACCOUNTING	3	3	25	75	100

Objectives:

- To impart the knowledge of computerized financial management.
- Learning the concepts of accounts and accounting software.

Unit – I :Introduction to Accounting (9 hours)

Principles of Book keeping – Day Books and Ledgers – Cash Book – Petty Cash Book – Trial Balance.

Unit – II :Preparation of Final Accounts (9 hours)

Preparation of Trading and Profit & Loss Account – Preparation of Balance Sheet (Simple Problems only)

Unit – III :Ratio Analysis (9 hours)

Meaning – Importance – Types - Liquidity Ratios - Solvency Ratio - Activity Ratios. (Simple problems only)

Unit – IV :Preparation of Accounts through Accounting Software (9 hours)

Creation of Company – Creation of Group – Creation of Ledger.

Unit – V: Voucher Creation and Display of Final Accounts in Accounting Software (9 hours)

Creation of Vouchers - Types of Voucher – Alteration of Voucher – Deletion of Voucher .

Preparation of Final Accounts through Tally – Trial Balance – Profit and Loss Account – Balance Sheet at the Gateway of Tally - Methods of showing Balance sheet.

Text Book:

1. Dr. S.A.N Shazuli Ibrahim, Financial Accounting – I, PASS Publications, Madurai.
2. Dr. P. Rizwan Ahmed, Tally ERP 9, Margham Publications, Chennai.

Books for Reference

1. S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol-I**,** Nineteenth Edition, 2015, Kalyani Publishers, Mumbai.
2. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
3. Nellai Kannan C, ***"Tally",*** 2004, Nels Publications.
4. Shraddha Singh & Navneet Mehra, ***"Tally.ERP 9- Power of Simplicity",*** 2014, ITC Publication.

Course Code	Course Title	H	C	I	E	T
17U3DAC4	STATISTICS AND NUMERICAL METHODS	4	3	25	75	100

Objectives:

- To impart the knowledge of computer arithmetic.
- Learning various statistical and numerical methods.

Unit – I: Computer Arithmetic (12 hours)

Floating point representation of numbers - Arithmetic operations with Normalized floating point numbers - Consequences of normalized floating point representations of numbers - Errors in numbers - Beginning an iterative method - The method of successive bisection - The methods of false position - Newton Rapson method - The Secant method - The method of successive approximation.

Unit – II: Iterative Methods (12 hours)

The gauss elimination method - Pivoting - Ill conditioned Equations-Refinement of solution obtained by Gaussian Elimination - Gauss Seidal iterative method & algorithm - Comparison of direct and iterative methods.

Unit – III: Interpolation (12 hours)

Forward difference method - Backward difference method - Central Difference method - Lagrange interpolation method - Divided difference method - Linear regression - Polynomial regression - Fitting exponential and trigonometric functions.

Unit – IV: Integration & Differentiation (12 hours)

Formulae for numerical differentiation - Numerical Integration-Simpson's 1/3 rule - Simpson's 3/8 rule - Errors in integration Formulae - Comparison of integration formulae.

Unit – V: Probability & Distribution (12 hours)

Basic probability - Random variables - Discrete random variables - Continuous random variables - Selecting the appropriate Distribution - Polynomial Regression - Simple linear regression.

Text books:

1. V.Rajaraman - "Computer Oriented Numerical Methods"- III Ed.,-PHI.
2. Billy Gillett - "Introduction To Operations Research"- TMH 1979.

Reference Books:

1. Sharma & Goyal - "Mathematical Statistics".
2. M.K. Venkatraman - "Numerical Methods for Engineering".

Course Code	Course Title	H	C	I	E	T
17U3DNM1	NME - COMPUTER FUNDAMENTALS	2	2	25	75	100

Objectives:

- To impart the basic knowledge of a computer.
- To explore the components and functions of computer.

Unit - I: Characteristics of Computers **(10 hours)**

Block Diagram - Problem Solving Using Computers - Classification of Computers - Computing Models.

Unit - II: Internal Representation **(10 hours)**

Representation of Characters, Integers & Fractions in Computers - Number Conversions Hexadecimal Binary – Octal - Decimal - Programming Languages.

Unit - III: Components **(10 hours)**

Functional Components of Computers - Input - Output Units - Memory – CPU.

Text Book:

V. Raja Raman - "Fundamentals of Computers" - II Edition – PHI – 1998.

Reference Books:

1. Basantra – "Computers Today" - Galgotia Publications.

2. Roger-Hunt – "Computers &Commonsense " – BPB pub.

IV SEMESTER

Course Code	Course Title	H	C	I	E	T
17U4DMC8	**COMPUTER NETWORKS**	**4**	**4**	**25**	**75**	**100**

Objectives:

- To impart the knowledge of computer networks.
- Learning the concept and the various layers of a computer network design.

UNIT-I : Introduction **(12 hours)**

Introduction: Uses of Computer Networks- Network Hardware-Network Software-Reference Models. Example Networks: The Internet-Third-Generation Mobile Phone Networks-Wireless LANs-RFID and Sensor Networks - Network Standardization.

UNIT –II: The Physical Layer **(12 hours)**

The Theoretical basis for Data Communication-Guided Transmission Media-Wireless Transmission – Communication Satellites-Digital Modulation and Multiplexing-The Public Switched Telephone Network-The Mobile Telephone System.

UNIT- III: Data Link Layer **(12 hours)**

Data Link Layer Design Issues: Error Detection and Correction-Elementary of Data Link Protocols- Sliding Window Protocols. The Medium Access Control Sublayer: The Channel Allocation Problem- Multiple Access Protocols-Bluetooth-Data Link Layer Switching.

UNIT- IV: The Network Layer **(12 hours)**

Network Layer Design Issues-Routing Algorithms: The Optimality Principle Shortest Path Algorithm-Flooding-Distance Vector Routing-Link State Routing-Hierarchical Routing-Broadcast Routing-Multicast Routing-Congestion Control Algorithms-Quality of Service-Internetworking-The Network Layer in the Internet.

UNIT- V: The Transport Layer **(12 hours)**

The Transport Service-Elements of Transport Protocols- The Internet Transport Protocols: User Datagram Protocol (UDP)-Transmission Control Protocol (TCP). The Application Layer: The Domain Name System (DNS)-Electronic mail. The World Wide Web. Network Security: Cryptography-Symmetric Key Algorithms ,Public-Key Algorithms-Digital Signatures.

TEXT BOOK

Tanenbaum and Wetherall, “Computer Networks”, Fifth Edition, Prentice Hall of India, New Delhi, 2010.

REFERENCE BOOKS

1. Stallings, W., “Data and Computer Communications”, Ninth Edition, Prentice Hall of India, New Delhi, 2010.
2. Forouzan, A.B., “Data Communication and Networking”, Fourth Edition, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2005.
3. Peterson.,L.L. and Davie, S.B., “ Computer Networks”, Fifth Edition, Morgan Kaufmann Publishers, San Fransisco, 2011.
4. Douglas, E.C., “Computer Networking and Internets”, Second Edition, Prentice Hall of India, New Delhi, 1999.

Course Code	Course Title	H	C	I	E	T
17U4DMC9	**LINUX PROGRAMMING**	**5**	**4**	**25**	**75**	**100**

Objectives:

- To impart the knowledge of open source software.
- Learning the concept and processes of Linux operating system.

Unit –I: Introduction to Linux **(15 hours)**

Getting started: An introduction to UNIX, Linux and GNU - Programming Linux.

Shell programming: Introduction - Pipes and redirection - The shell as a Programming language- Shell syntax - Going Graphical - Dialog utility - Putting it altogether.

Unit-II: Working With Files **(15 hours)**

Linux file structure-System calls and device drivers - Library functions - low level file access - The Standard I/O library - Formatted input and output - File and directory maintenance - Scanning Directories – Errors - The /Proc file systems - Advanced Topics: fcntl and mmap.

Unit-III: Processes and Signals **(15 hours)**

Introduction to process - Process structure - Starting new processes - Signals.

Unit-IV: Inter Process Communication **(15 hours)**

Pipes - Process pipes - Sending output to 'popen' - The pipe call - Parent and child processes - Named pipes: FIFOs - The CD database applications. **Semaphores, Shared memory and Message queues :** Semaphores - Shared memory - Message queues – IPC Status commands.

Unit-V: Sockets **(15 hours)**

Introduction - Socket connections - Network information - Multiple clients - Datagrams.

Chapters:

Unit – I : 1 and 2.
Unit – II : 3
Unit – III : 11.
Unit – IV : 13 and 14.
Unit – V : 14 and 15

Text Book:

Neil Matthew,Richard Stones-“ Beginning Linux Programming”,Fourth Edition,2008,Wiley Publishing Inc.

Reference Book:

Linux system programming- Robert Love,O’Reily,SPD.

Course Code	Course Title	H	C	I	E	T
17U4DMC10	PROGRAMMING IN JAVA	4	4	25	75	100

Objectives:

- To impart the knowledge of OOPs approach in computer programming.
- Learning the concept and controls of Java language.

Unit – I: Introduction **(12 hours)**

Java history – Java Features – Simple Java Programs – Class declaration – Tokens – Comments – Statements – JVM – Implementing Java programs – Command line arguments – Constants, Variables and Data types – Operators and Expressions – Decision making statements – Simple if statements – If-else statements – Nesting if-else statements – else-if ladder – switch statement – ternary operator – Looping – While, do-while, for loop statements.

Unit – II: Class & objects **(12 hours)**

Creation of class – Objects and methods – Accessing class members – Constructors – Method Overloading – Overriding – Static members – Inheritance – Interface.

Unit – III: Arrays **(12 hours)**

Arrays – Types – Length – Strings – Strings Manipulations – Vector – Vector classes – Wrapper class – Enumerated types – Java API Packages – System package – Creating and accessing user defined and system package – Managing errors and exceptions.

Unit – IV: Input / Output **(12 hours)**

Managing I/O files in Java – Stream I/O – Byte stream class – Character stream class – creation of files – File handling in Java – Multi threaded programming – Multithreads in Java – Thread class – Lifecycle of thread – Thread exceptions – Priority.

Unit – V: Applets & Graphics Programming **(12 hours)**

Applet programming – Introduction – Preparing to write Applets – Building applet code – Applet life cycle – Creating an executable applet – Applet tag – Running the applet – Passing parameters – Displaying numerical values - Getting input from the user – Graphics programming – Introduction – the Graphics class – Lines and rectangles – Circles and ellipse – Drawing arcs – Drawing polygons.

Text Book:

E. Balagurusamy – "Programming with Java" – V Edition., - MGH.

Reference Books:

1. Deital & Deital – "Java How to Program" – Pearson education-2003.
2. Herbert Schildt - "Java A Beginner's Guide" - IV Ed., TMH.
3. Patrick Naughton, Herbert Schildt – "Java Complete Reference2 – V Ed., - TMH.

Course Code	Course Title	H	C	I	E	T
17U4DMC11	COMPUTER SECURITY	5	4	25	75	100

Objectives:

- To impart the knowledge of security aspects of computing system.
- Learning the various methods of securing and administering computers and computer networks.

Unit – I: Introduction **(15 hours)**

Security problem in computing – Characteristics of computer in intrusion – Basic concepts – Threats, Vulnerabilities – Controls – Confidentiality – Integrity – Availability – Methods of Defense.

Unit – II: Encryption **(15 hours)**

Basic Encryption and Decryption – Substitution Cipher – Caesar Cipher – other substitutions – One time pad – Transposition – Columnar transposition – Symmetric and Asymmetric encryption Systems – Stream and block ciphers – Data encryption standard – Rivest Shamir Adel man (RSA) Encryption.

Unit – III: Methods **(15 hours)**

Security involving Programs and OS – Flaws – Malicious code – Virus, Worm – Program flaws – Buffer overflows- Incomplete mediation – Time of check and rime of use errors – Program development controls –memory file protection requirements & techniques – User Authentication. – Trusted OS – Design principles and evaluation.

Unit – IV: Network security **(15 hours)**

Database and network security – database integrity – database secrecy – interference control – Multilevel databases – Network threats – Introduction to network security techniques.

Unit – V: Administration **(15 hours)**

Administering security – Security planning – Risk analysis – Physical security – Legal aspects of security.

Text Book:

Charles P.Pfleeger, Shari Lawrence Pfleeger – "Security in Computing" – III Ed., - Pearson education – 2003.

Reference Book:

1. Atul Kanate – "Cryptography and Network Security, Principle and Practices – Prentice Hall of India – 1998.

Course Code	Course Title	H	C	I	E	T
17U4DAC5	RESOURCE MANAGEMENT TECHNIQUE	4	2	25	75	100

Objectives:

- To impart the knowledge of resource management technique.
- Learning the various problems and methods of operations research.

Unit-I: Linear Programming Problem – I (12 hours)

Mathematical Formulation of the problem – Graphical Solution – Introduction- Graphical Solution Method – Some exceptional cases- General L.P.P. – Canonical and Standard forms of L.P.P.

Unit-II: Linear Programming Problem – II (12 hours)

Simplex Method – Introduction – Fundamental Properties of Solutions – The computational procedure – Use of Artificial Variable.

Unit-III: Transportation and Assignment problem (12 hours)

Transportation Problem – Introduction – General Transportation Problem – The transportation table – Solution of a Transportation problem – Finding an initial basic feasible solution – Test for optimality – Transportation Algorithm (MODI method). Assignment Problem – Introduction – Mathematical formulation of the problem – The assignment method – Special cases in assignment problems – A typical assignment problem – The traveling salesman problem.

Unit-IV: Game Theory (12 hours)

Introduction – Two-person zero-sum games – Some basic terms – The Maxmin-Minimax principle – Games without Saddle points-mixed strategies – Graphic solution of 2 x n and m x 2 games – Dominance property.

Unit-V Network Scheduling (12 hours)

Introduction – Network and basic components – Logical sequencing – Rules of network Construction – Critical path analysis – Distinction between PERT and CPM.

Chapters:

Unit – I : 2.1 – 2.3, 3.1-3.5
Unit – II : 4.1-4.4
Unit – III: 10.1, 10.2, 10.5, 10.8-10.10, 10.13, 11.1-11.5, 11.7.
Unit – IV : 7.1-7.7.
Unit – V : 25.1-25.4, 25.6, 25.8.

Text Book:

Kanti Swarup, P.K. Gupta, Man Mohan – "Operations Research" – 18th edition, Sultan Chand & Sons Educational Publishers, New Delhi.

Reference Books:

1. Hamdy A. Taha – "Operations Research an Introduction" – PHI, 8th edition.

2. S.D. Sharma – "Operations Research" – 12th edition, Kedar Nath Ram Nath & Co Publishers, Meerut.

Course Code	Course Title	H	C	I	E	T
17U4DNM2	INTRODUCTION TO INTERNET	2	2	25	75	100

Objectives:

- To impart the knowledge of basics of Internet.
- Learning the various aspects of Internet design and functionalities.

Unit I: Introduction to Internet **(6 Hours)**

Internet- Growth of Internet and Arpanet - Owners of the Internet -Anatomy of Internet – History of WWW - Basic Internet Terminologies – Net etiquette - Internet Applications - Commerce on the Internet – Governance on the Internet - Impact of Internet on Society.

UNIT II: Browsers and Search engines **(6 Hours)**

Browsers – browser- Introduction – Parts of a browser window -Running a browser - working with a Browser. Search engines: What is search engine? - Types of search engines - Search and Meta search engines.

Unit III: E-mail **(6 Hours)**

E-mail - E-mail Networks and Servers - E-mail Protocols - Structure of E-mail - Attachments – E-mail Clients - E-mail Clients - web based E-mail-Address book – Signature File.

UNIT IV: HTML Programming Basics **(6 Hours)**

Introduction to HTML – HTML browsers - Different versions of HTML-HTML tags - Document overview - Header elements - Section headings –

UNIT V: HTML Programming Basics **(6 Hours)**

Block headings - Lists-Inline elements – Images - working with Tables, Forms, Frames.

Text book:

Internet Technology and Web design, Ramesh Bangia, Firewall Media, (An imprint of Lakshmi Publications Pvt. Ltd.), Third Edition, 2011.

Unit 1: Chapter 1.2
Unit 2: Chapter 3 & Chapter 4
Unit 3: Chapter 5(5.6), Chapter 8(8.11 &8.13)
Unit 4: Chapter 5 (5.1) & Chapter 6
Unit 5: Chapter 9

Reference Books:

1.The Internet Book, Douglas E. Comer, Fourth Edition, PHI Learning Pvt. ltd. , New Delhi, 2009.

2.Using the Internet the Easy Way, Young Kai Seng, Minerva Publications, First Edition, 2000.

3.Fundamentals of Information Technology By Alexis Leon and Mathews Leon, Vikas Publishing House Pvt. Ltd., Revised Edition.

M.Sc. Computer Science Syllabus(CBCS Pattern) with effect from June 2017 onwards

Semester III				Marks allotted		
Code	**Subject**	**Hrs**	**Cre**	**Int**	**Ext**	**Total**
17P3DMC7	Relational Database Management System	6	4	25	75	100
17P3DMC8	Software Engineering	5	4	25	75	100
17P3DME3	Elective-III: G. Dot net technology H. WAP and XML I. PHP Scripting Language	5	4	25	75	100

Semester I				Marks allotted		
Code	**Subject**	**Hrs**	**Cre**	**Int**	**Ext**	**Total**
17P1DMC1	Mathematical Foundations of Computer Science	5	4	25	75	100
17P1DMC2	Design and Analysis of Algorithms	5	4	25	75	100
17P1DMC3	Web Technologies	5	4	25	75	100
17P1DMC4	Linux Programming	5	4	25	75	100
17P1DMP1	Web Technologies Lab	5	4	50	50	100
17P1DMP2	LINUX Programming Lab	5	4	50	50	100
	Total	**30**	**24**			**600**
Semester II						
17P2DMC5	OOAD & UML	5	4	25	75	100
17P2DMC6	Advanced JAVA Programming	5	4	25	75	100
17P2DME1	Elective-I: A. Advanced Computer Architecture B. System Software and Operating System C. Computer Network	5	4	25	75	100
17P2DME2	Elective-II: D. Data Structures and Algorithms in C++ E. Multimedia Technology F. Programming in ASP	5	4	25	75	100
17P2DMP3	Advanced JAVA Programming Lab	5	4	50	50	100
17P2DMP4	Lab Based on the paper selected in Elective -II	5	4	50	50	100
	Total	**30**	**24**			**600**

17P3DNME	Introduction to Internet	4	4	25	75	100
17P3DMP5	RDBMS Lab	5	4	50	50	100
17P3DMP6	Lab Based on the paper selected in Elective -III	5	4	50	50	100
	Total	**30**	**24**			**600**
Semester IV						
17P4DMC9	Network Security	5	3	25	75	100
17P4DME4	Elective-IV: J. Web Services K. Digital Image Processing L. Data mining and data warehousing	5	3	25	75	100
17P4DMPRO	Project & Viva-Voce	20	12	100	200	300
	Total	**30**	**18**			**500**
	Grand Total	**120**	**90**			2300

Sem.	Sub.Code	Title of the paper	Hours	Credits
III	17P3DMC7	RELATIONAL DATABASE MANAGEMENT SYSTEM	6	4

Objectives:

- To impart the knowledge of Relational Concepts in DBMS.
- Learning the concept of designing DB with relational algebra

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UNIT I: Introduction:

Introduction: Database system Applications – Purpose of database systems – View of Data – Relational databases – Database Design – Object based semi structured databases - Data storage and Querying – Transaction Management – Database Architecture – Database Users and Administrators. Relational Model: Structure of Relational databases – Fundamental Relational Algebra Operations – Additional Relational Algebra Operations – Extended Relational Algebra Operations

UNIT II: ER –Model:

Database Design and ER Model: Overview of the Design Process – The Entity Relationship Model – Constraints - Entity-Relationship diagram - Entity-Relationship Design Issues – Weak Entity sets – Extended E-R features – Database design for Banking Enterprise .Relational Database Design: Features of good Relational Designs – Atomic Domains and First Normal form – Decomposition using functional Dependencies – Functional Dependency Theory - Decomposition using functional Dependencies – Decomposition using Multivalued Dependencies.

UNIT III: SQL:

Object based Databases: Overview – Complex Data types – Structured types and Inheritance in SQL – Table Inheritance – Array and Multi set types in SQL – Object Identity and Reference types in SQL –Implementing O-R features – Persistence Programming Languages – Object oriented Versus Object Relational Databases.

UNIT IV: File Structures:

Storage and File Structure: Overview of Physical Storage Media – Magnetic Disk – RAID – Tertiary Storage – Storage Access – File Organization - Organization of Records in files – Data Dictionary Storage. Indexing and Hashing: Basic Concepts – Ordered Indices – B++ Tree Index Files –Multiple Key Access – Static Hashing – Dynamic Hashing.

UNIT V: Data Recovery :

Transactions: Transaction Concept – Transaction State – Implementation of Atomicity and Durability – Concurrent Executions – Serializability – Recoverability – Implementation of Isolation – Testing for Serializability Concurrency Control: Lock-based protocols – Timestamp-based protocols - Validation-based protocols. Recovery System: Failure Classification – Storage Structure – Recovery and Atomicity – Log-based Recovery - Recovery with Concurrent Transactions.

Text Book:

Abraham Silberschatz, Henry F.Korth and S.Sudarshan, Database System Concepts, McGraw Hill International Edition 2006, Fifth Edition.

UNIT I : Chapter 1.1 to 1.3, 1.5 to 1.9, 1.11 & 1.12 and Chapter 2.1 to 2.4
UNIT II : Chapter 6.1 to 6.8 and Chapter 7.1 to 7.6
UNIT III : Chapter 9.1 to 9.9
UNIT IV : Chapter 11.1 to 11.8 and Chapter 12.1 to 12.3, 12.5 to 12.7
UNIT V : Chapter 15.1 to 15.8 , Chapter 16.1 to 16.3, and Chapter 17.1 to 17.5

Reference books:

1. Database Management Systems – Raghu Ramakrishnan & Johannes Gehrke, McGraw Hill International Edition – Third Edition – 2003
2. Database Management Systems - Alexis leon & mathews Leon, “Leon Vikas Publishing, Chennai, 2002.

Sem.	Sub.Code	Title of the paper	Hours	Credits
III	17P3DMC8	SOFTWARE ENGINEERING	5	4

Objectives:

- To impart the knowledge of software development with an engineering aspects..
- Learning the concept of designing software product, test and maintenance

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Unit 1:Introduction:

The software Process: Software and software engineering, process models, agile development.

Unit 2: Modelling:

Modelling: Understanding requirements, Requirements modelling: Scenarios, information, and analysis classes, flow, behaviour, patterns and web applications.

Unit 3:Quality Management:

Quality Management: Quality concepts, review techniques, software quality assurance, software testing strategies and formal model verification.

Unit 4:Estimation and scheduling:

Managing Software Projects: Project management concepts, process and project metrics, estimation for software projects and project scheduling.

Unit 5:Software process improvements:

Advanced Topics: Software process Improvement and emerging trends in software Engineering

Text Book:

Software engineering - A practitioner's approach - 7th Edition - By Roger S. Pressman - McGraw Hill International editions.

Reference Books:

1. Software engineering concepts – Richard Fairley – Tata Mcgraw – hill publishing company limited, Newdelhi 1997.
2. Software engineering – K. L. James, Prentice hall of india pvt. Ltd. , Newdelhi – 2009.
3. Fundamentals of software engineering – Rajib Mall, Prentice hall of india pvt. Ltd. , New Delhi – 2003
4. Analysis and design of information system – by Jams a Sen - Tata Mcgraw - Hill publishing company limited

Elective-III (III Semester)

Sem.	Sub.Code	Title of the paper	Hours	Credits
III	17P3ME3	G. DOT NET Technologies	5	4

Objectives:

- To teach the concepts of Dot NET programming.
- Learning the techniques of designing the front-end components with networking.

UNIT I : Introduction:
Introduction to .Net - .Net Framework Features & Architecture, CLR, Common Type System, MSIL, Assemblies and Class Libraries.

UNIT II
Advanced ADO.NET –Disconnected Data Access – Grid view, Details View, and Form View Controls – Crystal Reports –Role of ADO.NET in Distributed
Applications.

UNIT III
Advanced ASP.NET – Ad Rotator, Multiview, Wizard and Image Map Controls –Master Pages – Site Navigation – Web Parts – Uses of these controls and features in Website development.

UNIT IV
Advanced features of ASP.NET – Security in ASP.NET – State Management in ASP.NET – Mobile Application development in ASP.Net – Critical usage of these features in Website development.

UNIT V
Introduction to Dynamic Web Applications: Server Side Scripting basics –Server Side Scripting Languages – PHP Scripting - General Syntactic Characteristics – Primitives, operations and expressions – Control Statement –Arrays – Functions – Pattern Matching – Form Handling – Files – Cookies –Session Tracking – Database access with PHP and MYSQL.

Text Books
1. Wather, ASP .Net 3.5, SAMS Publication, 2005
2. Open Source Web Development with LAMP using Linux, Apache, MySQL,
Perl and PHP", James Lee and Brent Ware, Dorling Kindersley (India) Pvt.
Ltd, 2008

Elective-III: (III Semester)

Sem.	Sub.Code	Title of the paper	Hours	Credits
III	17P3ME3	H. WAP & XML	5	4

Objectives:

- To impart the knowledge of a communication Protocol specifically for wireless devices..
- Learning the concept of using internet access, including e-mail, the World Wide Web, newsgroups, and instant messaging.

Unit I

Overview of WAP: WAP and the wireless world – WAP application architecture – WAP internal structure – WAP versus the Web – WAP 1.2 – WTA and push features. Setting up WAP: Available software products – WAP resources – The Development Toolkits.

Unit II

WAP gateways: Definition – Functionality of a WAP gateway – The Web model versus the WAP model – Positioning of a WAP gateway in the network – Selecting a WAP gateway Basic WML: Extensible markup language – WML structure – A basic WML card – Text formatting – navigation – Advanced display features.

Unit III

Interacting with the user: Making a selection – Events – Variables – Input and parameter passing. WML Script: Need for WML script – Lexical Structure – Variables and literals – Operators – Automatic data type conversion – Control Constructs Functions – Using the standard libraries – programs – Dealing with Errors.

Unit IV

XML: Introduction XML: An Eagle's Eye view of XML – XML Definition – List of an XML Document – Related Technologies – An introduction to XML Applications – XML Applications – XML for XML – First XML Documents Structuring Data: Examining the Data XMLizing the data – The advantages of the XML format – Preparing a style sheet for Document Display.

Unit V

Attributes, Empty Tags and XSL: Attributes – Attributes Versus Elements – Empty Tags – XSL – Well formed XML documents – Foreign Languages and Non Roman Text – Non Roman Scripts on the Web Scripts, Character sets, Fonts and Glyphs – Legacy character sets– The Unicode Character set – Procedure to Write XML Unicode.

Text Books

1) For Unit I, II, III
Charles Arehart and Others. ”Professional WAP with WML, WML script, ASP, JSP, XML, XSLT, WTA Push and Voice XML” Shroff Publishers and Distributers Pvt. Ltd 2000.

2) For Unit IV & V
Eliotte Rusty Harlod “XML TM Bible”, Books India (P) Ltd, 2000

Elective –III (III Semester)

Sem.	Sub.Code	Title of the paper	Hours	Credits
III	17P3ME3	I. PHP Scripting Language	5	4

Objectives:

- To impart the knowledge of Open source scripting Language.
- Learning the concept of designing Web Development , combining the codes with HTML, Web content management and web frame work.

Unit I: Introduction

The Origin of PHP-PHP is better than Its alternatives-How PHP works with the Web ServerHardware and Software requirements and installation-PHP Pros and Cons-PHP: past, present and future (PHP 3.0, PHP 4.0, and PHP 5)-Strength of PHP Basic PHP Development-How PHP scripts work-Basic PHP syntax-PHP variables-PHP data types-Displaying type information-Testing for a specific data type-Operators-Variable manipulation-Dynamic variables-String in PHP Control Structures-The if statement-Using the else clause with if statement, multiple if, nested if-The switch statement-Using the ? Operator- Summary

Unit II: Arrays

Single-Dimensional Arrays-Multidimensional Arrays-Casting Arrays-Associative arraysAccessing arrays-Getting the size of an array-Looping through an array-Looping through an associative array- Examining arrays-Joining arrays-Sorting arrays- Sorting an associative arrays Loops-The while statement-The do while statement-The for statement-Break & continue Nesting loops-For each loops Functions-Introduction of functions -PHP Library Function-Array functions-String functions-Date and time functions-Other important functions-User Defined Function-Defining a function with parameters and without parameters-Returning value from function-Dynamic function calls Accessing variable with the global statement-Function calls with the static statement-Setting default values for arguments-Passing arguments to a function by value-Passing arguments to a function by reference

Unit III: Working With the File System

Creating and deleting a file-Reading and writing text files Working with directories in PHPChecking for existence of file-Determining file size-Opening a file for writing, reading, or appending-Writing Data to the file-Reading characters Working With Forms-Forms-Super global variables-The server array-A script to acquire user input-Importing user input - Accessing user input-Combine HTML and PHP code-Using hidden fields -Redirecting the user - File upload and scripts . Validation-Server side validation - Client side validation (Javascript) Working With Regular Expressions.

Unit IV: Classes And Objects

Introduction of Objects oriented programming Define a class-Creating an object-Object properties-Object methods-Object constructors and destructors Class constants, Access modifier, Class inheritance-Abstract classes and methods-Object serialization Checking for class and method existence-Exceptions-Summary Introduction To Database-Introduction to SQL-Connecting to the MYSQL-Database creation and selection-Database table creation,

update table structure-insert, update, delete data to a table-Fetch data from table, Acquiring the value, Joins, sub query-Finding the number of rows-Executing multiple queries- CookiesThe anatomy of a cookie-Setting a cookie with PHP-Deleting a cookie-Creating session cookie-Working with the query string-Creating query string

Unit V: Session

What is session-Starting a session-Working with session variables -Destroying sessionPassing session Ids-Encoding and decoding session variables Disk Access, I/O, And MailFile upload-File download-Environment variables-E-mail in PHP-Random numbers AJAX (Asynchronous JavaScript and XML)-Introduction to AJAX-Introduction to XMLHttpRequest Object-Method and Properties of XMLHttpRequest-Application of AJAX in web application

Text Books:

1. David Sklar, Nathan Torkington,"Learning PHP 5", 2004, O'Reilly.
2. W. Jason Gilmore,"Beginning PHP and MySQL 5", 2006 2nd edition, Apress

Reference Book:

1. Kevin Yank, "Build Your Own Database Driven Web Site Using PHP & MySQL" 2011, 4th edition, Sitepoint.
2. Ahsanul Bari,"Cake Php Application Development", 1st edition, 2008, Packet publishing ltd.

E-REFERENCES

1. .www.w3schools.com/php
2. php.net/downloads.php

III SEMESTER

Sem.	Sub.Code	Title of the paper	Hours	Credits
III	**17P3NME**	NME : INTRODUCTION TO INTERNET	**4**	**4**

Objectives:

- To teach the basic ideas about the usage of an Internet and its applications.
- Learning the architecture of an internet .

UNIT I:

Introduction to internet: Internet- Growth of Internet and ARPANet - Owners of the Internet - Anatomy of Internet – History of WWW - Basic Internet Terminologies - Internet Applications - Commerce on the Internet – Governance on the Internet - Impact of Internet on Society.- Internet Protocols - TCP/IP – Router - Internet Addressing Scheme- Machine Addressing - E-mail Addresses – Resource Addresses.

UNIT II:

Interconnectivity: Connectivity types - Setting up a connection - Hardware requirements- Selection of a modem - Software requirements – Internet accounts by ISP-ISDN-Protocol options-Service options. Internet Network: Network Definition-Common terminologies – Node - Host- Workstation -Network Administrator - Network security - Network Components – Servers-client Server- Communication Media - Types of Networks - Addressing in Internet – DNS - Network topologies.

UNIT III

Browsers and Search engines: Browsers – browser-INTRODUCTION – Parts of a browser window -Running a browser - working with a Browser. Search engines: What is search engine? - Types of search engines - Search and meta search engine s.

Unit IV:

E-mail: E-mail - E-mail Networks and Servers - E-mail Protocols - Structure of E-mail - Attachments – E-mail Clients - E-mail Clients - web based E-mail-Address book – Signature File.

Text book:

Internet Technology and Web design, Ramesh Bangia, Firewall Media, (An imprint of Lakshmi Publications Pvt. Ltd.), Third Edition, 2011.

Unit 1: Chapter 1.2
Unit 2: Chapter 3 & Chapter 4
Unit 3: Chapter 5(5.6), Chapter 8(8.11 &8.13)
Unit 4: Chapter 5 (5.1) & Chapter 6

Reference Books:

1.The Internet Book, Douglas E. Comer, Fourth Edition, PHI Learning Pvt. ltd. , New Delhi, 2009.
2.Using the Internet the Easy Way, Young Kai Seng, Minerva Publications, First Edition, 2000.
3.Fundamentals of Information Technology By Alexis Leon and Mathews Leon, Vikas Publishing House Pvt. Ltd., Revised Edition.

IV Semester

Sem.	Sub.Code	Title of the paper	Hours	Credits
IV	17P4MC9	NETWORK SECURITY	5	3

Objectives:

- To teach the algorithms on security in the network architecture.
- Learning the concept of designing security algorithms.

Unit I
Overview-Symmetric Ciphers: Classical Encryption Techniques

Unit II
Symmetric Ciphers: Block ciphers and the Data Encryption Standards Public key Encryption and Hash Functions: Public-Key Cryptography and RSA

Unit III
Network Security Practices: Authentication applications-Electronic Mail Security

Unit IV
Network Security Practices: IP Security-Web Security

Unit V
System Security: Intruders-Malicious Software-Firewalls

Text Book:
1. William Stallings, Cryptography and Network Security-Principles and Practices, Prentice-Hall, Third edition, 2003

References
1. Johannes A. Buchaman , Introduction to cryptography, Springer-Verlag.
2. Atul kahate , Cryptography and Network Security, TMH.

IV Semester

Sem.	Sub.Code	Title of the paper	Hours	Credits
IV	17P4ME4	Elective-IV: J. WEB SERVICES	5	3

Objectives:

- To teach the concepts of communication services over network using XML.
- To explore the real-time applications of Web services.

UNIT- I : XML TECHNOLOGY FAMILY

XML – Benefits – Advantages of XML over HTML – EDI – Databases – XML based standards – Structuring with schemas – DTD – XML schemas – XML processing – DOM – SAX – Presentation technologies – XSL – XFORMS – XHTML – Transformation – XSLT – XLINK – XPATH – XQuery

UNIT- II :ARCHITECTING WEB SERVICES

Business motivations for web services – B2B – B2C – Technical motivations – Limitations of CORBA and DCOM – Service Oriented Architecture (SOA) – Architecting web services – Implementation view – Web services technology stack – Logical view – Composition of web services – Deployment view – From application server to peer to peer – Process view – Life in the runtime.

UNIT- III: WEB SERVICES BUILDING BLOCKS

Transport protocols for web services – Messaging with web services – Protocols – SOAP – Describing web services – WSDL – Anatomy of WSDL – Manipulating WSDL – Web service policy – Discovering web services – UDDI – Anatomy of UDDI – Web service inspection – Ad hoc discovery – Securing web services.

UNIT- IV : IMPLEMENTING XML IN E–BUSINESS

B2B – B2C applications – Different types of B2B interaction – Components of E -Business XML systems – EBXML – Rosetta Net – Applied XML in vertical industry – Web services for mobile devices.

UNIT- V: XML CONTENT MANAGEMENT AND SECURITY

Semantic web – Role of meta data in web content – Resource description framework – RDF schema – Architecture of semantic web – Content management workflow – XLANG – WSFL – Securing web services

TEXT BOOKS

1. Ron Schmelzer and Travis Vandersypen, “XML and Web Services unleashed”, Pearson Education, 2002.
2. Keith Ballinger, “. NET Web Services Architecture and Implementation”, Pearson Education, 2003.

REFERENCES

1. David Chappell, “Understanding .NET A Tutorial and Analysis”, AddisonWesley, 2002.
2. Kennard Scibner and Mark C. Stiver, “Understanding SOAP”, SAMS publishing, 2000.
3. Alexander Nakhimovsky and Tom Myers, “XML Programming: WebApplications and Web Services with JSP and ASP”, Apress, 2002

IV Semester

Sem.	Sub.Code	Title of the paper	Hours	Credits
IV	17P4ME4	Elective-IV: DIGITAL IMAGE PROCESSING	5	3

Objectives:

- To teach the computer algorithm to perform image processing on digital images.
- To impart the knowledge on image compression techniques.

Unit I

Digital Image processing-Introduction – The Origin of Digital Image Processing – Gamma-Ray Imaging – X-Ray Imaging – Elements of visual perception – Light and the Electromagnetic spectrum – Image sensing and acquisition – Image sampling and Quantization – Some basic relationships between pixels – An Introduction to the Mathematical Tools Used in Digital Image Processing.

Unit II

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 and Spatial Filtering.

Unit III

Background – Preliminary Concepts – Sampling and the Fourier Transform of sampled functions – The Discrete Fourier Transform (DFT) of one variable – Extension to functions of two variables – Some properties of the 2-D Discrete Fourier Transform – The Basics of Filtering in the Frequency Domain – Image Smoothing Using Frequency Domain Filters – Image Sharpening Using Frequency Domain Filters – Selective Filtering.

Unit IV

A model of the Image Degradation/Restoration Process – Noise models – Restoration in the presence of Noise Only – Spatial Filtering – Periodic Noise Reduction by Frequency domain Filtering – Linear, Position Invariant Degradations – Estimating the Degradation function – Inverse Filtering – Minimum Mean square Error (Wiener) Filtering – Constrained Least Squares Filtering – Geometric Mean Filter – Image Reconstruction from Projections.

Unit V

Color Fundamentals – Color Models – Pseudocolor Image Processing – Basics of Full-color Image Processing – Color Transformations – Smoothing and Sharpening – Image segmentation Based on Color – Noise in Color Images – Color Image Compression – Image Compression Fundamentals – Some Basic – Compression Methods – Digital Image Watermarking.

Text Books

1. Rafael C.Gonzalez, Richard E.Woods, “Digital Image Processing“, Pearson 2009
2. J.T.Tou, R.C.Gonzalez, pattern Recognition principles, Addison Wesley 1974

Reference Books

1. Jain A F Fundamentals of Digital Image Processing, Prentice Hall 1995
2. Pratt, Digital Image Processing Wiley 2nd edition 1991
3. Gregory A Baxes, Digital Image Processing John Wiley 1994.
4. Digital Image Processing by S.Jayaraman, S.Esakkirajan, T.VeeraKumar, TMH, 2011

IV Semester

Sem.	Sub.Code	Title of the paper	Hours	Credits
IV	17P4ME4	**Elective-IV: DATA MINING AND DATA WAREHOUSING**	5	3

Objectives:

- To teach the data mining functions and enhancement on mining process.
- To impart the knowledge of on-line analytical processing.

UNIT I

DATA MINING AND DATA PREPROCESSING: Data Mining – Motivation – Definition – Data Mining on Kind of Data –Functionalities – Classification – Data Mining Task Primitives – Major Issues in Data Mining – Data Pre-processing – Definition – Data Clearing – Integration and Transformation – Data Reduction.

UNIT II

DATA WAREHOUSING: Multidimensional Data Model –Data Warehouse Architecture – Data Warehouse Implementation –From data Warehousing to Data Mining – On Line Analytical Processing - On Line Analytical Mining.

UNIT III

FREQUENT PATTERNS, ASSOCIATIONS AND CLASSIFICATION: The Apriori Algorithm – Definition of Classification and Prediction – Classification by Decision Tree Induction - Bayesian Classification – Rule Based Classification – Classification by Back Propagation – Lazy Learners – K-Nearest Neighbour – Other Classification Methods.

UNIT IV

CLUSTER ANALYSIS: Definition – Types of data in Cluster Analysis – Categorization of major Clustering Techniques – Partitioning Methods – Hierarchical Clustering – BIRCH - ROCK – Grid Based Methods – Model Based Clustering Methods – Outlier Analysis.

UNIT V

SPATIAL, MULTIMEDIA, TEXT AND WEB DATA: Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web – Data Mining Applications – Trends in Data Mining.

Text Book

Jiawei Han and Micheline Kamber, “Data Mining Concepts and Techniques“, 2nd Ed., Morgan Kaufmann Publishers, 2006.

REFERENCE BOOK

Margret H. Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson Education, 2003.

IV Semester

Sem.	Sub.Code	Title of the paper	Hours	Credits
IV	17P4MPRO	**PROJECT & VIVA-VOCE**	20	12

Objectives:

- To Motivate the students to do major project on the problems identifying with their own . Giving practice in different software platform and expertise them for developing a complete software solution in the field of Information technology

B.Sc. Information Technology Syllabus (CBCS Pattern)
With effect from June 2017 onwards

Sem	Course	Title	Hours/ Week	Credits	Int.	Ext.	Total
III	17U3DMC5	Operating systems	4	4	25	75	100
	17U3DMC6	Visual Programming	5	4	25	75	100
	17U3DMC7	LINUX Programming	4	4	25	75	100
	17U3DAC3	Data Structures and Computer Algorithms	4	4	25	75	100
	17U3DAC4	Computerized Accounting	3	2	25	75	100
	17U3DMP5	LAB-5: LINUX Programming Lab	4	2	50	50	100
	17U3DMP6	SBE-LAB- 6: Visual Programming	4	2	50	50	100
	17U3DNME1	(Non-major Elective) Introduction to Internet	2	2	25	75	100
		TOTAL	**30**	**24**			

Sem	Course	Title	Hours/ Week	Credits	Int.	Ext.	Total
IV	17U4DMC8	Programming in JAVA	5	4	25	75	100
	17U4DMC9	Data Communication & Computer Networks	4	4	25	75	100
	17U4DMC10	Web Programming Using PHP and MySQL	4	4	25	75	100
	17U4DMC11	Computer Organization	4	4	25	75	100
	17U4DAC5	Numerical Methods	3	2	25	75	100
	17U4DMP7	LAB-7: Web Programming Lab	4	2	50	50	100
	17U4DMP8	SBE- LAB-8: JAVA Programming Lab	4	2			
	17U4DNME2	PC Software	2	2	25	75	100
		TOTAL	**30**	**24**			

III SEMESTER

Course Code	Course Title	H	C	I	E	T
17U3DMC5	OPERATING SYSTEMS	4	4	25	75	100

Objectives:

- To impart the knowledge of system software.
- Learning the concept and operations of operating systems.

Unit - I: Introduction **(12 hours)**

Operating system basics – Computer System organization – Computer system architecture – operating system structure – Operating system operations – Distributed systems – Open source operating systems. **System structures**: Operating system services – User operating system interface – System calls – Operating system structure.

Unit - II: Process Management **(12 hours)**

Process concepts – Process scheduling – Inter-process communication. **Multithreaded programming:** Overview – Multithreading models. **Process Scheduling:** Basic concepts – Scheduling criteria – Scheduling algorithms.

Unit - III: Memory Management **(12 hours)**

Memory management strategies – Background – Swapping – Contiguous memory allocation – Paging – Structure of the page table – Segmentation. **Virtual memory management:** Background – Demand paging – Copy-on-write – Page replacement – Thrashing.

Unit - IV: Storage Management **(12 hours)**

File system: File concepts – Access methods – File sharing – Protection. **Secondary storage structures:** Overview of Mass-storage structure – Disk structure – Disk scheduling – Disk management - RAID structure. **I/O systems:** Overview – I/O hardware.

Unit - V: Process Coordination **(12 hours)**

Synchronization: Background – The Critical-Section problem – Semaphores. **Deadlocks:** System model – Deadlock characterization – Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance.

Chapters:

Unit – I : 1.1 -1.5, 1.10, 1.13, 2.1-2.3, 2.7.
Unit – II : 3.1, 3.2, 3.4, 4.1, 4.2, 5.1-5.3.
Unit – III : 8.1-8.6, 9.1-9.4, 9.6.
Unit – IV : 10.1, 10.2, 10.5, 10.6, 12.1, 12.2, 12.4, 12.5, 12.7, 13.1, 13.2.
Unit – V : 6.1, 6.2, 6.5, 7.1-7.5.

Text Book:

Abraham Silberschatz, Peter B.Galvin, Greg Gagne - "Operating System Concepts " – Wiley Student Edition – 8th Edition - 2010.

Reference Books:

3. D.M.Damdhere - "Operating systems – A concept based approach" – 2nd Edition – TMH.
4. William Stalings – " Operating system, Internals and design principles" – 2008 – PHI.

Course Code	Course Title	H	C	I	E	T
17U3DMC6	VISUAL PROGRAMMING	5	4	25	75	100

Objectives:

- To impart the knowledge of computer programming with GUI approach.
- Learning the concept and controls of a front-end tool.

UNIT I : Introduction (15 hours)

Overview of the IDE - Managing forms in Visual Basic - The Visual Basic Language: Declaring Constants, Variables – Selecting variable types-Converting between data types - setting variable scope- verifying data types – declaring arrays & Dynamic arrays – Declaring Subroutines – Declaring functions – Handling strings – Converting strings to numbers and back again – Handling operators & operator precedence – Using if-else statements- Using select case – Looping – Handling higher math- Handling Dates and Times.

UNIT II : Controls (15 hours)

Text Boxes and Rich text Boxes- command buttons – checkboxes & option buttons – list boxes and combo boxes – picture boxes and image controls – The timer control – The frame control – the label control – the shape control.

UNIT III: Menus & Toolbars (15 hours)

Visual Basic Menus: adding a menu to a form – modifying & deleting menu items – creating sub menus – using Visual Basic predefined menus-Handling MDI forms & MDI child menus-creating & displaying popup menus – Adding & deleting menu items at runtime-– Toolbars, status bars, progress bars and coolbars.

UNIT IV : Files & Data Base Concepts (15 hours)

File handling and File Controls – Using DAO,RDO and ADO : Creating and managing databases with the visual data manager – creating a table - Adding a Data control – opening a database with the data control, Remote data control, ADO data control – connecting a databases using controls- working with database objects in code.

UNIT V : Activex controls & Documents (15 hours)

Creating an Activex control – Designing Activex control- Adding controls to an Activex control-Registering an Activex control – Creating an Activex Document – Activex Document Dll vs EXEs – Testing an Activex Document.

Text Book:

Steven Holzner – "Visual Basic 6 Programming Black Book" - 16th Reprint Edition -Dreamtech Press Publications.

Reference Books:

4. Petroutsos.E – " Mastering Visual Basic 6" – Fifth edition, BPB Publications
5. Jerke .N - " Visual Basic 6.0 – The Complete reference" – Nineteenth Reprint 2004, Tata-McGraw Hill Publishing.
6. Gary Cornell- "VB 6 from the Ground up" – Second Reprint 1999-Tata-McGraw Hill Private Ltd.

Course Code	Course Title	H	C	I	E	T
17U3DMC7	LINUX PROGRAMMING	4	4	25	75	100

Objectives:

- To impart the knowledge of open source software.
- Learning the architecture and processes of Linux operating system.

Unit –I: Introduction to Linux **(12 hours)**

Getting started: An introduction to UNIX, Linux and GNU - Programming Linux.
Shell programming: Introduction - Pipes and redirection - The shell as a Programming language- Shell syntax - Going Graphical - Dialog utility - Putting it altogether.

Unit-II: Working With Files **(12 hours)**

Linux file structure-System calls and device drivers - Library functions - low level file access - The Standard I/O library - Formatted input and output - File and directory maintenance - Scanning Directories – Errors - The /Proc file systems - Advanced Topics: fcntl and mmap.

Unit-III: Processes and Signals **(12 hours)**

Introduction to process - Process structure - Starting new processes - Signals.

Unit-IV: Inter Process Communication **(12 hours)**

Pipes - Process pipes - Sending output to 'popen' - The pipe call - Parent and child processes - Named pipes: FIFOs - The CD database applications. **Semaphores, Shared memory and Message queues :** Semaphores - Shared memory - Message queues – IPC Status commands.

Unit-V: Sockets **(12 hours)**

Introduction - Socket connections - Network information - Multiple clients - Datagrams.

Chapters:

Unit – I : 1 and 2.
Unit – II : 3
Unit – III : 11.
Unit – IV : 13 and 14.
Unit – V : 14 and 15

Text Book:

Neil Matthew,Richard Stones-" Beginning Linux Programming",Fourth Edition,2008,Wiley Publishing Inc.

Reference Book:

Linux system programming- Robert Love,O'Reily,SPD.

Course Code	Course Title	H	C	I	E	T
17U3DAC3	DATA STRUCTURES AND COMPUTER ALGORITHMS	4	4	25	75	100

Objectives:

- To impart the knowledge of computer programming with algorithmic approach.
- Learning the concept of data structures and its operations.

UNIT I : Stacks and Queues **(12 hours)**

The Stack & Queue abstract data type– A Mazing Problem – Evaluation of Expressions– Multiple Stacks and Queues. **Linked Lists:** Singly Linked Lists –Circular list- Linked Stacks and Queues – Polynomials- Doubly Linked List.

UNIT II : Trees **(12 hours)**

Basic Terminology – Binary Trees- Properties - Representations - Binary Tree Traversal – Additional Binary tree operations-Threaded Binary Trees.

UNIT III : Graphs **(12 hours)**

Definitions and Representations – Elementary Graph operations-Minimum Cost Spanning Trees – Shortest Path and Transitive Closure – Activity Networks.

UNIT IV: Divide and Conquer **(12 hours)**

The General Method – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort – Selection Sort.

UNIT V: The Greedy Method **(12 hours)**

The General Method – Knapsack problem-Tree vertex Splitting-job sequencing with deadlines-Minimum cost spanning trees-optimal storage on tapes-optimal merge patterns-single source shortest path.

Text Books:

3. Ellis Horowitz , Sartaj Sahni & Dinesh Mehta – "Fundamentals of Data structures in C++" - 2nd Edition - Universities Press 2007.
4. Ellis Horowitz , Sartaj Sahni & Sanguthevar Rajasekaran- "Fundamentals Of Computer Algorithms"- 2nd Edition- Universities Press 2007.

Reference Books:

4. Yedidyah langsam, Moshe J.Augenstein and Aaron- "Data structures using C "– PHI.
5. Seymour Lipschutz – "Data Structures" - TataMcGrawhill – Year 2006.
6. Jean Paul Tremblay and Paul G Sorenson – "An Introduction to Data structure with Application" - THM, II Edition – 1991.

Course Code	Course Title	H	C	I	E	T
17U3DAC4	COMPUTERIZED ACCOUNTING	3	2	25	75	100

Objectives:

- To impart the knowledge of computerized financial management.
- Learning the concepts of accounts and accounting software.

Unit – I : Introduction to Accounting (9 hours)

Principles of Book keeping – Day Books and Ledgers – Cash Book – Petty Cash Book – Trial Balance.

Unit – II : Preparation of Final Accounts (9 hours)

Preparation of Trading and Profit & Loss Account – Preparation of Balance Sheet (Simple Problems only)

Unit – III : Ratio Analysis (9 hours)

Meaning – Importance – Types - Liquidity Ratios - Solvency Ratio - Activity Ratios. (Simple problems only)

Unit – IV : Preparation of Accounts through Accounting Software (9 hours)

Creation of Company – Creation of Group – Creation of Ledger.

Unit – V: Voucher Creation and Display of Final Accounts in Accounting Software (9 hours)

Creation of Vouchers - Types of Voucher – Alteration of Voucher – Deletion of Voucher .
Preparation of Final Accounts through Tally – Trial Balance – Profit and Loss Account – Balance Sheet at the Gateway of Tally - Methods of showing Balance sheet.

Text Book:

3. Dr. S.A.N Shazuli Ibrahim, Financial Accounting – I, PASS Publications, Madurai.
4. Dr. P. Rizwan Ahmed, Tally ERP 9, Margham Publications, Chennai.

Books for Reference

5. S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol-I**,** Nineteenth Edition, 2015, Kalyani Publishers, Mumbai.
6. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
7. Nellai Kannan C, ***"Tally",*** 2004, Nels Publications.
8. Shraddha Singh & Navneet Mehra, ***"Tally.ERP 9- Power of Simplicity",*** 2014, ITC Publication.

Course Code	Course Title	H	C	I	E	T
17U3DNM1	NON MAJOR ELECTIVE(NME) INTRODUCTION TO INTERNET	2	2	25	75	100

Objectives:

- To impart the knowledge of basics of Internet.
- Learning the various aspects of Internet design and functionalities.

Unit I: Introduction to Internet **(6 Hours)**

Internet- Growth of Internet and Arpanet - Owners of the Internet -Anatomy of Internet – History of WWW - Basic Internet Terminologies – Net etiquette - Internet Applications - Commerce on the Internet – Governance on the Internet - Impact of Internet on Society.

UNIT II: Browsers and Search engines **(6 Hours)**

Browsers – browser- Introduction – Parts of a browser window -Running a browser - working with a Browser. Search engines: What is search engine? - Types of search engines - Search and Meta search engines.

Unit III: E-mail **(6 Hours)**

E-mail - E-mail Networks and Servers - E-mail Protocols - Structure of E-mail - Attachments – E-mail Clients - E-mail Clients - web based E-mail-Address book – Signature File.

UNIT IV: HTML Programming Basics **(6 Hours)**

Introduction to HTML – HTML browsers - Different versions of HTML-HTML tags - Document overview - Header elements - Section headings –

UNIT V: HTML Programming Basics **(6 Hours)**

Block headings - Lists-Inline elements – Images - working with Tables, Forms, Frames.

Text book:

Internet Technology and Web design, Ramesh Bangia, Firewall Media, (An imprint of Lakshmi Publications Pvt. Ltd.), Third Edition, 2011.

Unit 1: Chapter 1.2
Unit 2: Chapter 3 & Chapter 4
Unit 3: Chapter 5(5.6), Chapter 8(8.11 &8.13)
Unit 4: Chapter 5 (5.1) & Chapter 6
Unit 5: Chapter 9

Reference Books:

1.The Internet Book, Douglas E. Comer, Fourth Edition, PHI Learning Pvt. ltd. , New Delhi, 2009.
2.Using the Internet the Easy Way, Young Kai Seng, Minerva Publications, First Edition, 2000.
3.Fundamentals of Information Technology By Alexis Leon and Mathews Leon, Vikas Publishing House Pvt. Ltd., Revised Edition.

Course Code	Course Title	H	C	I	E	T
17U4DMC8	PROGRAMMING IN JAVA	5	4	25	75	100

Objectives:

- To impart the knowledge of OOPs approach in computer programming.
- Learning the concept and controls of Java language.

Unit – I: Introduction **(12 hours)**

Java history – Java Features – Simple Java Programs – Class declaration – Tokens – Comments – Statements – JVM – Implementing Java programs – Command line arguments – Constants, Variables and Data types – Operators and Expressions – Decision making statements – Simple if statements – If-else statements – Nesting if-else statements – else-if ladder – switch statement – ternary operator – Looping – While, do-while, for loop statements.

Unit – II: Class & objects **(12 hours)**

Creation of class – Objects and methods – Accessing class members – Constructors – Method Overloading – Overriding – Static members – Inheritance – Interface.

Unit – III: Arrays **(12 hours)**

Arrays – Types – Length – Strings – Strings Manipulations – Vector – Vector classes – Wrapper class – Enumerated types – Java API Packages – System package – Creating and accessing user defined and system package – Managing errors and exceptions.

Unit – IV: Input / Output **(12 hours)**

Managing I/O files in Java – Stream I/O – Byte stream class – Character stream class – creation of files – File handling in Java – Multi threaded programming – Multithreads in Java – Thread class – Lifecycle of thread – Thread exceptions – Priority.

Unit – V: Applets & Graphics Programming **(12 hours)**

Applet programming – Introduction – Preparing to write Applets – Building applet code – Applet life cycle – Creating an executable applet – Applet tag – Running the applet – Passing parameters – Displaying numerical values - Getting input from the user – Graphics programming – Introduction – the Graphics class – Lines and rectangles – Circles and ellipse – Drawing arcs – Drawing polygons.

Text Book:

E. Balagurusamy – "Programming with Java" – V Edition., - MGH.

Reference Books:

1. Deital & Deital – "Java How to Program" – Pearson education-2003.
2. Herbert Schildt - "Java A Beginner's Guide" - IV Ed., TMH.
3. Patrick Naughton, Herbert Schildt – "Java Complete Reference2 – V Ed., - TMH.

Course Code	Course Title	H	C	I	E	T
17U4DMC9	DATA COMMUNICATION & COMPUTER NETWORKS	4	4	25	75	100

Objectives:

- To impart the knowledge of data communication and computer networks.
- Learning the concept and the various layers of a computer network design.

UNIT I: DATA COMMUNICATION **(12 hours)**

Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies –Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT II : DATA LINK LAYER **(12 hours)**

Error – detection and correction – Parity – LRC – CRC – Hamming code – low Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET–Bridges.

UNIT III: NETWORK LAYER **(12 hours)**

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT IV : TRANSPORT LAYER **(12 hours)**

Duties of transport layer – Multiplexing – De -multiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services(QOS)–IntegratedServices.

UNIT V: APPLICATION LAYER **(12 hours)**

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security – Cryptography.

TEXT BOOK:

Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, 2004.

REFERENCE BOOKS :

1. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
2. Larry L.Peterson and Peter S. Davie, “Computer Networks”, Harcourt Asia Pvt. Ltd., Second Edition.
3. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Ed.,2003.
4. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

Course Code	Course Title	H	C	I	E	T
17U4DMC10	WEB PROGRAMMING	4	4	25	75	100

Objectives:

- To impart the knowledge of web programming.
- Learning the .

UNIT I **(12 hours)**

Internet Basics: Basic Concepts – Internet Domains – IP Address – TCP/IP Protocol – The WWW – The Telnet — Introduction to HTML: Web server - Web client / browser - Tags – Text Formatting – Lists – Tables – Linking Documents - Frames.

UNIT II **(12 hours)**

]JavaScript: JavaScript in Web Pages – The Advantages of JavaScript – Writing JavaScript into HTML – Syntax – Operators and Expressions – Constructs and conditional checking – Functions – Placing text in a browser – Dialog Boxes – Form object's methods – Built in objects – user defined objects.

UNIT III **(12 hours)**

XML: Comparison with HTML – DTD – XML elements – Content creation – Attributes –Entities – XSL – XLINK – XPATH – XPOINTER – Namespaces – Applications – integrating XML with other applications.

UNIT IV **(12 hours)**

UNIT V **(12 hours)**

ASP: Introduction to ASP – Objects – Components – Working with HTML forms – Connecting to Microsoft SQL Server & MS–Access Database – SQL statements with connection object – Working with record sets.

Text Books

1. "Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI", Ivan Bayross, BPB Publication. UNIT I & II
2. "XML Bible", Elliotte Rusty Harold, 2nd Edition, Wrox Publication. UNIT III
3. "Beginning Java Server Pages", Vivek Chopra, Sing Li, Rupert Jones, Jon Eaves, John T. Bell, Wrox Publications. UNIT IV
4. "Practical ASP", Ivan Bayross, BPB Publication. UNIT V

Course Code	Course Title	H	C	I	E	T
17U4DMC11	COMPUTER ORGANIZATION	4	4	25	75	100

Objectives:

- To impart the knowledge of organization of computer.
- Learning the concept of components of a computer system.

UNIT I: BASIC STRUCTURE OF COMPUTERS (12 hours)

Functional units – Basic operational concepts – Bus structures – Performance and metrics – Instructions and instruction sequencing – Hardware – Software Interface – Instruction set architecture – Addressing modes – RISC – CISC. ALU design – Fixed point and floating point operations.

UNIT II: BASIC PROCESSING UNIT (12 hours)

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Micro programmed control – Nano programming.

UNIT III: PIPELINING (12 hours)

Basic concepts – Data hazards – Instruction hazards – Influence on instruction sets – Data path and control considerations – Performance considerations – Exception handling.

UNIT IV: MEMORY SYSTEM (12 hours)

Basic concepts – Semiconductor RAM – ROM – Speed – Size and cost – Cache memories – Improving cache performance – Virtual memory – Memory management requirements – Associative memories – Secondary storage devices.

UNIT V: I/O ORGANIZATION (12 hours)

Accessing I/O devices – Programmed Input/Output -Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB), I/O devices and processors.

TEXT BOOK:

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, Fifth Edition, Tata McGraw Hill, 2002.

REFERENCES:

1. David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software interface”, Third Edition, Elsevier, 2005.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Sixth Edition, Pearson Education, 2003.
3. John P. Hayes, “Computer Architecture and Organization”, Third Edition, Tata McGraw Hill, 1998.

Course Code	Course Title	H	C	I	E	T
17U4DAC5	NUMERICAL METHODS	3	2	25	75	100

Objectives:

- To impart the knowledge of computer arithmetic.
- Learning various algebraic and numerical methods.

UNIT I: Algebraic and Transcendental Equations (9 Hours)

Errors in numerical computation-Iteration method-Bisection method-Regula-Falsi method-Newton-Raphson method-Horner's method.

UNIT II: Simultaneous Equations (9 Hours)

Introduction-Simultaneous equations-Back substitution-Gauss Elimination method-Gauss – Jordan Elimination method-Calculation of Inverse of a matrix-Crout's method-Iterative methods-Gauss-Jacobi Iteration method-Gauss seidal Iteration method-Newton Raphson's method for simultaneous equations.

UNIT III: Interpolation (9 Hours)

Introduction: Newton's interpolation Formulae-Central difference Interpolation formulae-Gauss forward, Gauss backward, Lagrange's interpolation formulae-Divided differences-Newton's divided difference formula-Inverse Interpolation.

UNIT IV: Numerical Differentiation and Integration (9 Hours)

Introduction-Derivates using Newton's forward difference formula-Derivates using Newton's backward difference formula-Numerical Integration-Newton-cotes quadrature formula-Trapezoidal Rule-Simpson's one third rule-Simpson's 3/8 th rule.

UNIT V: Numerical Solution of Ordinary Differential Equations (9 Hours)

Introduction-Taylor series method-Picard's method-Euler's method-Runge-kutta method of second, third, fouth order-Predictor & corrector methods-Mile's method.

Text Book:

Numerical Methods, Second Edition, S.Arumugam, A.Thangapandi Issac, A.Somasundaram, SCITECH publications.

Chapters:

Unit I: Chapter-3

Unit II: Chapter-4 (excluding Relation method and its related problems)

Unit III: Chapter-7 (Sections: 7.0, 7.1, 7.2((i), (ii) and related problems); 7.3,7.4,7.5,7.6)

Unit IV: Chapter-8 (Sections: 8.0,8.1,8.2 related problems,8.5 (excluding Weddles rule, Booles rule, Romberg's method and related problems))

Unit V: Chapter-10 (Sections : 10.0,10.1,10.2,10.3(excluding modified Euler's method & its related problems) 10.4,10.5,10.6)

Reference Book:

Mathews J.H. Numerical Method for Maths, Science and Engineering; PHI, New Delhi, 2001.

Course Code	Course Title	H	C	I	E	T
17U4DNM2	PC SOFTWARE	2	2	25	75	100

Objectives:

- To impart the knowledge of basic computer software.
- Learning various features of Word and PowerPoint.

Unit I: Introduction to MS Word **(6 Hours)**

Getting started with Word: Starting Word 2000 - Viewing Layouts- Typing, Navigating Documents and Selecting Text.

Unit II: Creating Professional Documents **(6 Hours)**

Setting up the page – Customizing the page. Advance Tools in Word2000: proofing Tools – Using Tables - Mail merge – using Macros.

Unit III: Introduction to MS PowerPoint **(6 Hours)**

Getting started with PowerPoint: Usefulness of PowerPoint for Presentations – Starting a PowerPoint Presentation- Enhancing the presentation.

Unit IV: Features of PowerPoint **(6 Hours)**

ClipArt and WordArt in PowerPoint – Working with Charts and tables.

Unit V: Advanced Concepts in PowerPoint **(6 Hours)**

Advanced Concepts in PowerPoint: Importing and exporting charts - Giving final touches Creating Presentation for the Internet- Automatic work with Macros.

Text Book:

"Working with MS Office 2000" by Content Development Group. Tata McGraw-Hill Publishing Company Limited.

Reference Book:

"Pc Software for Windows 98 Made Simple"- Tata McGraw-Hill Publishing Company Limited.

Department of Commerce

Commerce - UG

B.Com

(Aided, SF – Girls, SF – Boys)

III Semester & IV Semester Course Structure under CBCS Pattern

Semester III					Second Year		Semester IV		
Category	**Course Code**	**Paper**	**Hrs**	**Credit**	**Category**	**Course Code**	**Paper**	**Hrs**	**Credit**
Part III					**Part III**				
Core -6	17U3KMC6	International Trade	4	4	Core -9	17U4KMC9	Insurance & Risk Management	5	4
Core-7	17U3KMC7	Cost Accounting	6	4	Core-10	17U4KMC10	Business Finance	5	4
Core-8	17U3KMC8	Partnership Accounts	6	4	Core-11	17U4KMC11	Special Accounts	6	4
Allied-2	17U3KAC2	Company Law & Practice	5	4	Allied-4	17U4KAC4	Entrepreneurship Development and Start Ups	5	4
Allied-3	17U3KAC3	Practical Banking	5	4	Allied-5	17U4KAC5	Business Legislation - I	5	4
Part IV					Part IV				
Skill Based Elective	17U3KSM3	Logistics & Supply Chain Management	2	2	Skill Based Elective	17U4KSM4	E-Commerce Applications	2	2
Non Major Elective	17U3KNM1	Basics of Accounting / Basic Tamil-I / Advanced Tamil- I	2	2	Non Major Elective	17U4KNM2	Marketing and Salesmanship Basic Tamil-I / Advanced Tamil- I	2	2
		Total	**30**	**24**			**Total**	**30**	**24**

Course Code	Course Title	C	H	I	E	T
17U3KMC6	**International Trade**	4	60	25	75	100

Learning Objectives

- To gain knowledge on International trade and its importance in Balance of Payments of the country
- To equip on preparation of export procedures and documentation with INCO Terms and familiarize with Terms of Letter of Credit
- To calculate foreign exchange rate in different situations
- To have a view and importance of International Institutions

Learning Outcomes: Knowledge on Foreign Trade, Skill on Export documentation & Procedure

Unit I: Introduction to International Trade

Meaning – Definitions – Domestic Trade Vs International Trade – Need and Importance – Balance of Trade – Balance of Payments (BoP)– Components of BoP – BoP Disequilibrium – Corrective measures of Disequilibrium. International Commercial Terms (INCO Terms) EXW - FCA– FAS – FoB – C&F – CIP – CPT – DAF – DES – DEQ – DDU – DDP.

Unit II: Foreign Exchange & Export Financing

Meaning – Exchange Rates – Factors determining Exchange Rate – Types of Exchange Rate – Fixed and Fluctuating Rates – Spot and Forward Rates. Export Financing – Importance of Export Financing – Methods of Export Financing – Pre-shipment & Post shipment credit – ECGC – Role of ECGC - EXIM Bank – Functions.

Unit III: Export Procedure & Export Documentations

Processing of Export Order – Excise Clearance – Customs Clearance – Quality and Pre – shipment inspection – Bank procedures – Duty Draw back.

Export Documentations – Documents Relating to Goods – Documents Relating to Shipping– Combined Transportation Documents – Certificate of Inspection – Appropriate forms.

Unit IV: Letter of Credit, Bills of Exchange & Bills of Lading

Meaning – Types of Letter of Credit – Mechanism of Letter of Credit – Bills of Exchange – Types of Bills of Exchange – Demand Bills – Sight Bills – D/A and D/P. Bills of Lading – Meaning – Types.

Unit V: International Institutions

IBRD-IMF– GATT – Objectives - WTO – Principles – External Commercial Borrowings

Book for Study

Francis Cherunilam, ***International Trade and Export Management***, 20th Revised Edition, 2017, Himalaya Publishing House, Mumbai.

Books for Reference

1. T.A.S Balagobal, ***Export Management***, Himalaya Publishing House, Mumbai
2. C. Jeevanandam, ***Foreign Exchange, Practice, Concepts & Control***, Sultan Chand & Sons, New Delhi.
3. Dr. S. Sankaran, ***International Trade***, Margham Publications, Chennai.
4. Dr. V. Radha, ***International Trade,*** Prassanna Publishers & Distributors, Chennai.
5. www.wto.org.in
6. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U3KMC7	**Cost Accounting**	4	90	25	75	100

Learning Objectives

- To familiarize the concept of cost accounting and its importance with various classification of cost
- To prepare cost sheet independently for various types of industries
- To acquire the skills in control of materials cost, labour cost and overhead costs
- To understand and ascertainment of cost by using various methods of costing

Learning Outcomes: Depth knowledge in Cost Accounting, Methods of Costing & Skill in Preparation of Cost Sheets

Unit – I Introduction to Cost Accounting

Definitions – Objectives – Nature – Scope – Limitations of Financial Accounting – Financial Accounting Vs Cost Accounting – Installation of Costing system. Cost Classifications – Elements of Cost – Preparation of Cost Sheet.

Unit – II Material

Material Cost – Purchase Procedure – Various stock levels – Economic Order Quantity (EOQ) – FSN – ABC – JIT – Bin Card – Stores Ledger – Methods of Pricing issues – FIFO – LIFO – Base Stock level – Simple Average and Weighted Average method – Treatment of Scrap, Spoilage, Wastage & Defective.

Unit – III Labour and Overheads

Labour Costs – Labour Turnover – Methods of Labour Turnover – Treatment of Idle time and Over time – Methods of wage payment – Time rate – Piece rate – Taylor differential piece rate system- Incentive methods – Halsey and Rowan Plan.

Overhead Costing – Meaning – Classification – Allocation and Apportionment of Overheads – Reapportionment – Methods of Absorption – Calculation of Machine Hour Rate.

Unit – IV Methods of Costing

Job Costing – Batch Costing – Contract Costing (including escalation clause) – Operating Costing (Transport only)

Unit – V Process Costing

Application of Process Costing - Normal Loss – Abnormal Loss – Abnormal Gain – Concept of Equivalent Production – Joint Products and By products. Reconciliation between Cost Profit and Financial Profit.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory.

Book for Study

S.P. Jain & K.L Narang, ***Cost Accounting***, Kalyani Publishers, Ludhiana.

Books for Reference

1. Dr.A.Murthy & Dr.S.Gurusamy, ***Cost Accounting,*** Vijay Nicole Imprints Private Limited, Chennai.
2. T.S. Reddy & Y. Hari Prasad Reddy, ***Cost Accounting***, Margham Publication, Chennai.
3. Dr. M. Wilson, ***Cost Accounting,*** Himalaya Publishing House, Mumbai.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.edx.org

Course Code	Course Title	C	H	I	E	T
17U3KMC8	**Partnership Accounts**	4	90	25	75	100

Learning Objectives

- To know and understanding the concept of partnership and legal requirements of partnership firm
- To prepare comprehensive problems on partnership accounting under various situations viz., Admission, retirement, death and dissolution

Learning Outcomes: Knowledge on Legal requirements of Partnership, Skill on preparation of accounts pertaining to admission, retirement, death of a partner and dissolution of partnership.

Unit – I Introduction to Partnership Accounts

General – Definition – Legal Requirements – Partners Capital Account – Fixed and Fluctuating system – Appropriation of Profits – Past Adjustments – Guarantee.

Unit – II Admission of a Partner

Revaluation of Assets & Liabilities – Memorandum Revaluation Method – Treatment of Goodwill – Premium – Revaluation and Memorandum Revaluation Method – Calculation of Profit sharing Ratio-

Unit – III Retirement and Death of a Partner

Retirement – Revaluation of Assets and Liabilities – Treatment of Goodwill – Revaluation and Memorandum Revaluation Methods - Calculation of Profit Sharing Ratio –Settlement of Amount Due to Retiring Partner. Death of a Partner – Treatment of Joint Life Policy.

Unit – IV Dissolution - I

Journal Entry for Dissolution – Treatment of Goodwill on Dissolution – Treatment of unrecorded and liability – Insolvency of a Partner (Garner Vs Murray) - Capital Ratio under Fixed Capital Method and Fluctuating Capital Method (Garner Vs Murray).

Unit – V Dissolution – II

Insolvency of all Partners - Piecemeal Distribution – Proportionate Capital Method – Maximum Loss Method.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Book for Study

S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol. I**,** 19th Edition, 2015, Kalyani Publishers, Ludhiana.

Books for Reference

1. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
2. M.A. Arulanandam & K.S. Raman, "***Advanced Accountancy"*** Vol.I, Sixth Edition, 2015, Himalaya Publishing House, Mumbai.
3. Reddy & Murthy, "***Financial Accounting",*** Margham Publication, Chennai.
4. www.icai.org.in
5. www.icmai.in
6. www.icsi.edu.in
7. www.edx.org

Course Code	Course Title	C	H	I	E	T
17U3KAC2	**Company Law & Practice**	4	75	25	75	100

Learning Objectives

- To provide solid foundations in company law since formation of the company to winding up of the company as per the companies act 2013
- To get familiarized with regulatory frame work on issues of share capital, company meetings and managerial personnel and appointment of directors

Learning Outcomes: Knowledge on formation of company, Managerial personnel & Directors, ability to conduct meetings and winding up procedure

Unit – I Formation of Company

Company – Definition – Essential characteristics – Lifting up of Corporate veil - Kinds of Companies – One Person Company (OPC) – Associate Company – Licensed Company – Producer Company – Dormant Company –Public Vs Private Companies - Formation of a company – Promotion – Promoters – Functions - Incorporation – Commencement of Business - Memorandum of Association – Clauses and Alterations - Articles of Association – Contents – Prospectus – Contents – Mis-Statement of Prospectus.

Unit - II Shares and Share Capital

Meaning – Nature – Kinds of Shares –Preference shares – Equity shares – Sweat equity shares – Stock Vs Share – Share Capital – Classifications (Authorised, Issued, Subscribed, Called up and Paid-up Capital) – Share Certificate –Dematerialisation of Shares - Transfer of Shares – Transmission of Shares – Lien on Shares - Debentures - Legal provisions governing Shares and Debentures.

Unit – III Company Meetings and Proceedings

Kinds – Annual General Meeting - Extraordinary general meeting - Class meeting – Procedures and Requisites of a valid meeting – Notice – Agenda – Quorum – Proxy - Resolution – Types – Minutes.

Unit – IV Managerial Personnel and Directors

Managerial Personnel – Meaning – Key Managerial Personnel (KMP) – Types – Managing Directors Vs Whole Time Director – Independent Director – Manager – Company Secretary - Functions of Company Secretary - Remuneration. Directors – Meaning – Classification – Appointment of Directors – Committees – Audit committee – Stake holder committee – Corporate Social Responsibility (CSR) committee – Removal of Directors – Power and Duties – Concept of Corporate Governance.

Unit – V Winding up

Meaning – Modes of Winding up – Winding up by National Company Law Tribunal (NCLT) – Company Liquidator – Official Liquidator - Duties and Powers of Liquidators – Voluntary Winding up – Members Voluntary winding up – Creditors Voluntary Winding up.

Book for Study

S.N. Maheswari & S.K. Maheswari, ***A Manual of Business Laws***, Himalaya Publishing House, Mumbai.

Books for Reference

1. Kapoor N.D., ***Elements of Company Law***, Sultan Chand & Co., New Delhi. Ashok and Bagrail, Company Law, New Delhi, S.Chand & Co.2010.
2. V. Balachandran & M. Govidarajan, ***A Students Handbook on Company Law and Practice***, Vijay Nicole Imprints Private Limited, Chennai.
3. J.Shanthi, ***Company Law***, Margham Publications, Chennai.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U3KAC3	**Practical Banking**	4	75	25	75	100

Learning Objectives

- To know the practical aspects of banking Viz. Relationship between banker and customer, opening of accounts, NI Act, crossing and endorsement of Cheques
- To equip themselves on treatment of the various types of customers.
- To familiarize the concept of paying banker &collecting banker
- To impart knowledge about various modern services offered by the banker

Learning Outcomes: Thorough knowledge on practical aspects of banking and modern services offered by the banker

Unit – I Introduction to Banking

Definition of Banking – Definition of Customer – Relationship between Banker and Customer – General and Special relationship – Obligation to honour a Cheque – Maintain Secrecy – Right of Lien – Right of Appropriation – Clayton's case – Right-off Set-off.

Unit – II Opening of an Account & Types of Customers

General precautions and procedures – Types of Account – Savings Account, Current Account and Fixed Deposits – Features – Fixed Deposit Receipt and its Legal Implications.

Account of different Types of Customers – Minor – Illiterate – Lunatic – Married Women – Partnership firm – Joint Stock Company – Non- Trading concern and Joint account.

Unit – III Negotiable Instrument Act, 1881

Negotiable Instrument - Definition – Essential Features – Cheque – Definition – Features – Proper drawing of Cheque – MICR. Crossing – Types – Significance – Canceling of Crossing. Endorsement – Types – Rules of Endorsement – Material Alteration and its effects.

Unit – IV Paying Banker & Collecting Banker

Paying Banker – Meaning – Duties – Circumstance for Dishonouring a Cheque – Statutory Protection – Payment in Due Course and Holder in Due Course.

Collecting Banker – Meaning – Capacities – Rights and Duties – Statutory Protection – Concept of negligence and conversion.

Unit – V Subsidiary Services of Modern Banker

Demand Draft – ATM – Safety Locker – Credit Cards and Debit Card – Consultancy Services – Merchant Banking Services – E-Banking – Electronic Fund Transfer – RTGS – M-Banking.

Book for Study

Gordon and Natarajan, ***Banking Theory, Law and Practice***, Himalaya Publishing House, Mumbai

Books for Reference

1. P.N. Varshney, ***Banking Law and Practice***, Himalaya Publishing House, Mumbai
2. B.Santhanam, ***Banking Law and Practice***, Margham Publication, Chennai.
3. K.C. Shekhar & Lekshmy Shekhar, ***Banking Theory and Practice***, Vikas Publishing House Pvt. Ltd., New Delhi.
4. Sundharam & Varshney, ***Banking Theory Law & Practice***, Sultan Chand & Sons, New Delhi.
5. https://economictimes.indiatimes.com
6. www.rbi.org.in

Course Code	Course Title	C	H	I	E	T
17U3KSM3	**Logistics and Supply Chain Management**	2	30	25	75	100

Learning Objectives

- To get an exposure on Logistics and Supply chain Management and its relevance in current environment
- To acquire skill on Warehousing and effective Transport management system
- To learn and recognize Logistic Information system

Learning Outcomes: Knowledge on Logistics and Supply Chain Management, Warehousing and Transportation

Unit – I An Introduction to Logistics and Supply Chain Management

Introduction – Definition of Logistics – Definition of Supply Chain – Importance of Logistics and Supply Chain – Objectives of Business Logistics – Logistics and Supply chain Management - Functions of Logistics Management – Supply Chain Macro Processes in a Firm.

Unit – II Supply Chain Relationships

Channel Structure – Relationship Management – Channel Relationships – Leadership – Logistical Service Alliances – Factors Stimulating service based alliances – Various Approaches to Study Channels – Description Institutional Approach – Graphic Approach – Commodity Grouping – Functional Treatments - Channel Arrangement Classification – Conditions for successful Supply Chain Relationships.

Unit – III Warehouse Management

Storage Functionality and Principles – Strategic Storage – Warehouse Benefits – Service Benefits of Warehousing – Types of Warehouses – Private warehouses – Public Warehouses – Functions of Public Warehouses – Documents used in public warehouses.

Unit – IV Transportation

Introduction – Importance - Effective Transportation System - Modes of Transportation – Air – Package Carriers – Trucks – Truck Vs Rail – Water / Transport Pipeline – Intermodal / Transportation – Trailer on Flatcar (TOFC) or Piggyback Container on Flat Car (COFC) – Coordinated air truck – CONCOR.

Unit – V Logistic Information System

Information functionality – Linking Logistics into an Integrated Process – Principles of Logistics information – Information Architecture – Operations – Applications of information technologies – Electronic Data Interchange (EDI) – Personal Computers – Artificial Intelligence or Expert system – Communication – Bar Coding and Scanning.

Book for Study

Dr. L. Natarajan, ***Logistics and Supply Chain Management,*** 2014, Margham Publications, Chennai.

Books for Reference

1. K.Shridhara Bhat, ***Logistic Management***, Himalaya Publishing House, Mumbai
2. Donald I Rowerson, David J. Closs & M. Bixby Cooper, ***Supply Chain Logistic Management***, McGraw- Hill Higher Education,
3. Martin Christopher, ***Logistic & Supply Chain Management***, Pearson, Publisher, Bengaluru.
4. www.investopedia.com
5. www.shopify.com

Course Code	Course Title	C	H	I	E	T
17U4KMC9	**Insurance & Risk Management**	4	75	25	75	100

Learning Objectives

- To Sensitize the concept of risk in business and principles underlying the risk management
- To familiarize the concept of insurance, Various types of insurance and insight into fundamental principles of insurance
- To equip to prepare procedures for making claims against different kinds of insurance Life, Fire and Marine.

Learning Outcomes: Basic knowledge on risk and insurance. Depth knowledge on principles of insurance and types of insurance. Skill on premium calculation and Claim procedure

Unit I Introduction to Risk Management

Risk – Meaning – Degree – Types – Static and Dynamic – Financial and Non-financial risks- Pure and Speculative Risk – Fundamental and Particular Risk – Business and Personal Risk. Risk Management – Significance – Principles – Objectives – Cost – Risk Management Information System (RMIS) – Process – Methods. Pooling of Risk – Transferring of Risk.

Unit II Introduction to Insurance

History of Insurance – Reforms – IRDA – Characteristics of an Insurable Risk – Privatization and Liberalisation in India – Nature and Principles of Insurance – Insurable Interest - Subrogation – Utmost Good Faith – Warranties – Proximate Cause – Indemnity – Assignment – return of premium Classification of Insurance – Advantages – Difference between Life and General Insurance.

Unit III Life Insurance

Meaning – Types – Policy Conditions – Product - Term Insurance – Endowment – Whole life Policy – Annuity – Meaning – Types of Annuity Policies – Difference between Annuity and Life Insurance. Claim Procedure – Documents to be produced to claim Life Insurance – Settlement – Policy Loan – Condition – Premium Calculation – Mortality Table.

Unit IV Marine and Fire Insurance

Marine - Meaning – Types – Policy Condition – Perils – Kinds of Perils – Marine Losses – Payment of Claims. Fire Insurance – Meaning – Contract of Fire Insurance – Types of Fire Policies. Payment of Claim.

Unit V Miscellaneous Insurance

Motor Insurance – Kinds of Motor Insurance – Burglary Insurance – Personal Accident Insurance – Fidelity Guarantees Insurance – Cash Transit Insurance – Money Insurance – Goods in Transit Insurance - Baggage Insurance – Pedal Cycle Insurance – Neon Sign Insurance – House Holders Insurance – Jeweller's Block Policies – Blood Stock Insurance – Sports Insurance. Specialized Classes of General Insurance – Industrial all risk Insurance – Aviation Insurance – Airline Insurance – Oil and Gas Insurance – Political Risk Insurance. Claims.

Book for Study

1. Alka Mittal & S.L. Gupta, ***Principles of Insurance and Risk Management***, Sultan Chand & Sons, New Delhi. (Unit I & II)
2. M.N Mishra & S.B. Mishra. ***Insurance Principles and Practice***, S. Chand & Company Ltd., New Delhi (Unit III , IV & V)

Books for Reference

1. Dr. A. Murthy, ***Principles of Insurance,*** Margam Publications, Chennai.
2. Dr.P.Periasamy, ***Principles & Practice of Insurance***, Himalaya Publishing House, Mumbai
3. Dr. P.K. Gupta, ***Insurance and Risk Management***, Himalaya Publishing House, Mumbai.
4. http://.insuranceinstituteofindia.com, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4KMC10	**Business Finance**	4	75	25	75	100

Learning Objectives

- To understand the concept of finance &finance functions, and familiarize with the various sources of funds
- To calculate cost of capital, Leverages and optimizing EPS though capital structure models.
- To make a decision long term investment proposals by using Payback, NPV, IRR & ARR and prepare statement of working capital requirements independently**.**
- To familiarize the concept of dividend policy and its relevance in corporate

Learning Outcomes: Knowledge on Sources of finance, suggesting suitable capital mix for financing decisions, skill on capital budgeting, working capital and dividend decisions.

Unit – I Introduction to Business Finance

Definition – Scope – Objectives – Functions - Responsibility of Financial Manager – Financial Decisions – Sources of Funds – Long term – Short term sources.

Unit – II Cost of Capital, Capital Structure and Leverages

Cost of Capital – Meaning – Importance – Measurement – Cost of Debenture, Preference Share, Equity Share, Retained Earnings – Weighted Average Cost. Capital structure – Theories of Capital Structure – Designing Optimum Capital structure – Indifference point – Financial Break Even point. Leverages – Meaning – Financial Leverage – Operating Leverage – Combined Leverage.

Unit – III Capital Budgeting

Meaning – Significances – Methods of Appraisal - Pay Back Method – Discounted Cash Flow Method – Discounted Pay Back – Net Present Value – Profitability Index – Internal Rate of Return – Average Rate Return (ARR) – Capital Rationing.

Unit – IV Working Capital Management

Meaning – Types of Working Capital – Factors influencing Working Capital – Sources of Working Capital – Operating Cycle – Estimation of Working Capital.

Unit – V Dividend Policy

Meaning – Types of Dividend – Factors influencing Dividend Policies – Theories of Dividend Decisions – Irrelevance and Relevance Theory.

Note: The Questions should be asked in the ratio of 60% Problems and 40 % for theory

Book for Study

Shasi K. Gupta, ***Financial Management***, Kalyani Publishers, Ludiana.

Books for Reference

1. M.Y. Khan & P.K. Jain, ***Financial Management Text, Problems and Cases***, McGraw Hill Education Pvt. Ltd. New Delhi.
2. IM. Pandey, ***Financial Management***, Vikas Publishing House Pvt. Ltd. Noida.
3. Dr. A. Murthy, ***Financial Management***, Margham Publications, Chennai.
4. www.investopedia.com, www.managementstudyguide.com

Course Code	Course Title	C	H	I	E	T
17U4KMC11	**Special Accounts**	4	90	25	75	100

Learning Objectives

- To make solid foundations on various special types of business activities viz., Branch, Departmental Accounting, Hire purchase & Installment purchase system.
- To prepare final accounts for service industry viz., Banking and Insurance Industry
- To familiarize with accounting relating to shipping company and investment companies

Learning Outcomes: Depth working knowledge on preparation of accounts for special types of business and ability to preparation of final accounts of banking and insurance companies

Unit – I Branch and Departmental Accounting Treatment

Branch Accounts – Dependent Branch – Accounting of Various Types of Dependent – Branches – Invoice Price Method – Independent Branches.

Departmental Accounts – Allocation of Expenses – Inter Department Transfers – Departmental Trading Profit & Loss Accounts.

Unit – II Hire Purchase and Instalment Purchase Systems

Meaning – Calculation of Interest – Cash Price – Entries – Ledger Accounts in the books of Buyer and Seller – Default and Repossession – Complete and Partial – Instalment Purchase System.

Unit – III Bank Accounts

Meaning – Rebate on Bills Discounted – Interest on Doubtful Debts – Preparation of Profit and Loss Account and Balance Sheet with Relevant Schedules (New Method) – Non Performing Assets (NPA)

Unit – IV Insurance Company Accounts

Life Insurance – Revenue Account Valuation – Balance Sheet (New Method) – General Insurance – Fire and Marine Revenue Account – Profit and Loss Appropriation Account and Balance Sheet (New Method).

Unit – V Shipping Company and Investment Accounts

Voyage – Meaning – Complete and Incomplete Voyage Account. Investment Account – Accounting Treatment – Types of Securities-cum Interest and Ex interest.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Book for Study

S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol-I**,** Nineteenth Edition, 2015, Kalyani Publishers, Ludhiana

Books for Reference

1. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
2. M.A. Arulanandam & K.S. Raman, "***Advanced Accountancy"*** Vol-I, Sixth Edition, 2015, Himalaya Publishing House, Mumbai.
3. Reddy & Murthy, ***"Financial Accounting",*** Margham Publication, Chennai.

www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.edx.org

Course Code	Course Title	C	H	I	E	T
17U4KAC4	**Entrepreneurship Development and Start Ups**	4	75	25	75	100

Learning Objectives

- To know the concept of Entrepreneur, types and factors contributing motivating factors
- To sensitize the importance of women in business and business opportunities for women entrepreneurs
- To identify the business opportunities on Startups
- To prepare a business project report independently

Learning Outcomes: Knowledge on entrepreneurship including women, ability to identify startup and prepare project report independently

Unit – I Introduction to Entrepreneur

Meaning of Entrepreneur – Characteristics – Functions – Entrepreneur Vs Manager – Intrapreneur /Corporate Entrepreneur - Types of Entrepreneur – Motivating Factors – Entrepreneurial Competencies – Entrepreneur and Economic Development.

Unit – II Entrepreneurship

Meaning – Definition – Factors Stimulating Entrepreneurship – Factors affecting Entrepreneurship Growth – Economic Factors – Social Factors – Cultural Factors – Personality Factors – Psychological and Sociological Factors. Theories of Entrepreneurship – Economic Theory – Social Theory – Psychological Theory – Motivational Theories.

Unit –III Women Entrepreneurs

Concept of Women Entrepreneurship – Factors Influencing Women Entrepreneurs – Types – Differences between Men Entrepreneur and Women Entrepreneur - Role of Women Entrepreneurs – Business opportunities for Women Entrepreneurs – Growth of Women Entrepreneurship in India – Institutions supporting Women in Entrepreneurship - Problems – Remedial Measures.

Unit – IV Business Idea and Start Ups

Business Idea – Sources of Ideas – Identifying a Business Opportunity – Defining Opportunity – Preliminary Evaluation. Start ups – Start up Initiatives by Government – Mentors – Accelerators – Incubators – Sources of Finance for Start Ups – Failure of Start Ups – Strategies for Success of Start Ups – Start Ups Innovation in India.

Unit – V Project Report

Meaning – Importance – Precautions - Components – Contents of Project Report – General Information – Project Description – Market Potential – Cost of Capital and Means of Finance – Source of Finance – Assessment of Working Capital Requirements – Economic and Social Consideration – Reasons for Failure of a Project – Preparation of Model Project Report.

Books for Study

E.Gordon and K. Natarajan, ***Entrepreneurial Development***, Himalaya Publishing House, Mumbai.

Books for Reference.

1. Jayshree Suresh, ***Entrepreneurial Development,*** Margham Publication, Chennai.
2. S. Gawande, ***Entrepreneurship and Skills Development***, Satyam Publishers and Distributors, Jaipur.
3. S.S. Khanka, ***Entrepreneurial Development***, S.Chand, New Delhi.
4. Alpana Trehan, ***Entrepreneurship,*** Dreamtech Press, New Delhi.
5. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4KAC5	**Business Legislation - I**	4	75	25	75	100

Learning Objectives

- To gain the comprehensive knowledge on the business law viz., Contract Act
- To know the legal framework for special contract and sale of goods act
- To recognize the change in the consumerism under Consumer Protection Act and Competition Commission Act

Learning Outcomes: Basic knowledge on contract act, wagering and special contracts. Basic awareness about consumer protection act and competition commission act.

Unit – I Indian Contract Act, 1872

Definitions – Kinds of Contract – Essential Elements – Offer and Acceptance – Capacities of Parties – Consideration – Legality of Object and Consideration Free and Voluntary Consent.

Unit – II Wagering and Contingent Contract

Quasi Contract – Discharge of Contract – Discharge of Contract – Remedies for breach of Contract.

Unit – III Special Contracts

Contract of Indemnity – Meaning – Rights of Indemnity Holder – Implied Indemnity – Enforceability. Contract of Guarantee – Meaning – Parties – Basic Principles – Liability of Surety. Contract of Bailment – Meaning – Kinds of Bailment – Duties of Bailee and Bailer – Bailee's Lien. Contract of Pledge – Meaning – Ingredients of Pledge – Nature of Pledge.

Unit IV Sale of Goods Act, 1930

Sale – Meaning – Difference between Sale and agreement to sell – Formation of Contract of Sale – Conditions and Warranties – Rights and Duties of Buyer and Seller – Unpaid Seller.

Unit – V Consumer Protection Act, 1986 & Competition Act, 2002

Consumer Protection Act, 1986 – Objects – Rights of Consumer – Consumer Forum – Redressal Mechanism.Competition Act, 2002 – Definitions – Prohibition of Anti Competitive Agreement – Prohibition of Abuse of Dominant Position and Regulation of Combinations – Competition Commission of India (CCI) – Functions, Powers and Duties.

Books for Study

S.N Maheshwari & S.K. Maheshwari, ***A Manual of Business Law***, Edition 2016, Himalaya Publishing House, Delhi.

Books for Reference

1. N.D. Kapoor**, Elements of *Mercantile Law***, Sultan Chand & Sons, New Delhi.
2. M.C. Shukla, ***Mercantile Law***, S.Chand, New Delhi.
3. P.P.S. Gogna, ***Mercantile Law***, S.Chand, New Delhi.
4. All Bare Acts
5. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U4KSM4	**E-Commerce Applications**	2	30	25	75	100

Learning Objectives

- To know the concept of E Commerce and models of E Commerce and its applications
- To familiarize with Electronic Funds Transfer with security
- To have knowledge on Mobile Commerce and E Marketing and their applications.

Learning Outcomes: Knowledge and application of E Commerce, Electronic Funds Transfer and E Marking in the current business environment

Unit – I Introduction to E-Commerce

Definition of Electronic Commerce – E-Commerce and Traditional Commerce – Advantages of E-Commerce – Business, Consumers, Society and Nation – E-Business and E-Commerce – Need for E-business – Factors stressing the need for E-business.

Unit – II Models of E-Commerce & E-Commerce Applications

Business to Business E-Commerce (B2B) – Business to Consumers E-Commerce (B2C) – Consumer to Business E-Commerce (C2B) – Consumer to Consumer E-Commerce (C2C) – Business to Employee service E-Commerce (B2E) – Business to Government E-Commerce (B2G).

E-Commerce Applications – Electronic Banking – Difference between Internet Banking and Traditional Banking – Electronic Trading – Insurance – Healthcare – E-tailing – Electronic Auctions – Electronic Brokers – Electronic Searching – E-Agriculture – E-Governance in India – E-Governance Models

Unit – III Electronic Fund Transfer

Meaning – Benefits of Electronic Payment –Popular Electronic Payment Methods – Financial EDI – Credit Card System on the Internet – Components of Online Credit Processing Security Requirements in E- Payment Systems – Key Security Schemes – Secret Key Cryptography – Public Key Cryptography – Digital Signature.

Unit – IV Mobile Commerce

Mobile Commerce - Factors drive M-Commerce - Difference between E-Commerce and M-Commerce - Growth of M-Commerce in India - Applications of M-Commerce.

Unit – V E-Marketing

Meaning – Advantages – E-Customers Relationship Management (E-CRM) – Advantages of using technologies for providing customer support – Phases of E-CRM – Features of E-CRM Software – E-CRM Work Model.

Books for Study

Dr. K. Abirami Devi & Dr. M. Alagammai, ***E-Commerce***, Margham Publication, Chennai.

Books for Reference

1. Nidhi Dhawan, ***E-Commerce Concepts and Applications***, International Book House Pvt. Ltd. New Delhi.
2. S.V. Srinivasan, ***E-Commerce***, Vijay Nicole Imprints Pvt. Ltd. Chennai.
3. www.investopedia.com

NME

COMMERCE – UG

III Semester

Course Code	Course Title	C	H	I	E	T
17U3KNM1	**Basics of Accounting**	2	30	25	75	100

Learning Objectives

- To know and understand the basic concepts of Accounting and its relevance in business.
- To understand the process of accounting systematically and prepare financial statements.
- To familiarize the concepts of Break even analysis and ability to determine break even point to every business enterprise.

Learning Outcomes: Knowledge on basic accounting principles and preparation of profit &loss account and Balance Sheet. Ability to calculate BEP.

Unit – I Introduction to Accounting

Meaning – Definition – Features of Good Accounting System - Principles of Accounting – Concepts and Conventions – Book keeping – Importance – Golden Rules of Accounting.

Unit – II Journal and Subsidiary Books

Journal – Meaning – Journal Entries. Subsidiary Books - Meaning – Types. Cash Book –

Unit – III Ledger and Trail Balance

Ledger – Meaning – Preparation of Ledger Accounts. Trail Balance - Meaning - Preparation of Trail Balance.

Unit – IV Final Accounts

Meaning - Preparation of Trading and Profit & Loss Account – Preparation of Balance Sheet (Simple Problem only)

Unit – V Preparation of Final Accounts

Preparation of Trading and Profit & Loss Account – Preparation of Balance Sheet (Simple Problem only)

Note: The Questions should be asked in the ratio of 60 % for theory and 40% Problem.

Book for Study:

1. R.S.N. Pillai & Bhagavathi, ***Fundamentals of Marketing***, S.Chand & Sons, New Delhi.
2. Dr. Shazuli Ibrahim, ***Financial Accounting – I***, PASS Publications, Madurai.
3. www.edx.org

NME
COMMERCE – UG
IV Semester

Course Code	Course Title	C	H	I	E	T
17U4KNM2	**Marketing and Salesmanship**	2	30	25	75	100

Learning Objectives

- To familiarize the concept of Marketing and salesmanship in the current environment.
- To demonstrate the selling skills while marketing the products or services.
- To prepare advertisement copy and slogan independently.
- To gain familiarity with the online marketing and involving themselves in the business of E-Marketing.

Learning Outcomes: Basic knowledge on marketing, E marketing and sales promotion. Acquiring skill on personal selling.

UNIT – I Marketing

Marketing – Meaning – Features – Importance – Scope – Types of Market – Marketing mix – Product mix – Price mix – Place(Distribution) Mix – Promotion Mix - E- Marketing.

Unit – II Sales Promotion

Meaning – Importance – Objectives – Effectiveness of Sales promotion – Kinds – Consumer Sales promotion – Dealer Sales Promotion – Sales force sales promotion – Promotion planning.

Unit – III Advertising

Meaning – Importance – Types – Advantages – Advertising Copy - Advertising Media – Meaning – Kinds of Media – Advertising agencies.

Unit – IV Personal selling

Meaning - Nature – Importance – Process of Personal Selling – AIDAS theory – Qualities of a Good salesman – Duties and Responsibilities of sales man – Sales personality – Physical qualities, Psychological qualities, Social qualities and Moral qualities.

Unit – V E-Marketing

Meaning – Advantages of E- Marketing – Types – Article Marketing – Affiliate Marketing – Video Marketing – Tele Marketing – E-mail Marketing – Blogging.

Text Book

R.S.N. Pillai and Bagavati, ***"Modern Marketing Principles & Practices",*** Fourth Edition, 2015, S.Chand & Company Pvt., Ltd., New Delhi.

Reference Books

1.**P**hilip Kotler, Gary Armstrong, Prafulla Y. Agnihotri and Ehsan ul Haque, ***"Principles of Marketing- A South Asian Perspective",*** Thirteenth Edition, 2010, Pearson India.
2.N. Rajan Nair & Sanjith R Nair, ***"Marketing",*** *2011*, Sultan Chand & Sons, New Delhi.11.
3.S.A. Sherlekar***, "Modern Marketing",*** 2016, Himalaya Publishing House, Mumbai, Second Edition.
4. S.M. Jha, ***"Services Marketing",*** Sixth Edition, 2009, Himalaya Publishing House.
5. www.investopedia.com

Commerce - UG

B.Com (Professional Accounting) (Self Financing Stream)

III Semester & IV Semester Course Structure under CBCS Pattern

Semester III		Second Year			Semester IV				
Category	**Course Code**	**Paper**	**Hrs**	**Credit**	**Category**	**Course Code**	**Paper**	**Hrs**	**Credit**
Part III					**Part III**				
Core -5	17U3AMC5	Investment & Security Analysis	6	4	Core -8	17U4AMC8	Company Accounts	6	4
Core-6	17U3KMC6	International Trade	4	4	Core- 9	17U4KMC9	Insurance & Risk Management	5	4
Core-7	17U3KMC7	Cost Accounting	6	4	Core-10	17U4AMC10	Operations Research	6	4
Allied-3	17U3AAC3	Company Law - I	5	4	Allied-5	17U4AAC5	Business Economics	4	4
Allied-4	17U3AAC4	Industrial Law	5	4	Allied-6	17U4AAC6	Company Law - II	5	4
Part IV					**Part IV**				
Skill Based Elective	17U3ASM3	Stock and Commodity Market operations	2	2	Skill Based Elective	17U3ASM4	Computerised Accounting	2	2
Non Major Elective	17U3KNM1	Basics of Accounting / Basic Tamil-I / Advanced Tamil- I	2	2	Non Major Elective	17U4KNM2	Marketing and Salesmanship Basic Tamil-I / Advanced Tamil- I	2	2
		Total	**30**	**24**			**Total**	**30**	**24**

Course Code	Course Title	C	H	I	E	T
17U3AMC5	**Investment & Security Analysis**	4	90	25	75	100

Learning Objectives

- To study the concept of investment, investment avenues and Principles of Investment and understanding risk in investments
- To acquire analytical skills by Fundamental/Technical factors and decision making skills in investment in various securities.
- To know the concept of derivatives in finance and commodity markets

Learning Outcomes: Depth knowledge on Investment Management, investment avenues. Skill on Security valuation and operations of derivatives market

Unit – I Investment and Investment Risks

Meaning of Investment – Need of Investment – Scope of Investment – Differences between Investment, speculation and gambling – Investment principles – Investment process - Historical Vs Expected Return – Computation of historical and expected return of a stock – Current yield. Investment Risks: Systematic risks- Yield risk – Investment rate risk – Purchasing power risk – Unsystematic risk – Business risk – Financial risk.

Unit – II Investment Avenues

Features of equity shares, preference shares and its types – Bonds and its various types – Features – Innovative financial instruments – Convertible debentures and warrants – Characteristics of Zero coupon bonds – Deep discount bonds - Secured premium notes – Post office savings schemes- LIC Policies – Mutual Funds.

Unit – III Security Valuation

Security Valuation – Basic Valuation Models – Bonds – Preference Shares – Common Stock. – Dividend concept, Earnings concept – Efficient Market Theory – Efficient Market Hypothesis – Empirical Analysis – Random Walk Model – Recent Trends.

Unit- IV Fundamental and Technical Analysis

Fundamental analysis – Industrial analysis – Company analysis – Economy analysis –Technical analysis – Timing in investment – Tools of technical analysis – Market movements – Moving average analysis – Dow Theory – Recent Trends

Unit – V Derivatives

Meaning – Classification – Commodity Derivatives – Financial Derivatives – Basic Derivatives – Complex Derivatives – Exchange Traded Derivatives – OTC Derivatives – Characteristic of Derivatives – Participants in Derivatives Market - Forwards – Futures – Options – Swaps – Derivative Markets in India

Books for Study

Preethi Singh. ***Investment Management***. Mumbai: Himalaya Publishing House, 2014. Print.

Books for Reference

1. Avadhani V.A. ***Securities Analysis & Portfolio Management***. Himalaya Publishing House, 2013, Mumbai.
2. Pandian Punithavathy - ***Security Analysis And Portfolio Management***, Vikas Publishing House.
3. Lee, Cheng F. ***Advances in Investment Analysis and Portfolio Management***. Science & Technology Books.
4. Bhalla **V.K.** ***Investment Management***. Sultan Chand & Co., New Delhi
5. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U3KMC6	**International Trade**	4	60	25	75	100

Learning Objectives

- To gain knowledge on International trade and its importance in Balance of Payments of the country
- To equip on preparation of export procedures and documentation with INCO Terms and familiarize with Terms of Letter of Credit
- To calculate foreign exchange rate in different situations
- To have a view and importance of International Institutions

Learning Outcomes: Knowledge on International Trade, Skill on Export documentation & Procedure and awareness about international institutions

Unit I: Introduction to International Trade

Meaning – Definitions – Domestic Trade Vs International Trade – Need and Importance – Balance of Trade – Balance of Payments (BoP)– Components of BoP – BoP Disequilibrium – Corrective measures of Disequilibrium. International Commercial Terms (INCO Terms) EXW - FCA– FAS – FoB – C&F – CIP – CPT – DAF – DES – DEQ – DDU – DDP.

Unit II: Foreign Exchange & Export Financing

Meaning – Exchange Rates – Factors determining Exchange Rate – Types of Exchange Rate – Fixed and Fluctuating Rates – Spot and Forward Rates. Export Financing – Importance of Export Financing – Methods of Export Financing – Pre-shipment & Post shipment credit – ECGC – Role of ECGC - EXIM Bank – Functions.

Unit III: Export Procedure & Export Documentations

Processing of Export Order – Excise Clearance – Customs Clearance – Quality and Pre – shipment inspection – Bank procedures – Duty Draw back.

Export Documentations – Documents Relating to Goods – Documents Relating to Shipping– Combined Transportation Documents – Certificate of Inspection – Appropriate forms.

Unit IV: Letter of Credit, Bills of Exchange & Bills of Lading

Meaning – Types of Letter of Credit – Mechanism of Letter of Credit – Bills of Exchange – Types of Bills of Exchange – Demand Bills – Sight Bills – D/A and D/P. Bills of Lading – Meaning – Types.

Unit V: International Institutions

IBRD-IMF– GATT – Objectives - WTO – Principles – External Commercial Borrowings

Book for Study

Francis Cherunilam, ***International Trade and Export Management***, 20th Revised Edition, 2017, Himalaya Publishing House, Mumbai.

Books for Reference

1. T.A.S Balagobal, ***Export Management***, Himalaya Publishing House, Mumbai
2. C. Jeevanandam, ***Foreign Exchange, Practice, Concepts & Control***, Sultan Chand & Sons, New Delhi.
3. Dr. S. Sankaran, ***International Trade***, Margham Publications, Chennai.
4. Dr. V. Radha, ***International Trade,*** Prassanna Publishers & Distributors, Chennai.
5. www.wto.org.in
6. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U3KMC7	**Cost Accounting**	4	90	25	75	100

Learning Objectives

- To familiarize the concept of cost accounting and its importance with various classification of cost
- To prepare cost sheet independently for various types of industries
- To acquire the skills in control of materials cost, labour cost and overhead costs
- To understand and ascertainment of cost by using various methods of costing

Learning Outcomes: Depth knowledge in Cost Accounting, Methods of Costing & Skill in Preparation of Cost Sheets

Unit – I Introduction to Cost Accounting

Definition – Objectives – Nature – Scope – Limitations of Financial Accounting – Financial Accounting Vs Cost Accounting – Installation of Costing system. Cost Classifications – Elements of Cost – Preparation of Cost Sheet.

Unit – II Material

Material Cost – Purchase Procedure – Various stock levels – Economic Order Quantity (EOQ) – FSN – ABC – JIT – Bin Card – Stores Ledger – Methods of Pricing issues – FIFO – LIFO – Base Stock level – Simple Average and Weighted Average method – Treatment of Scrap, Spoilage, Wastage & Defective.

Unit – III Labour and Overheads

Labour Costs – Labour Turnover – Methods of Labour Turnover – Treatment of Idle time and Over time – Methods of wage payment – Time rate – Piece rate – Taylor differential piece rate system- Incentive methods – Halsey and Rowan Plan.

Overhead Costing – Meaning – Classification – Allocation and Apportionment of Overheads – Reapportionment – Methods of Absorption – Calculation of Machine Hour Rate.

Unit – IV Methods of Costing

Job Costing – Batch Costing – Contract Costing (including escalation clause) – Operating Costing (Transport only)

Unit – V Process Costing

Application of Process Costing - Normal Loss – Abnormal Loss – Abnormal Gain – Concept of Equivalent Production – Joint Products and By products. Reconciliation between Cost Profit and Financial Profit.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory.

Book for Study

S.P. Jain & K.L Narang, ***Cost Accounting***, Kalyani Publishers, Ludhiana.

Books for Reference

1. Dr.A.Murthy & Dr.S.Gurusamy, ***Cost Accounting,*** Vijay Nicole Imprints Private Limited, Chennai.
2. T.S. Reddy & Y. Hari Prasad Reddy, ***Cost Accounting***, Margham Publication, Chennai.
3. Dr. M. Wilson, ***Cost Accounting,*** Himalaya Publishing House, Mumbai.
4. www.icai.org.in
5. www.icmai.in
6. www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U3AAC3	**Company Law - I**	4	75	25	75	100

Learning Objectives

- To provide solid foundations in company law since formation of the company to winding up of the company as per the companies act 2013
- To get familiarized with regulatory frame work on membership, issues of share capital, company meetings and proceedings

Learning Outcomes: Knowledge on formation of company, Member and membership, ability to conduct meetings and proceedings

UNIT - I Introduction

Company – Definition – Essential Characteristics – Company Vs Partnership Firm - Lifting up of Corporate veil - Kinds of Companies – Public Vs Private Companies – One person Company (OPC) - Small Company – Dormant Company – Associate Company – Licensed Company – Defunct Company - Producer Company – Limited Liability Partnership (LLP) - .

Unit – II Formation of Company

Promotion – Promoters – Functions - Incorporation – Commencement of Business – Memorandum of Association – Clauses and Alterations - Articles of Association – Contents – Prospectus – Contents – Types of Prospectus – Shelf Prospectus, Abridged Prospectus, Deemed Prospectus, Red Herring Prospectus, Offer for Sale and Information Memorandum – Liabilities of Misstatement of Prospectus.

Unit – III Membership of Company

Modes of Acquiring Membership – Rights and Privilege of members – Dematerialization of Securities – Transfer and transmission of Securities in dematerialization form – Nomination – Forfeiture and Surrender of Shares

Unit - IV Shares and Share capital

Meaning – Nature – Kinds of Shares –Preference shares – Equity shares – Sweat equity shares – Stock Vs Share – Share Capital – Classifications (Authorised, Issued, Subscribed, Called up and Paid up Capital) – Share Certificate –Transfer of Shares – Transmission of Shares – Lien on Shares - Debentures - Legal Provisions governing Shares and Debentures.

Unit - V Company Meetings and Proceedings

Kinds – Annual General Meeting - Extraordinary General Meeting - Class meetings – Procedures and Requisites of a Valid meeting – Notice – Agenda – Quorum – Proxy - Resolution – Types – Minutes.

Book for Study

S.N. Maheswari & S.K. Maheswari, ***A Manual of Business Laws***, Himalaya Publishing House, Mumbai.

Book for Study

1. Kapoor N.D., ***Elements of Company Law***, Sultan Chand & Co., New Delhi. Ashok and Bagrail, Company Law, New Delhi, S.Chand & Co.2010.
2. V. Balachandran & M. Govindarajan, ***Company Law***, 2nd Edition, Vijay Nicole Imprints Pvt., Ltd., Chennai.
3. Gogna P.P.S., ***A Text Book of Company Law***, New Delhi, S.Chand & Co.,
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U3AAC4	**Industrial Law**	4	75	25	75	100

Learning Objectives

- To acquire the knowledge on Industrial laws and their practical applications in commercial situations
- To provide a basic knowledge on Employees Compensation, PF Act and payment of Bonus act

Learning Outcomes: Basic knowledge on Factories act, industrial dispute act, employees compensation act, the payment of bonus act and EPF &ESI act and its relevance in the business establishments

Unit – I The Factories Act, 1948 & Shops and Establishments Act, 1947 (State Act)

The Factories Act, 1948 **–** Definition **-** Preliminary – The Inspecting Staff – Health, Safety and Welfare of Workers – Working Hours of Adults – Employment of Women and Young person - Leave with Wages.

Shops and Establishments Act, 1947 (State Act) – Object – Definitions – Working hours – Wages – Leave with wages – Cleanliness and Safety - Inspectors.

Unit – II Industrial Disputes Act, 1947

Definitions –Industrial Dispute– Lay Off – Lockout – Strike – Retrenchment – Closure and Transfer of Undertaking – Difference between Lockout and Lay off, Retrenchment and Closure , Lockout and Closure – Lockout and Retrenchment – Unfair Labour Practice – Authorities – Procedure and Powers of Authorities – Reference to Arbitration Conciliation Machinery – Adjudication Machinery – Labour Courts – Industrial Tribunal – National Tribunal – Reference of Disputes to Boards , Courts or Tribunals and Voluntary Reference.

Unit – III The Employees' Compensation Act, 1923.

Nature and Scope – Definitions – Employees' Compensations – Employee's Liability – Meaning of Accident Compensation –Disablement **-** Permanent and Temporary – total and partial- Disablement – Compensations of death and disablement- report of fatal accidents.

Unit – IV The Payment of Bonus Act, 1965

Object – Application – Definitions – Methods of Computing Gross Profits – Payment of Bonus – Importance.-Minimum Wages Act and Payment of Gratuity Act.

Unit – V The Employees Provident Fund Act 1952 & ESI Act, 1948.

The Employees Provident Fund Act 1952 **-** Object – Definitions – Employees' Provident Fund Scheme – Employees' Pension Scheme – Employees' Deposit-linked Insurance Scheme.

ESI Act, 1948 – Object – Definitions – Benefits – ESI Corporations.

Book for Study

S.N. Maheswari & S.K. Maheswari, A Manual of Business Laws, Himalaya Publishing House, Mumbai.

Books for Reference

1. N.D. Kapoor, ***A Hand Book of Industrial Law***, Sultan Chand & Sons, New Delhi.
2. Susma Arora, ***Business & Industrial Laws***, Taxmann's Publications, New Delhi.
3. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U3ASM3	**Stock and Commodity Market Operations**	2	30	25	75	100

Learning Objectives

- To provide knowledge on stock exchange and capital market instruments
- To acquire skills on trading in stock and commodity markets
- To understand and apply the concept of future and forward market in investment decisions

Learning Outcomes: In-depth knowledge in capital market instruments and commodity markets. Able to operate stock and commodity market independently.

Unit –I Stock Exchange

Meaning – Need and Importance - Stock and Commodity Exchanges in India - Recent Developments.

Unit – II Capital Market Instruments

Primary and Secondary markets and its Instruments - Rolling settlement, Clearing house operations- Dematerialization, Re-materialization- Depository system- Initial Public Offering (IPO)/ Follow on Public Offer (FPO) ; Book Building- Auction, Insider trading. Credit rating- objective – Sources - Process, credit rating agencies in India.

Unit – III Securities Market Intermediaries & Stock Exchanges

Securities Market Intermediaries: Primary Market and Secondary Market Intermediaries: Role and Functions- Merchant Bankers - Stock Brokers - Syndicate Members – Registrars – Underwriters - Bankers to an Issue - Portfolio Managers - Debenture Trustees.

.Unit – IV Commodity Market

Regulatory Structure, Design of markets- Issues in Agricultural, Non-Agricultural Markets - Product Design - Contract Specifications - Spot Price And Present Practices of Commodities Exchanges – Intermediaries - Clearing House Operations - Risk Management Procedures and Delivery Related Issues - Issues Related to Monitoring and Surveillance by Exchanges and Regulator, Basic Risk and its Importance in Pricing- Commodity Options on Futures and its mechanism.

Unit – V Forward & Futures

Meaning - Risks Associated – Difference – Features - Stock Futures - Benefits of Future Market - Components of Future Price - Index and Index Futures – Margin - Hedging - Hedging Risks - Portfolio Returns.

Books for Study

Preethi Singh. ***Investment Management***, Himalaya Publishing House, 2014. Mumbai.

Books for Reference

1. Avadhani V.A. ***Securities Analysis & Portfolio Management***. Himalaya Publishing House, 2013, Mumbai.
2. Pandian Punithavathy - ***Security Analysis And Portfolio Management***, Vikas Publishing House.
3. Lee, Cheng F. ***Advances in Investment Analysis and Portfolio Management***. Science & Technology Books.
4. Bhalla **V.K.** ***Investment Management***. Sultan Chand & Co., New Delhi
5. www.investopedia.com, www.sebi.gov.in

Course Code	Course Title	C	H	I	E	T
17U4AMC8	**Company Accounts**	4	90	25	75	100

Learning Objectives

- To lay the foundations in company accounts viz., Issue of shares and debentures
- To get working knowledge on valuation of goodwill and shares for a company under various situations.
- To gain working knowledge on business combinations
- To solve the problems pertaining to liquidation of companies

Learning Outcomes: Knowledge on Issue of shares, ability to value intangible assets and working knowledge and skill on preparation of accounting for business combination, reconstruction and liquidation of companies

Unit – I Issue of Shares & Debentures

Issue of Equity, Preferences Shares and Debentures – Issue at Par, Premium and Discount – Forfeiture and Re-issue of shares for consideration other than cash –Buyback of shares - Redemption of preference share and debentures - Profit prior to incorporation – Underwriting – Firm underwriting – Accounting Treatment for Employees Stock Option Plan (ESOP) – Right Issues – Valuation of Rights.

Unit – II Valuation of Goodwill and Shares

Valuation of Goodwill - Simple Profit Method – Super Profit Method – Purchase of Super Profit – Sliding Scale Valuation of Super Profit – Annuity Method – Capitalization of Super Profit - Valuation of Shares: Net Assets Method – Yield Method.

Unit – III Accounting for Business Combination

Accounting for Amalgamation: Meaning under AS14 (Revised Ind AS103) – Purchase Consideration – Computation – Methods of Accounting for Amalgamation – Inter Company Owings and Holdings – Accounting Treatment for Absorption – Accounting Treatment for External Reconstruction

Unit – IV Alteration of Share Capital and Internal Reconstruction

Alteration of Share capital (Sec 61 of the Companies Act 2013) – Internal Reconstruction or Capital reduction – Procedure for reducing share capital – Accounting entries on internal reconstruction – Re-organisation through surrender of shares – Scheme of Reconstruction.

Unit – V Liquidation

Meaning – Statement of Affairs - Form of Statement of Affairs – Procedure of preparation of Statement of Affairs - List to be attached Statement of Affairs – Deficiencies Accounts – Liquidators Statement of Accounts - Liquidation of Companies – Liquidator's final statement of accounts.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory.

Book for Study

S.P. Jain & K.L. Narang, ***Advanced Accountancy Corporate Accounting***, Vol-II, Kalyani Publishers, Ludhiyana.

Books for Reference

1. R.L. Gupta, Advanced Accounting – II, Sultan Chand, New Delhi.
2. Reddy & Murthy, Corporate Accounting, Margham Publications, Chennai.
3. Raman & Arulanandam, Corporate Accounting, Himalaya Publication, New Delhi.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U4KMC9	**Insurance & Risk Management**	4	75	25	75	100

Learning Objectives

- To Sensitize the concept of risk in business and principles underlying the risk management
- To familiarize the concept of insurance, Various types of insurance and insight into fundamental principles of insurance
- To equip to prepare procedures for making claims against different kinds of insurance viz., Life, Fire and Marine.

Learning Outcomes: Basic knowledge on risk and insurance. Depth knowledge on principles of insurance and types of insurance. Skill on premium calculation and Claim procedure

Unit I Introduction to Risk Management

Risk – Meaning – Degree – Types – Static and Dynamic – Financial and Non-financial risks- Pure and Speculative Risk – Fundamental and Particular Risk – Business and Personal Risk. Risk Management – Significance – Principles – Objectives – Cost – Risk Management Information System (RMIS) – Process – Methods. Pooling of Risk – Transferring of Risk.

Unit II Introduction to Insurance

History of Insurance – Reforms – IRDA – Characteristics of an Insurable Risk – Privatization and Liberalisation in India – Nature and Principles of Insurance – Insurable Interest - Subrogation – Utmost Good Faith – Warranties – Proximate Cause – Indemnity – Assignment – return of premium Classification of Insurance – Advantages – Difference between Life and General Insurance.

Unit III Life Insurance

Meaning – Types – Policy Conditions – Product - Term Insurance – Endowment – Whole life Policy – Annuity – Meaning – Types of Annuity Policies – Difference between Annuity and Life Insurance. Claim Procedure – Documents to be produced to claim Life Insurance – Settlement – Policy Loan – Condition – Premium Calculation – Mortality Table.

Unit IV Marine and Fire Insurance

Marine - Meaning – Types – Policy Condition – Perils – Kinds of Perils – Marine Losses – Payment of Claims. Fire Insurance – Meaning – Contract of Fire Insurance – Types of Fire Policies. Payment of Claim.

Unit V Miscellaneous Insurance

Motor Insurance – Kinds of Motor Insurance – Burglary Insurance – Personal Accident Insurance – Fidelity Guarantees Insurance – Cash Transit Insurance – Money Insurance – Goods in Transit Insurance - Baggage Insurance – Pedal Cycle Insurance – Neon Sign Insurance – House Holders Insurance – Jeweller's Block Policies – Blood Stock Insurance – Sports Insurance. Specialized Classes of General Insurance – Industrial all risk Insurance – Aviation Insurance – Airline Insurance – Oil and Gas Insurance – Political Risk Insurance. Claims.

Book for Study

1. Alka Mittal & S.L. Gupta, ***Principles of Insurance and Risk Management***, Sultan Chand & Sons, New Delhi. (Unit I & II)
2. M.N Mishra & S.B. Mishra. ***Insurance Principles and Practice***, S. Chand & Company Ltd., New Delhi (Unit III , IV & V)

Books for Reference

1. Dr. A. Murthy, ***Principles of Insurance,*** Margam Publications, Chennai.
2. Dr.P.Periasamy, ***Principles & Practice of Insurance***, Himalaya Publishing House, Mumbai
3. Dr. P.K. Gupta, ***Insurance and Risk Management***, Himalaya Publishing House, Mumbai.
4. http://.insuranceinstituteofindia.com, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4AMC10	**Operations Research**	4	90	25	75	100

Learning Objectives

- To understand the basic concept of operations research and tools used in business decisions.
- To gain working knowledge on Linear Programming, Transportation and Assignment problems
- To apply game, queuing and network analysis in business situations

Learning Outcomes: Knowledge on operations research tools and its applicability in business decisions and ability to solve various business problems through OR tools

Unit – I Introduction to Operations Research

Meaning – Definition – Techniques of Operations Research – Uses and Limitations of Operations Research.

Unit – II Linear Programming Problem

Meaning – Definition – Formulation of LPP – Methods for solving LPP – Graphical Method – Simplex method – Big M Method – Duality Method.

Unit – III Transportation and Assignment Problem

Meaning – Transportation Model – Types of Transportation problems – Methods for solving transportation problem: Vogel's Approximation method – Least Cost Method – North West Corner Method – Initial Solution – Optimal Solution.

Assignment Problem – Meaning –Types of Assignment problems – Hungarian Method – Optimal Solution.

Unit – IV Game Theory & Queuing Theory

Game Theory – Applications – Methods for solving Game theory – Saddle point method – Dominance Principle method – Algebraic method – Graphical Method – Sub Game method.

Queuing Theory – Applications – Uses – Limitation – Single Channel Model Only.

Unit – V Network Analysis

Meaning – Critical Path Method (CPM) – Programming Evaluation Review Techniques (PERT) – Simple problems only.

Books for Study:

Kapoor V.K. & Sumant Kapoor, ***Operation Research Techniques for Management***, Sultan Chand & Sons, New Delhi.

Books for Reference:

1. Chawla. K.K, Vijay Gupta & Bhushan K. Sharma, ***Operation Research Quantitative Analysis for Management***, Kalyani Publishers, New Delhi.
2. K. Shridhara Bhat, ***Operation Research,*** Himalaya Publishing House, Mumbai.
3. J.K.Sharma, ***Quantitative Techniques in Management,*** Trinity Press, New Delhi.
4. www.icai.org.in, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4AAC5	**Business Economics**	4	60	25	75	100

Learning Objectives

- To provide basic knowledge on business economics and understand the various concepts that aid in decision making
- To familiarize the concept of demand and demand forecasting and determination of elasticity of demand in various situations
- To have better knowledge on production cost analysis with factors of production
- To aware knowledge on pricing and pricing policies in various situations

Learning Outcomes: Basic knowledge on business economics and fundamental aids to decision making. Depth knowledge on Demand and Demand forecasting and understanding of pricing policies and strategies.

UNIT – I Introduction

Definition – Nature and Scope of Business Economics – Fundamental Concepts – Aids to Decision Making – Opportunity Cost Principle – Equi – Marginal Principle – Incremental Principle – Time Perspective Principle – Discounting Principle

Unit II: Cardinal Utility Analysis

Introduction - Concepts of Utility - Total, Marginal Utility - Law of Diminishing Marginal Utility - Law of Equi-Marginal Utility - Consumer's surplus.

Unit III: Demand and Demand Forecasting

Demand – Meaning – Definition - Law of Demand - Demand determinants- Elasticity of Demand - Types of Elasticity of Demand - Degrees of Price Elasticity of Demand - Measurement of elasticity of Demand - Meaning of demand forecasting - Methods of demand forecasting for established products.

Unit IV: Production, Costs and Revenue Analysis

Introduction - Features of factors of production - Law of returns (Increasing, Constant and Diminishing) – Isoquant - Iso-cost line- TC – VC – FC – AC – MC – AR – MR - Factors of Production.

Unit V: Pricing Policies and Strategies

Pricing - Pricing policy - Formulation of pricing policy - Objectives of pricing policy - Factors involved pricing policy - Pricing strategies - Skimming pricing and Penetration pricing - Pricing over the life cycle of a product - Cyclical pricing - Transfer pricing - Differential pricing - Full cost pricing. Business Cycle – Phases – Remedies.

Books for Study:

1. R. Cauvery, U.K. Sudha Nayak, M. Girija and R. Meenakshi "***Managerial Economics",*** 2002, S.Chand & Co, New Delhi.
2. V.G. Mankar, "***Business Economics",*** 1999, Marcmillan India Ltd, New Delhi.

Reference Books

1. **M**.L. Jhingan and J. K Stephen, ***"Managerial Economics",*** 2012, Vrinda Publications (P) Ltd., Delhi.
2. Varshney and Maheswary, ***"Managerial Economics",*** 2004, Sultan Chand & Co., Delhi.
3. Managerial Economics, D. M. Mithani, ***"Managerial Economics",*** 2006, Himalaya Publishing House, Delhi.
4. www.icai.org.in, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4AAC6	**Company Law - II**	4	75	25	75	100

Learning Objectives

- To provide solid foundations in company law on Managerial Personnel, Accounts, Audit & investigations of the company as per the companies act 2013
- To gain knowledge on procedure on winding up of the company
- To get familiarized with regulatory frame work on corporate governance, majority rule and minority rights

Learning Outcomes: Knowledge on Management and control of companies. Understanding of Dividend and Bonus shares. Skill on winding up Procedures.

Unit I Management and Control of Companies

Managerial Personnel – Meaning – Key Managerial Personnel (KMP) – Types – Managing Directors Vs Whole time director – Independent Director – Manager – Company Secretary - Functions of Company secretary - Remuneration. Directors – Meaning – Classification – Appointment of Directors – Committees – Audit committee – Stake holder committee – Corporate Social Responsibility (CSR) committee – Investor Grievance Committee - Removal of Directors - Powers and Duties.

Unit – II Accounts, Audit and Investigation

Books of Accounts – Statutory Books of Accounts and Statutory Registers – Financial Statements. Auditors – Appointment – Resignation and Removal, Qualification and Disqualification, Rights, Duties and Liabilities – Audit and Auditors Report – Cost Records and Cost Audit

Unit – III Dividends and Bonus Shares

Dividend – Meaning – Profit – Dividend Fund – Rules Regarding Payment of Fund – Interim Dividend – Treatment of unpaid and unclaimed dividend – Investor Education and Protection fund. Bonus Shares – SEBI guidelines for Bonus shares.

Unit- IV Winding Up

Meaning – Modes of winding up – Winding up by National Company Law Tribunal (NCLT) – Company Liquidator – Official Liquidator - Duties and Powers of Liquidators – Voluntary winding up – Member Voluntary winding up – Creditors voluntary winding up.

Unit – V Corporate Governance &Majority Rule and Minority Rights.

Corporate Governance - Concepts – Global Institution for Corporate Governance – Authorities involved – Evaluation of Corporate measures. E-Governance and XBRL . Majority Rule and Minority Rights. Law relating to Majority powers and Minority rights – Shareholders remedies – Prevention of Oppression and Mismanagement.

Book for Study

S.N. Maheswari & S.K. Maheswari, A Manual of Business Laws, Himalaya Publishing House, Mumbai.

Books for Study

1. Kapoor N.D., ***Elements of Company Law***, Sultan Chand & Co., New Delhi.
2. Ashok and Bagrail, ***Company Law***, S.Chand & Co.2010, New Delhi.
3. Gogna P.P.S., ***A text book of Company***, S.Chand & Co., New Delhi.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4ASM4	**Computerised Accounting**	2	30	25	75	100

Learning Objectives

- To familiarize and working knowledge on accounting software
- To work independently in the preparation of financial statements though accounting software
- To acquaint working knowledge on calculation of interest and GST through accounting software

Learning Outcomes: knowledge on accounting software. Complete working knowledge of preparation of final accounts through accounting package

Unit I Introduction to Accounting through Computer Software

Tally- Features of Tally – Tally and Accounting – Tally and Financial Management – Tally and Inventory/stock Management – Security Features of Tally - Benefits of Tally. Features & Configuration: General Features - Accounting Features – Inventory Features.

Unit II: Creation of Company, Group & Ledger

Creation of Company – Group Creation – Primary groups - Display of groups - Alteration of Groups - Deletion of Groups - Creation of ledgers - Process of creation of ledger.

Unit III: Accounting Vouchers & Inventory Vouchers

Voucher Meaning - Types of Voucher - Accounting Voucher - Creation and Alteration of vouchers - Voucher Numbers - Day – Date - Deletion of Voucher – Display of Voucher. Inventory Vouchers - Stock Journal – Stock Groups, Stock Items and Stock Category Creation, Alteration and Deletion.

Unit IV: Final Accounts & Bank Reconciliation Statement

Display of Trial Balance – Display of Profit and Loss Account and Balance sheet – Methods of showing Balance sheet. Bank Reconciliation Statement - Meaning – Drawbacks - Voucher-wise reconciliation – Process of Bank reconciliation.

Unit V: Interest Calculations & GST

Interest Calculations - Simple Interest – Compound Interest. Backup and Restore.

Introduction to GST – Getting started with GST Goods - Getting started with GST Services

Book for Study

Rishwan Ahamed, Tally ERP 9, Margham Publication, Chennai.

Books for Reference

1. S.Palanivel, ***"Tally- Accounting Software"***, Margham Publications, Chennai
2. Nellai Kannan C, ***"Tally",*** 2004, Nels Publications.
3. Shraddha Singh & Navneet Mehra, ***"Tally.ERP 9- Power of Simplicity",*** 2014,
    a. ITC Publication.
4. Asok K Nadhani, ***"Mastering Tally.ERP 9",*** 2012, BPB Publications.
5. ***"Accounting Package"***, ICAI New Delhi Publications.
6. ***"Tally9"***, Tally Solutions Ltd. Bangalore.
7. www.investopedia.com, www.edx.org, www.tutorialspoint.co

Commerce - UG

B.Com (Banking and Insurance)

Self Financing Stream

III Semester & IV Semester Course Structure

Semester III					Second Year Semester IV				
Category	**Course Code**	**Paper**	**Hrs**	**Credit**	**Category**	**Course Code**	**Paper**	**Hrs**	**Credit**
Part III					**Part III**				
Core -6	17U3IMC6	Practice of Life Insurance	6	4	Core -9	17U4IMC9	Service Marketing	5	4
Core-7	17U3KMC7	Cost Accounting	5	4	Core-10	17U4IMC10	Regulation of Insurance Business	6	4
Core-8	17U3KMC8	Partnership Accounts	5	4	Core-11	17U4KMC11	Special Accounts	6	4
Allied-2	17U3KAC2	Company Law & Practice	5	4	Allied-4	17U4IAC4	Banking & Allied Laws - I	5	4
Allied-3	17U3KAC3	Practical Banking	5	4	Allied-5	17U4AAC5	Business Economics	4	4
Part IV					Part IV				
Skill Based Elective 3	17U3ISM3	Foreign Trade	2	2	Skill Based Elective 4	17U4KSM4	E-Commerce Applications	2	2
Non Major Elective	17U3KNM1	Basics of Accounting / Basic Tamil-I / Advanced Tamil- I	2	2	Non Major Elective	17U4KNM2	Marketing and Salesmanship Basic Tamil-I / Advanced Tamil- I	2	2
		Total	**30**	**24**			**Total**	**30**	**24**

Course Code	Course Title	C	H	I	E	T
17U3IMC6	**Practice of Life Insurance**	4	90	25	75	100

Learning Objectives

- To get practical exposure on practice of life insurance viz., premium & bonus, various plans of life insurance
- To know about policy documents and conditions prevailing in policy documents
- To prepare policy claims and procedures.
- To acquire comprehensive knowledge on premium, surrender, assignment and revival of policies

Learning Outcomes: Depth knowledge on Life insurance and its practices. Ability to calculate premium and claims. Understanding of various types of life insurance products.

Unit – I Practice of Life Insurance

Life Insurance Organisation: Definition – Growth of Insurance Business in India – Liberalisation of the Indian Insurance sector – List of Private Life Insurance Companies Operating in India – Organisational structure of a Life Insurance Company – Appointment of Life Insurance Agents and their Functions – Remuneration to Agents – Trends in Life Insurance distribution channel.

Premium and Bonuses: Meaning of premium – Definitions – Types of Premium – Calculation of Premium. Meaning of Bonus — Definition – Types of Bonus.

Plans of Life Insurance: Analyze of various Insurance plans – Features of a Traditional plan – Types of Life Insurance Plans – Importance of Riders – Industrial Life Insurance – Benefits of Married Women Property Act (MWP Act) – Importance of Keyman Insurance – Importance of Health Insurance.

Unit – II Annuities, Group Insurance and Linked Life Insurance Policies

Annuities: Meaning – Definitions – Different Types of Annuity Plans – Advantages and Disadvantages of Annuity.

Group Insurance: Meaning – Importance of Group Insurance – Features of Group Insurance – Eligibility conditions in Group Insurance – Different Group Insurance Schemes – Premium Pricing In Group Insurance – Payment of Gratuity. Group Superannuation Scheme – Types of Group Superannuation Schemes – Advantages and Disadvantages of Group Superannuation Schemes - Pension – Types of Pension.

Linked Life Insurance Policies: Unit Linked Insurance Plan (ULIP) – Definition – ULIP Premium – Choice of Funds – Difference between ULIP and Traditional Plan – Work of ULIP - Pricing of units – Features of ULIP – IRDA guidelines.

Unit – III Application & Acceptance and Policy Documents

Application and Acceptance: Fundamentals of a life Insurance Contract – Essentials elements of a valid contract – Principles of utmost good faith – Insurable Interest – Life Insurance application process – Underwriting of Life insurance.

Policy Documents: Format of Documents – Policy Schedule – Condition and Privileges in an Insurance Policy.

Unit – IV Premium Payment, Revival, Assignment, Nomination and Surrender of Policy.

Premium: Factors affecting premium – Timing of Premium – Calculation of Premium – Surrender value and non-forfeiture options.

Revival of Policy – Meaning – Different revival schemes.

Assignment of Insurance policies – Features of Assignment – Types of Assignment. Nomination – Process of Nomination – Features of Nomination – Differences between Nomination and Assignment.

Surrender of an Insurance Policy – Features of Surrender – Foreclosures – Features of Foreclosure.

Unit – V Policy Claims

Policy claims – Definition – Types of policy claims – Proof of title of claimant – Nomination – Claim concession – Presumption of death – Insurance riders – Accidental death benefit rider – Permanent disability benefit – Post maturity options.

Book for Study

Practice of Life Insurance, Insurance Institute of India, Mumbai.

Books for Reference

1. Dr. A. Murthy, ***Principles of Insurance,*** Margam Publications, Chennai.
2. Dr.P.Periasamy, ***Principles & Practice of Insurance***, Himalaya Publishing House, Mumbai.
3. M.N Mishra & S.B. Mishra. ***Insurance Principles and Practice***, S. Chand & Company Ltd., New Delhi
4. http://.insuranceinstituteofindia.com, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U3KMC7	**Cost Accounting**	4	75	25	75	100

Learning Objectives

- To familiarize the concept of cost accounting and its importance with various classification of cost
- To prepare cost sheet independently for various types of industries
- To acquire the skills in control of materials cost, labour cost and overhead costs
- To understand and ascertainment of cost by using various methods of costing

Learning Outcomes: Depth knowledge in Cost Accounting, Methods of Costing & Skill in Preparation of Cost Sheets

Unit – I Introduction to Cost Accounting

Definitions – Objectives – Nature – Scope – Limitations of Financial Accounting – Financial Accounting Vs Cost Accounting – Installation of Costing system. Cost Classifications – Elements of Cost – Preparation of Cost Sheet.

Unit – II Material

Material Cost – Purchase Procedure – Various stock levels – Economic Order Quantity (EOQ) – FSN – ABC – JIT – Bin Card – Stores Ledger – Methods of Pricing issues – FIFO – LIFO – Base Stock level – Simple Average and Weighted Average method – Treatment of Scrap, Spoilage, Wastage & Defective.

Unit – III Labour and Overheads

Labour costs – Labour Turnover – Methods of Labour turnover – Treatment of Idle time and over time – Methods of wage payment – Time rate – Piece rate – Taylor differential piece rate system- Incentive methods – Halsey and Rowan Plan.

Overhead Costing – Meaning – Classification – Allocation and Apportionment of Overheads – Reapportionment – Methods of Absorption – Calculation of Machine Hour Rate.

Unit – IV Methods of Costing

Job Costing – Batch Costing – Contract Costing (including escalation clause) – Operating Costing (Transport only)

Unit – V Process Costing

Application of Process Costing – Application of Process Costing - Normal Loss – Abnormal Loss – Abnormal Gain – Concept of Equivalent Production – Joint Products and By products. Reconciliation between Costing Profit and Financial Profit.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Book for Study

S.P. Jain & K.L Narang, ***Cost Accounting***, Kalyani Publishers, Ludhiana.

Books for Reference

1. Dr.A.Murthy & Dr.S.Gurusamy, ***Cost Accounting,*** Vijay Nicole Imprints Private Limited, Chennai.
2. T.S. Reddy & Y. Hari Prasad Reddy, ***Cost Accounting***, Margham Publication, Chennai.
3. Dr. M. Wilson, ***Cost Accounting,*** Himalaya Publishing House, Mumbai.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.investopedia.com, www.edx.org.

Course Code	Course Title	C	H	I	E	T
17U3KMC8	Partnership Accounts	4	75	25	75	100

Learning Objectives

- To know and understanding the concept of partnership and legal requirements of partnership firm
- To prepare comprehensive problems on partnership accounting under various situations viz., Admission, retirement, death and dissolution

Learning Outcomes: Knowledge on Legal requirements of Partnership, Skill on preparation of accounts pertaining to admission, retirement, death of a partner and dissolution of partnership

Unit – I Introduction to Partnership Accounts

General – Definition – Legal Requirements – Partners Capital Account – Fixed and Fluctuating system – Appropriation of Profits – Past Adjustments – Guarantee.

Unit – II Admission of a Partner

Revaluation of Assets & Liabilities – Memorandum Revaluation Method – Treatment of Goodwill – Premium – Revaluation and Memorandum Revaluation Method – Calculation of Profit sharing Ratio-

Unit – III Retirement and Death of a Partner

Retirement – Revaluation of Assets and Liabilities – Treatment of Goodwill – Revaluation and Memorandum Revaluation Methods - Calculation of Profit Sharing Ratio –Settlement of Amount Due to Retiring Partner. Death of a Partner – Treatment of Joint Life Policy.

Unit – IV Dissolution - I

Journal Entry for Dissolution – Treatment of Goodwill on Dissolution – Treatment of unrecorded and liability – Insolvency of a Partner (Garner Vs Murray) - Capital Ratio under Fixed Capital Method and Fluctuating Capital Method (Garner Vs Murray).

Unit – V Dissolution – II

Insolvency of all Partners - Piecemeal Distribution – Proportionate Capital Method – Maximum Loss Method.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Book for Study

S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol. I**,** 19th Edition, 2015, Kalyani Publishers, Ludhiana.

Books for Reference

1. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
2. M.A. Arulanandam & K.S. Raman, "***Advanced Accountancy"*** Vol.I, Sixth Edition, 2015, Himalaya Publishing House, Mumbai.
3. Reddy & Murthy, "***Financial Accounting",*** Margham Publication, Chennai.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.investopedia.com, www.edx.org.

Course Code	Course Title	C	H	I	E	T
17U3KAC2	**Company Law & Practice**	4	75	25	75	100

Learning Objectives

- To provide solid foundations in company law since formation of the company to winding up of the company as per the companies act 2013
- To get familiarized with regulatory frame work on issues of share capital, company meetings and managerial personnel and appointment of directors

Learning Outcomes: Knowledge on formation of company, Managerial personnel & Directors, ability to conduct meetings and winding up procedure

Unit – I Formation of Company

Company – Definition – Essential characteristics – Lifting up of Corporate veil - Kinds of Companies – One Person Company (OPC) – Associate Company – Licensed Company – Producer Company – Dormant Company –Public Vs Private Companies - Formation of a company – Promotion – Promoters – Functions - Incorporation – Commencement of Business - Memorandum of Association – Clauses and Alterations - Articles of Association – Contents – Prospectus – Contents – Mis-Statement of Prospectus.

Unit - II Shares and Share Capital

Meaning – Nature – Kinds of Shares –Preference shares – Equity shares – Sweat equity shares – Stock Vs Share – Share Capital – Classifications (Authorised, Issued, Subscribed, Called up and Paid-up Capital) – Share Certificate –Dematerialisation of Shares - Transfer of Shares – Transmission of Shares – Lien on Shares - Debentures - Legal provisions governing Shares and Debentures.

Unit – III Company Meetings and Proceedings

Kinds – Annual General Meeting - Extraordinary general meeting - Class meeting – Procedures and Requisites of a valid meeting – Notice – Agenda – Quorum – Proxy - Resolution – Types – Minutes.

Unit – IV Managerial Personnel and Directors

Managerial Personnel – Meaning – Key Managerial Personnel (KMP) – Types – Managing Directors Vs Whole Time Director – Independent Director – Manager – Company Secretary - Functions of Company Secretary - Remuneration. Directors – Meaning – Classification – Appointment of Directors – Committees – Audit committee – Stake holder committee – Corporate Social Responsibility (CSR) committee – Removal of Directors – Power and Duties – Concept of Corporate Governance.

Unit – V Winding up

Meaning – Modes of Winding up – Winding up by National Company Law Tribunal (NCLT) – Company Liquidator – Official Liquidator - Duties and Powers of Liquidators – Voluntary Winding up – Members Voluntary winding up – Creditors Voluntary Winding up.

Book for Study

S.N. Maheswari & S.K. Maheswari, ***A Manual of Business Laws***, Himalaya Publishing House, Mumbai.

Books for Reference

1. Kapoor N.D., ***Elements of Company Law***, Sultan Chand & Co., New Delhi. Ashok and Bagrail, Company Law, New Delhi, S.Chand & Co.2010.
2. V. Balachandran & M. Govidarajan, ***A Students Handbook on Company Law and Practice***, Vijay Nicole Imprints Private Limited, Chennai.
3. J.Shanthi, ***Company Law***, Margham Publications, Chennai.
4. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U3KAC3	**Practical Banking**	4	75	25	75	100

Learning Objectives

- To know the practical aspects of banking Viz. Relationship between banker and customer, opening of accounts, NI Act, crossing and endorsement of Cheques
- To equip themselves on treatment of the various types of customers.
- To familiarize the concept of paying banker &collecting banker
- To impart knowledge about various modern services offered by the banker

Learning Outcomes: Thorough knowledge on practical aspects of banking and modern services offered by the banker

Unit – I Introduction to Banking

Definition of Banking – Definition of Customer – Relationship between Banker and Customer – General and Special relationship – Obligation to honour a Cheque – Maintain Secrecy – Right of Lien – Right of Appropriation – Clayton's case – Right-off Set-off.

Unit – II Opening of an Account & Types of Customers

General precautions and procedures – Types of Account – Savings Account, Current Account and Fixed Deposits – Features – Fixed Deposit Receipt and its Legal Implications.

Account of different Types of Customers – Minor – Illiterate – Lunatic – Married Women – Partnership firm – Joint Stock Company – Non- Trading concern and Joint account.

Unit – III Negotiable Instrument Act, 1881

Negotiable Instrument - Definition – Essential Features – Cheque – Definition – Features – Proper drawing of Cheque – MICR. Crossing – Types – Significance – Canceling of Crossing. Endorsement – Types – Rules of Endorsement – Material Alteration and its effects.

Unit – IV Paying Banker & Collecting Banker

Paying Banker – Meaning – Duties – Circumstance for Dishonouring a Cheque – Statutory Protection – Payment in Due Course and Holder in Due Course.

Collecting Banker – Meaning – Capacities – Rights and Duties – Statutory Protection – Concept of negligence and conversion.

Unit – V Subsidiary Services of Modern Banker

Demand Draft – ATM – Safety Locker – Credit Cards and Debit Card – Consultancy Services – Merchant Banking Services – E-Banking – Electronic Fund Transfer – RTGS – M-Banking - NEFT.

Book for Study

Gordon and Natarajan, ***Banking Theory, Law and Practice***, Himalaya Publishing House, Mumbai

Books for Reference

1. P.N. Varshney, ***Banking Law and Practice***, Himalaya Publishing House, Mumbai
2. B.Santhanam, ***Banking Law and Practice***, Margham Publication, Chennai.
3. K.C. Shekhar & Lekshmy Shekhar, ***Banking Theory and Practice***, Vikas Publishing House Pvt. Ltd., New Delhi.
4. Sundharam & Varshney, ***Banking Theory Law & Practice***, Sultan Chand & Sons, New Delhi.
5. https://economictimes.indiatimes.com, www.rbi.org.i

Course Code	Course Title	C	H	I	E	T
17U3ISM3	**Foreign Trade**	2	30	25	75	100

Learning Objectives

- To gain knowledge on International trade and its importance in Balance of Payments of the country
- To equip on preparation of export procedures and documentation with INCO Terms and familiarize with Terms of Letter of Credit
- To calculate foreign exchange rate in different situations
- To know overview and importance of International Institutions

Learning Outcomes: Knowledge on Foreign Trade, Skill on Export documentation & Procedure

Unit I: Introduction to Foreign Trade

Foreign Trade – Definition - Need and Importance – Domestic Trade Vs Foreign Trade - Balance of Trade – Balance of Payments (BoP)– Components of BoP – BoP Disequilibrium.

Unit II: Foreign Exchange

Meaning – Exchange Rates – Factors determining Exchange Rate – Types of Exchange Rate - Fixed and Fluctuating Rates - Spot and Forward Rates.

Unit III: Export Financing & Export Procedure

International Commercial Terms (INCO Terms) EXW - FCA– FAS – FoB – C&F – CIP – CPT – DAF – DES – DEQ – DDU – DDP.

Export Financing – Importance of Export Financing – Methods of Export Financing – Pre-shipment & Post shipment credit.

Processing of Export Order – Excise Clearance – Customs Clearance – Quality and pre – shipment inspection – Duty Draw back.

Unit IV: Export Documentations & **Letter of Credit**

Export Documentations – Documents Relating to Goods – Documents Relating to Shipping– Combined Transportation Documents – Certificate of Inspection – Appropriate forms. Letter of Credit - Meaning – Types of Letter of Credit – Mechanism of Letter of Credit.

Unit V: International Institutions

ECGC – Role of ECGC - EXIM Bank – Functions – GATT – Objectives - WTO - Principles.

Book for Study

Francis Cherunilam, ***International Trade and Export Management***, 20th Revised Edition, 2017, Himalaya Publishing House, Mumbai.

Books for Reference

1. T.A.S Balagobal, ***Export Management***, Himalaya Publishing House, Mumbai
2. C. Jeevanandam, ***Foreign Exchange, Practice, Concepts & Control***, Sultan Chand & Sons, New Delhi.
3. Dr. S. Sankaran, ***International Trade***, Margham Publications, Chennai.
4. Dr. V. Radha, ***International Trade,*** Prassanna Publishers & Distributors, Chennai.
5. www.wto.org.in, www.investopedia.com.

Course Code	Course Title	C	H	I	E	T
17U4IMC9	**Service Marketing**	4	75	25	75	100

Learning Objectives

- To know the basic concept of marketing and various approaches of study of marketing
- To have a exposure towards services marketing and its components
- To acquaint knowledge on marketing of banking and insurance sectors

Learning Outcomes: knowledge on Basics of Marketing &Service marketing. Complete understanding of marketing of banking and insurance products.

Unit – I Introduction to Marketing

Definition – Importance – Evolution of Marketing Concept – Marketing Functions – Classification – Approaches to the Study of Marketing – Meaning of market – Kinds of Market – Market Segmentation – Methods of Segmentation - Concept of Market Targeting and Positioning.

Unit – II Marketing of Services

Introduction – Definition – Goods and Services (A Comparative Analysis) – Salient features of Marketing Services – Services Marketing – Concepts – Significance – Marketing Information System.

Unit – III Management of Service Marketing

Introduction – Concepts of Marketing Mix – Capacity Planning – Capacity Scheduling – Internal Marketing.

Unit – IV Bank Marketing

Introduction – Bank Marketing-Concept – Justification for marketing the Banking services – Users of Banking services – Behavioral Profile of users – MIS for Banks – Significance – Marketing Segmentation – Marketing Mix – Physical attraction – Bank Marketing in the Indian Perspective.

Unit – V Insurance Marketing

Introduction – Concept – Users – Behavioral Profile of Users – Marketing Segmentation – Insurance product – Product Planning and Development – Formulation of marketing mix for Insurance organization – Promotion mix – Price mix – Place mix – The People – Insurance Marketing in the Indian Environment.

Books for Study

Jha S.M, Services Marketing, Himalaya Publishing House, Mubai.

Books for Reference

1. R. Srinivasan, ***Services Marketing***, The Indian Context, PHI Learning Pvt. Ltd.
2. Zeithamal, Valarie.A, ***Services Marketing***, Tata McGraw Hill, New Delhi.
3. Rajendra Nargundkar, ***Service Marketing***, Tata McGraw Hill, New Delhi.
4. Lovelock Christopher, ***Service Marketing***, Pearson Education, Delhi.
5. www.investopedia.com, www.edx.org, www.businessdictionary .com.

Course Code	Course Title	C	H	I	E	T
17U4IMC10	**Regulation of Insurance Business**	4	90	25	75	100

Learning Objectives

- To know comprehensive knowledge on Insurance legislation and Insurance Act
- To understand the various regulation on insurance business viz Anti money laundering
- To aware about Dispute Resolution Mechanism and prerequisites conditions for lodging complaints
- To acquaint knowledge on Financial Regulatory Aspect of Solvency Margin & Investments and International Trends in Insurance Regulations

Learning Outcomes: Comprehensive knowledge on IRDA act and regulation of conduct of business. Awareness of Dispute Resolution Mechanism and International Trends in Insurance Regulations

Unit – I Development of Insurance Legislation in India and Insurance Act, 1938

Introduction – Stages in the development of life insurance in India – Stages in the development of non-life insurance in India – Nationalisation of the insurance business in India – Insurance Sector Reforms – Insurance Association of India, Councils and Committees – General Insurance Business (Nationalisation) Act, 1972 (GIBNA) - Provisions of the General Insurance Business (Nationalisation) Act, 1972 (GIBNA).

Insurance Regulatory and Development Authority (IRDA) – Composition of IRDA – Purpose of Forming the IRDA – Duties, Powers and Functions of the IRDA – Regulations issued by IRDA – Acts governing insurance business in India – General and Life Insurance Councils. IRDA and its Licensing functions – The code of conduct applicable to Agents, Corporate Agents and Brokers – Regulation for Third Party Administrators (TPA) – Registration of Insurance Companies – Life and General Reinsurance Regulations – General Insurance Corporation of India (GIC). Surveyors – Role and Duties of Surveyors – Licensing Procedure – Corporate surveyors and Loss Assessors – Renewal of licence – Duties and Responsibilities of a Surveyor and Loss Assessor – Categorisation of Surveyors – Code of conduct.

Unit – II Regulations on Conduct of Business

The Insurers' obligations to rural and social sectors – Micro Insurance – History of micro insurance – IRDA Micro-insurance Regulations, 2005. Regulation of ULIPs – Regulatory environment of ULIPs – Money laundering – Stages and methods of money laundering – Money laundering legislation and international co-operation – Know Your Customer (KYC) – Process of KYC – Anti-Money Laundering (AML) and Countering Financing of Terrorism (CFT) Guidelines – Methods of Receipt of premium – Commencement of risk -

Unit – III Policyholder's Rights of Assignment, Nomination, Transfer and Protection of Policyholder's Interest

Provisions related with the assignment and transfer of Insurance Policies (Section 38) – Provisions related with the nomination of Insurance policies (Section 39) – Provisions related with the prohibition of rebate (Section 41) – Provisions related with the no risk to be assumed premium is received in advance (Section 64VB).

Protection of Policyholders Interest – Stages of Insurance policy – Pre-sale stage of insurance policy – Post-sale stage of insurance policy – Free look period – Objective of free look period – Requirements for cancellation of cancellation of policy in free look period – Matters to be stated in a life insurance policy – Grievance redressal procedure – Policyholders' servicing – Claims procedure in respect of a life insurance policy – Claims procedure in respect of a general insurance policy – Key feature document – Format of Key Feature Document.

Unit – IV Dispute Resolution Mechanism

Consumer Protection Act, 1986 – Features of Act – Structure of Consumer Protection Act, 1986. Insurance ombudsman – Nature of complaints – Pre-requisite conditions for lodging complaint – Suggested amendments by the 'Law Commission'.

Unit – V Financial Regulatory Aspect of Solvency Margin & Investments and International Trends in Insurance Regulations

Financial Regulatory Aspect of Solvency Margin & Investments – Types of Reserves maintained by Insurance Companies – Reserving Process followed by Insurance Companies – Insurance Accounting.

International Trends in Insurance Regulation – Impact on the Indian Insurance Sector – Insurance Regulatory Systems of other countries.

Book for Study

Regulation of Insurance Business, Insurance Institute of India, Mumbai.

Books for Reference

1. Dr. A. Murthy, ***Principles of Insurance,*** Margam Publications, Chennai.
2. Dr.P.Periasamy, ***Principles & Practice of Insurance***, Himalaya Publishing House, Mumbai
3. Dr. P.K. Gupta, ***Insurance and Risk Management***, Himalaya Publishing House, Mumbai.
4. M.N Mishra & S.B. Mishra. ***Insurance Principles and Practice***, S. Chand & Company Ltd., New Delhi.
5. http://.insuranceinstituteofindia.com, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U4KMC11	**Special Accounts**	4	90	25	75	100

Learning Objectives

- To make solid foundations on accounting of various special types of business activities viz., Branch, Departmental Accounting, Hire purchase & Installment purchase system.
- To prepare final accounts for service industry viz., Banking and Insurance Industry
- To familiarize with accounting relating to shipping company and investment companies

Learning Outcomes: Depth working knowledge on preparation of accounts for special types of business and ability to preparation of final accounts of banking and insurance companies

Unit – I Branch and Departmental Accounting Treatment

Branch Accounts – Dependent Branch – Accounting of Various Types of Dependent – Branches – Invoice Price Method – Independent Branches.

Departmental Accounts – Allocation of Expenses – Inter Department Transfers – Departmental Trading Profit & Loss Accounts.

Unit – II Hire Purchase and Instalment Purchase Systems

Meaning – Calculation of Interest – Cash Price – Entries – Ledger Accounts in the books of Buyer and Seller – Default and Repossession – Complete and Partial – Instalment Purchase System.

Unit – III Bank Accounts

Meaning – Rebate on Bills Discounted – Interest on Doubtful Debts – Preparation of Profit and Loss Account and Balance Sheet with Relevant Schedules (New Method) – Non Performing Assets (NPA)

Unit – IV Insurance Company Accounts

Life Insurance – Revenue Account Valuation – Balance Sheet (New Method) – General Insurance – Fire and Marine Revenue Account – Profit and Loss Appropriation Account and Balance Sheet (New Method).

Unit – V Shipping Company and Investment Accounts

Voyage – Meaning – Complete and Incomplete Voyage Account. Investment Account – Accounting Treatment – Types of Securities-cum Interest and Ex interest.

Note: The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Book for Study

S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol-I**,** Nineteenth Edition, 2015, Kalyani Publishers, Ludhiana

Books for Reference

4. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
5. M.A. Arulanandam & K.S. Raman, "***Advanced Accountancy"*** Vol-I, Sixth Edition, 2015, Himalaya Publishing House, Mumbai.
6. Reddy & Murthy, ***"Financial Accounting",*** Margham Publication, Chennai.
7. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.edx.org.

Course Code	Course Title	C	H	I	E	T
17U4IAC4	**Banking and Allied Laws - I**	4	75	25	75	100

Learning Objectives

- To gain the comprehensive knowledge on the Banking Law and business law viz., Contract Act
- To know the legal framework for special contract and sale of goods act
- To learn about Indian Partnership Act

Learning Outcomes: Basic knowledge on legal framework of regulation of banks, contract act, special contracts sales of goods act, Partnership act and its relevance in banking business

Unit – I Legal Framework of Regulation of Banks

Introduction – Central Bank – Public sector, Private sector, RRBs, and Co-operative Banks. Control over organisation of Banks. Regulation of Banking Business – Reserve Bank of India (RBI) Act 1932 – Banking Regulation Act 1956 – Negotiable Instrument Act,1881.

Unit – II Indian Contract Act,1872

Introduction – Contract – Agreement – Types of Contract – Essential elements of Contract – Wagering and Contingent contract – Quasi Contract – Contract Act and Banking.

Unit – III Specific Contracts

Contract of Indemnity – Meaning – Rights of Indemnity holder – Implied Indemnity – Enforceability. Contract of Guarantee – Meaning - Parties – Basic principles – Liability of Surety. Contract of Bailment – Meaning – Kinds of Bailment – Duties of Bailee and Bailer – Bailee's Lien. Contract of Pledge – Meaning – Ingredients of Pledge – Nature of Pledge. Contract of Agency – Meaning – Rights – Termination.

Unit – IV Sale of Goods Act, 1930

Meaning – Features – Sale & Agreement to Sell – Distinction between Sale and Agreement. Conditions and Warranty – Introduction – Meaning – Implied conditions and Warranty – Rights of unpaid of seller.

Unit – V Indian Partnership Act, 1932

Meaning – Nature – Types of Partners – Limited Liability Partnership (LLP) – Features – Relation of Partner to one another – Relation of Partners to third parties – Duties of Partners – Dissolution of Firm – Effect of Non Registration.

Books for Study

Legal and Regulatory Aspects of Banking, IIBF, MacMillan Publications, Mumbai.

Books for Reference

1. S.N Maheshwari & S.K. Maheshwari, ***A Manual of Business Law***, Edition 2016, Himalaya Publishing House, Delhi.
2. www.icai.org.in, www.icmai.in, www.icsi.edu.in

Course Code	Course Title	C	H	I	E	T
17U4AAC5	**Business Economics**	4	60	25	75	100

Learning Objectives

- To provide basic knowledge on business economics and understand the various concepts that aid in decision making
- To familiarize the concept of demand and demand forecasting and determination of elasticity of demand in various situations
- To have better knowledge on production cost analysis with factors of production
- To aware knowledge on pricing and pricing policies in various situations

Learning Outcomes: Basic knowledge on business economics and fundamental aids to decision making. Depth knowledge on Demand and Demand forecasting and understanding of pricing policies and strategies.

UNIT – I Introduction

Definition – Nature and Scope of Business Economics – Fundamental Concepts – Aids to Decision Making – Opportunity Cost Principle – Equi – Marginal Principle – Incremental Principle – Time Perspective Principle – Discounting Principle

Unit II: Cardinal Utility Analysis

Introduction - Concepts of Utility - Total, Marginal Utility - Law of Diminishing Marginal Utility - Law of Equi-Marginal Utility - Consumer's surplus.

Unit III: Demand and Demand Forecasting

Demand – Meaning – Definition - Law of Demand - Demand determinants- Elasticity of Demand - Types of Elasticity of Demand - Degrees of Price Elasticity of Demand - Measurement of elasticity of Demand - Meaning of demand forecasting - Methods of demand forecasting for established products.

Unit IV: Production, Costs and Revenue Analysis

Introduction - Features of factors of production - Law of returns (Increasing, Constant and Diminishing) – Isoquant - Iso-cost line- TC – VC – FC – AC – MC – AR – MR - Factors of Production.

Unit V: Pricing Policies and Strategies

Pricing - Pricing policy - Formulation of pricing policy - Objectives of pricing policy - Factors involved pricing policy - Pricing strategies - Skimming pricing and Penetration pricing - Pricing over the life cycle of a product - Cyclical pricing - Transfer pricing - Differential pricing - Full cost pricing. Business Cycle – Phases – Remedies.

Books for Study:

1. R. Cauvery, U.K. Sudha Nayak, M. Girija and R. Meenakshi "***Managerial Economics",*** 2002, S.Chand & Co, New Delhi.
2. V.G. Mankar, "***Business Economics",*** 1999, Marcmillan India Ltd, New Delhi.

Reference Books

1. M.L. Jhingan and J. K Stephen, ***"Managerial Economics",*** 2012, Vrinda Publications (P) Ltd., Delhi.
2. Varshney and Maheswary, ***"Managerial Economics",*** 2004, Sultan Chand & Co., Delhi.
3. Managerial Economics, D. M. Mithani, ***"Managerial Economics",*** 2006, Himalaya Publishing House, Delhi.
4. www.icai.org.in, www.investopedia.com

Course Code	Course Title	**C**	**H**	**I**	**E**	**T**

17U4KSM4	**E-Commerce Applications**	2	30	25	75	100

Learning Objectives

- To know the concept of E Commerce and models of E Commerce and its applications
- To familiarize with Electronic Funds Transfer with security
- To have knowledge on Mobile Commerce and E Marketing and their applications.

Learning Outcomes: Knowledge and application of E Commerce, Electronic Funds Transfer and E Marking in the current business environment

Unit – I Introduction to E-Commerce

Definition of Electronic Commerce – E-Commerce and Traditional Commerce – Advantages of E-Commerce – Business, Consumers, Society and Nation – E-Business and E-Commerce – Need for E-business – Factors stressing the need for E-business.

Unit – II Models of E-Commerce & E-Commerce Applications

Business to Business E-Commerce (B2B) – Business to Consumers E-Commerce (B2C) – Consumer to Business E-Commerce (C2B) – Consumer to Consumer E-Commerce (C2C) – Business to Employee service E-Commerce (B2E) – Business to Government E-Commerce (B2G).

E-Commerce Applications – Electronic Banking – Difference between Internet Banking and Traditional Banking – Electronic Trading – Insurance – Healthcare – E-tailing – Electronic Auctions – Electronic Brokers – Electronic Searching – E-Agriculture – E-Governance in India – E-Governance Models

Unit – III Electronic Fund Transfer

Meaning – Benefits of Electronic Payment –Popular Electronic Payment Methods – Financial EDI – Credit Card System on the Internet – Components of Online Credit Processing Security Requirements in E- Payment Systems – Key Security Schemes – Secret Key Cryptography – Public Key Cryptography – Digital Signature.

Unit – IV Mobile Commerce

Mobile Commerce - Factors drive M-Commerce - Difference between E-Commerce and M-Commerce - Growth of M-Commerce in India - Applications of M-Commerce.

Unit – V E-Marketing

Meaning – Advantages – E-Customers Relationship Management (E-CRM) – Advantages of using technologies for providing customer support – Phases of E-CRM – Features of E-CRM Software – E-CRM Work Model.

Books for Study

Dr. K. Abirami Devi & Dr. M. Alagammai, ***E-Commerce***, Margham Publication, Chennai.

Books for Reference

1. Nidhi Dhawan, ***E-Commerce Concepts and Applications***, International Book House Pvt. Ltd. New Delhi.
2. S.V. Srinivasan, ***E-Commerce***, Vijay Nicole Imprints Pvt. Ltd.
3. www.investopedia.com.

Commerce - UG

B.Com (Capital Market)

I Semester & II Semester Course Structure under CBCS Pattern with effect from the Academic Year 2018-19

Semester I		First Year			Semester II				
Category	**Course Code**	**Paper**	**Hrs**	**Credit**	**Category**	**Course Code**	**Paper**	**Hrs**	**Credit**
Part I	17U1KLA1	Business Communication	4	3	**Part I**	17U2KLA2	Technology for Business Applications	4	3
Part II	17U1KEN1	English - I	6	4	**Part II**	17U2KEN2	English - II	6	4
Part III					**Part III**				
Core 1	17U1KMC1	Financial Accounting -I	6	4	Core 3	17U2KMC3	Financial Accounting-II	6	4
Core 2	18U1XMC2	Introduction to Financial and Capital Market Operations	6	4	Core 4	17U2KMC4	Business Statistics	6	4
Allied 1	17U1IAC1	Business Mathematics	4	4	Core 5	17U2KMC5	Marketing	4	4
Part IV					**Part IV**				
Skill Based Elective	18U1XSM1	NSE Learn to Trade (NLT) – I (Lab)	2	2	Skill Based Elective	18U2XSM2	NSE Learn to Trade (NLT) – II (Lab)	2	2
Skill Based Elective		Environmental Studies	2	2	Skill Based Elective		Value Education	2	2
		Total	**30**	**22**			**Total**	**30**	**22**

Course Code	Course Title	C	H	I	E	T
17U1KLA1	**Business Communication**	4	60	25	75	100

Learning Objectives:

- To know basic concept of communication and essentials of effective communication
- To aware about various types of communication
- To be able to prepare resume and report writing independently

Learning Outcomes: Knowledge on Communication and its types. Ability to prepare resume and report writing independently.

Unit I: Introduction to Communication

Meaning - Definition - Characteristics – Process - Essentials of Effective Communication - Forms of Communication - Verbal and Non-Verbal - Types - Formal and Informal - Media of Communication - Written – Oral - Visual - Audio Visual - Computer based Communication - Barriers and remedies.

Unit II: Written Communication

Meaning - Business Letters - Essentials of a good Business Letter - Layout - Trade Letters – Enquiries & Offers – Quotations – Orders - Circular Letters - Sales Letters - E-mail Etiquettes.

Unit III: Oral Communication

Oral and other forms of Communication – Speeches - Group Communication - Presentations - Listening – Dialogue skills.

Unit IV: Drafting of a resume

Application for a situation – Structure - Preparation of Curriculum vitae – Drafting an application for different positions.

Unit V: Report Writing

Meaning - Types of Business Reports - Structure of a Report - Stock exchange reports and Sales reports.

Text Book

1. Urmila Rai & S.M Rai, ***"Business Communication"***, Second Edition, 2015, Himalaya Publishing House, Mumbai.

Reference Books

1. Rajendra Pal & J.S. Korlahalli, "***Essentials of Business Communication***", Thirteenth Edition, 2013, Sultan Chand & Sons, New Delhi.
2. M.S. Ramesh, C.C. Pattanshetti***"Business Communication",*** Twenty Eight Edition, 2015, R. Chand & Co, New Delhi.
3. R.S.N. Pillai & Bagavathi, ***"Modern Commercial Correspondence",*** 2007, S.Chand & Company Ltd, New Delhi.
4. Herta A Murphy, Herbert W Hildebrandt & Jane P. Thomas, Seventh Edition, 2010, "***Effective Business Communication",*** MCGraw Hill Education Private Limited, New Delhi.
5. Sanjay Kumar & Pushp Lata, 2012, ***"Communication Skills",*** Oxford University Press.
6. www.investopedia.com, www.businessdictionary .com

Course Code	Course Title	C	H	I	E	T
17U1KMC1	**Financial Accounting – I**	4	90	25	75	100

Learning Objectives:

- To know the basic concepts and convention of accounting
- To able to prepare final accounts independently
- To gain working knowledge on Accounting for insurance claims and Average due date

Learning Outcomes: Gaining knowledge on Principles of accounting and ability to prepare final accounts and accounting for insurance claims

Unit I: Introduction to Financial Accounting

Definition – Accounting Principles, Concepts and Conventions – Rules – Accounting Equation – Double Entry System - Advantages of Double entry system - Basic knowledge of Accounting Standards and Ind AS.

Unit II: Subsidiary Books

Bank Reconciliation Statement – Trial Balance – Rectification of errors – Suspense Account – Effect of errors on profit.

Unit III: Final Accounts

Preparation of Manufacturing, Trading and Profit and Loss Account and Balance Sheet – Adjustment Entries – Closing entries.

Unit IV: Depreciation

Meaning – Causes – Fixed installment method, Written down value method, Change in the providing depreciation with Prospective and Retrospective Effect, Annuity method, Sinking fund method, Insurance policy method – Application of depreciation as per Companies Act (useful life method) and Income-Tax Act.

Unit V: Accounting for Insurance Claims and Average Due Date

Accounting for Insurance claims- Loss of Stock – Loss of Profit (Simple Problems Only). Average Due Date and Account Current.

The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Text Book

1. S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol-I**,** Nineteenth Edition, 2015, Kalyani Publishers, Mumbai.

Reference Books

1. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol-I, 2015, Sultan Chand & Sons, New Delhi.
2. M.A. Arulanandam & K.S. Raman, "***Advanced Accountancy"*** Vol-I, Sixth Edition, 2015, Himalaya Publishing House, Mumbai.
3. S. N. Maheshwari & Suneel K Maheshwari, ***"Financial Accounting",*** Fifth Edition, 2012, Vikas Publishing House.
4. R.S.N. Pillai, Bagavathi & S. Uma, ***"Fundamentals of Advanced Accountancy",*** Third Edition, 2015, S. Chand, New Delhi.
5. SP. Iyengar, "***Advanced Accountancy"*** Vol-I***,*** Fourth Edition, 2004.Sultan Chand & Sons, New Delhi.
6. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.investopedia.com, www.edx.org

Course Code	Course Title	C	H	I	E	T
18U1XMC2	**Introduction to Financial Market & Capital Market Operation**	4	90	25	75	100

Learning objectives:

- To enlighten the knowledge on conceptual frame of financial and capital markets
- To gain knowledge on derivatives market
- To be able work on Trading, Clearing and Settlement procedure
- To learn comprehensive knowledge on legal frame work on capital market operations

Learning Outcomes: Basic knowledge on financial market with special reference to capital market operations. Skill on Trading, Clearing and Settlement procedure in stock market operations

Unit – I Financial Markets

Markets and Financial Instruments – Types of Markets – Equity Debt – Derivatives commodities – Features of Private & Public Companies – Types of Investment Avenues

Primary Market – Initial Public Offer (IPO) – Book Building through online IIPO – Eligibility to issue securities – Pricing of issues – Fixed Vs Book building issues – Allotment of shares – Basis of Allotment – Private placement.

Secondary Market – Role and Functions of Securities and Exchange Board of India (SEBI) - Depositories – Stock Exchanges – Intermediaries in the Indian Stock Market Listing – Membership – Trading clearing settlement and Risk Management – Investor Protection Fund (IPF) – Do's and Don'ts for investors – Equity and debt investment

Unit – II Derivatives and Financial Statement Analysis

Derivatives – Types of Derivatives – Commodity and commodity exchanges – Commodity Vs Financial derivatives.

Financial Statement Analysis – Balance Sheet – Profit & Loss account – Stock market related ratios – Simple analysis before investing in the shares – Understanding Annual Report.

Unit – III Capital Market

An overview of the Indian Securities Market – Market segments – Key Indicators of Securities Market - Products and Participants – Market Segments and their Products – Reforms in Indian Securities Markets

Trading Membership – Stock brokers – NSE membership – Surrender of trading membership – Suspension & expulsion of membership – Declaration of defaulter – Authorized persons – Sub-brokers, Broker-clients relations – Sub-broker-clients relations – Investors Service Cell and Arbitration – Code of Advertisement.

Unit – IV Trading, Clearing and Settlement

Trading – Introduction - NEAT system – Market types – Trading system users hierarchy – Local Database – Market Phases – Logging on – Log off/exit from the application – Neat screen – Invoking and inquiry screen – Order Management – Trade Management – Limited Physical market – Block trading session – Retail debt market (RDM) – Trading information downloaded to members – Internet broking – Wireless Application Protocol (WAP) – Computer to computer link (CTCL) facility.

Clearing and Settlement – Introduction – Key terminology used in clearing and settlement process – Transaction cycle – Settlement process – Securities and funds settlement – Shortages handling – Risk in settlement – Risk management – International securities identification number – Data and Report downloads.

Unit – V Legal Framework and Fundamental Valuation concept

Legal Framework – SEBI (intermediaries)Regulations, 2008 – SEBI (prohibited of insider trading) Regulations, 1992 – SEBI (prohibition of fraudulent and unfair trade practices relating to, Securities market) Regulations, 2003 – The Depositories Act, 1996 – Indian Contract Act, 1872 – Income Tax Act, 1961.

Fundamental Valuation concept – Time value of money – Understanding financial statement.

Books for Study

1. ***Introduction to Financial Market & Capital Market Operation***, NSE Study Material.
2. Gordon & Natarajan , ***Financial Markets and Services***, Himalaya Publishing House, Mumbai.

Books for Reference

1. Bholey L.M. ***New Issues Market of India***, Vara Publication Ltd, Mumbai.
2. ***Capital markets and Securities Laws***, The Institute of Company Secretaries of India, New Delhi.
3. Srivasta R.M, ***Management of Indian Financial Institution,*** Himalaya Publishing House, Mumbai
4. Khan MY, ***Indian Financial Theory and Practice***, Vikas Publishing House, Delhi
5. Bholey, ***Financial Markets and Institutions***, Vara Publication, Mumbai.
6. www.sebi.gov.in

Course Code	Course Title	C	H	I	E	T
17U1IAC1	**Business Mathematics**	4	60	25	75	100

Learning Objectives:

- To know mathematical knowledge on Ratios, Proportions, Matrices, Determinants.
- To be able solve simple mathematical problems pertaining to commerce field

Learning Outcomes: Basic knowledge on set, Ratios, Proportions, Matrices and Determinants. Skill on Commercial arithmetic.

Unit I Ratios and Proportions

Theory of Indices and Surds - Logarithms.

Unit II Matrices and Determinants

Solving Equations using Crammers Rule and Matrix Inversion only - Permutations and Combinations - Progressions - Arithmetic and Geometric.

Unit III Set Theory

Theory of Equations - Linear and Simultaneous Equations – Quadratic Equations. Introduction to Boolean Algebra (Properties only).

Unit IV Calculus

Basic concepts of Differential and Integral Calculus - Applications of Standard Results - Simple application of Differentiation and Integration of Commerce and Economics.

Unit V Commercial Arithmetic

Interest and Annuities - Simple and Compound Interest - Rule 72 – EMI – Annuity - Future value - Present value - Sinking fund.

Text Book

1. C.K. Ranganath, C.S. Sampagiram and Y. Rajaram, ***"Business Mathematics",*** Third Edition, 2014, Himalaya Publishing House, Mumbai.

Reference Books

1. Qazi Zameeruddin, Vijay K Khanna & S.K. Bhambri, ***"Business Mathematics",*** Second Edition, 2015, Vikas Publishing House Pvt Ltd.
2. V. Sundaresan and S.D.Jeyaseelan, ***"An Introduction to Business Mathematics",*** 2010, S.Chand (G/L) & Company Ltd.
3. D.C. Sanchetti & V.K. Kapoor, ***"Business Mathematics",*** Eleventh Edition, 2014, Sulthan Chand & Sons.
4. P.R. Vittal, ***"Business Mathematics & Statistics",*** 2012, Margham Publications, Chennai.
5. www.icai.org.in
6. www.icmai.in

Course Code	Course Title	C	H	I	E	T
18U1XSM1	**NSE* Learn to Trade (NLT) – I (Lab)**	2	30	25	75	100

Learning Objectives:

- To acquire skill relating to capital market operations
- To get hands on training on NSE Learn to Trade

Learning Outcomes: Knowledge on NSE portals. Skill on Capital market operations independently.

Unit – I NSA - Numeric Speed Accelerator

Unit – II FKA – Function Key Accelerator

Unit – III TSA – Trading Skill Accelerator

Unit – IV ASA – Arithmetic Skill Accelerator – I

Unit – V ASA – Arithmetic Skill Accelerator – II

Note: 100% Lab.

NSE* National Stock Exchange

Book for Study

Study Material, National Stock Exchange, Mumbai.

Course Code	Course Title	C	H	I	E	T
17U2KLA2	**Technology for Business Applications**	3	60	25	75	100

Learning Objectives

- To know basic concept of computer and anatomy of a digital computer
- To gain knowledge on Date base management systems
- To have working knowledge on MS Office and MS access

Learning Outcomes: Basic understanding of concept of computer and its anatomy. Awareness about DBMS and complete hand on training on MS office

Unit I: Introduction to Computer

Introduction - Types of Computers - Characteristics of Computers – Classification of Digital Computers Systems – Micro Computers, Mini Computers, Main Frame Computers, Super Computers, Net work Computers – Uses of Computers.

Unit II: Anatomy of a Digital Computer

Digital Computers - Functions and Components of a Computer – CPU – ALU – Memory – Registers – Address – Computer Architecture – Memory Units – RAM, ROM, FROM, EPROM, EEPROM, FLASH MEMORY – Auxiliary Storage Devices. Machine Language – Assemble language – High level language – Compilers and Interpreters.

Unit III: Data Base Management Systems

Introduction – Meaning - History of Information - Quality of Information - Information Processing - Characteristics of Data in Data Base - Types of Data Base Management Systems.

Unit IV: MS Word

Introduction – Creating word document - Editing text - Creating a Resume Wizard – Adding and Formatting Numbers and Symbols - Print. MS Excel - Creating Tables, Graphs and Charts – Finance, Mathematical and Statistical Functions. Power Point - Presentation through Templates.

Unit V: MS Access

Introduction – Creation of Table – Preparation of Pay Roll - Report for Product Data Base - Big Data - Data Mining - Data Warehousing – Cloud Computing - Knowledge Management System - An overview of Statistical Package for Social Science (SPSS).

Text Book

1. Alexis Leon & Mathews Leon, ***"Fundamentals of Information Technology",*** 2013, Vijay Nicole Imprints Pvt., Ltd., Chennai.

Reference Books

1. **M**anas Parhi & Jagjit Singh, ***"Information Technology for Business"***, 2003, Unistar Books Pvt., Ltd.
2. Dennis P. Curtin, Kim Foley, Kunal Sen, & Cathleen Morin, ***"Information Technology"***, 2013, McGrraw Hill Education (India)Pvt., Ltd.
3. Chetan Srivastava, ***"Principles of Information Technology",*** 2004, Kalyani Publishers, New Delhi.
4. Brain K. Williams & Stacey. C. Sawyer, ***"Using Information Technology",*** Third Edition, 2003, Tata McGraw-Hill Publishing Company Ltd., New Delhi.
5. www.investopedia.com, www.businessdictionary .com, www.techforbusiness.com

Course Code	Course Title	C	H	I	E	T
17U2KMC3	**Financial Accounting - II**	4	90	25	75	100

Learning Objectives:

- To know the basic concept of Consignment and Joint venture accounting
- To able to prepare final accounts for accounts of incomplete records
- To gain working knowledge on Accounting for Non trading concerns

Learning Outcomes: Advanced working knowledge on accounting for Consignment, Joint Venture, Accounting for Incomplete records and Non trading concerns

Unit I: Consignment (Hours 18)

Meaning - Distinction between sale and consignment – Account sale – Journal entries and Ledger Accounts in the books of consignor and consignee – Valuation of unsold stock on Consignment – Normal loss and Abnormal loss – Invoicing goods higher than cost.

Unit II: Joint Venture (Hours 18)

Meaning - Journal & Ledger Accounts in the books of Venturers - Existing books - Separate Set of Books - Memorandum Joint Venture method.

Unit III: Self- Balancing Ledgers (Hours 18)

Meaning - Sectional Balancing (Excluding Errors affecting Self Balancing Ledgers) Royalty Account: Meaning - Minimum Rent- Short working - Recouping short workings- Restricted and unrestricted – Entries and Ledger Accounts in the Books of Lessor and Lessee – Sub-Lease.

Unit IV: Accounting for Incomplete Records (Hours 18)

Introduction - Ascertainment of Profit – Net worth Method - Conversion Method.

Unit V: Financial Statements for Not-for-Profit Organisation (Hours 18)

Meaning- Distinction between profitable and Not for Profitable Organisation – Books to be maintained - Distinction between Capital and Revenue – Basic Records – Preparation of Income and Expenditure Account and Balance sheet from Receipts and Payments and vice versa.

Text Book

1. S.P. Jain & K.L Narang, ***"Advanced Accountancy"*** Vol- I**,** Nineteenth Edition, 2015, Kalyani Publishers, Mumbai.

Reference Books

1. R.L. Gupta & M. Radhaswamy, ***"Advanced Accountancy"*** Vol- I, 2015, Sultan Chand & Sons, New Delhi.
2. M.A. Arulanandam & K.S. Raman, "***Advanced Accountancy"*** Vol- I, Sixth Edition, 2015, Himalaya Publishing House, Mumbai.
3. S. N. Maheshwari & Suneel K Maheshwari, ***"Financial Accounting",*** Fifth Edition, 2012, Vikas Publishing House.
4. R.S.N. Pillai, Bagavathi & S. Uma, ***"Fundamentals of Advanced Accountancy",*** Third Edition, 2015, S. Chand, New Delhi.
5. SP. Iyengar, "***Advanced Accountancy"*** Vol-I**,** Fourth Edition, 2004, Sultan Chand & Sons, New Delhi.

Course Code	Course Title	C	H	I	E	T
17U2KMC4	**Business Statistics**	4	90	25	75	100

Learning Objectives:

- To know the concept of statistics and its applications in business
- To be able to calculate measures of central tendency, measures of dispersion
- To gain working knowledge on correlation and regression
- To acquire skills towards solving problems in time series analysis

Learning Outcomes: Knowledge on Date analysis and presentation of data. Ability to calculate Mean, Median, Mode and Standard Deviation. Ability to predict the future by Regression and Analysis of time series

Unit I: Introduction to Statistics

Definition – Functions - Collection, Classification, Tabulation and Presentation of Data - Frequency Distribution - Graphical and Diagrammatic Presentation – Histogram - Frequency Polygon – Ogive - Bar and Pie Diagram.

Unit II: Measures of Central Tendency

Mean – Meaning – Definition – Arithmetic Mean, Geometric Mean & Harmonic Mean – Combined Mean - Median, Quartiles, Deciles and Percentiles – Mode (Uni and Bi Model) - Measures of Dispersion – Range - Standard Deviation - Combined Standard Deviation - Coefficient of Variation.

Unit III: Correlation and Regression Analysis

Correlation - Meaning – Definition - Types - Measures of Correlations - Karl Pearson's Coefficient of Correlation – Rank Coefficient of Correlation – Concurrent Deviation.

Regression Analysis – Meaning - Definition - Regression Lines.

Unit IV: Index Numbers and Analysis of Time series

Index Numbers – Meaning – Types – Definition - Methods - Tests of consistency of Index number (Time reversal & Factor reversal test) - Cost of Living Index – Chain Base – Fixed Base – Base shifting.

Analysis of Time Series – Meaning – Definition - Models - Method of Least Square and Moving Average.

Unit V: Probability

Meaning - Addition - Multiplication – Conditional - Bayes' Theorem - Mathematical Expectation.

The Questions should be asked in the ratio of 80% Problems and 20 % for theory

Text Book

1. RSN. Pillai & Bagavathi, "***Business Statistics"***, Eight Edition, 2016, S.Chand & Co Pvt., Ltd., New Delh.

Reference Books

1. S.P. Gupta, ***"Statistical Methods",*** Forty Fourth Edition, 2014, Sultan Chand & Sons, New Delhi.
2. S.C. Gupta & V.K. Kapoor, ***"Fundamentals of Mathematical Statistics",*** 2014, Sultan Chand & Sons, New Delhi.
3. J.K. Sharma, "***Fundamentals of Business Statistics",*** Second Edition, 2014, Vikas Publishing House Pvt., Ltd., Noida.
4. B.M. Aggarwal, ***"Business Mathematics and Statistics Fundamentals",*** Twentieth Edition, 2008, Sultan Chand & Sons, New Delhi.
5. www.icai.org.in, www.icmai.in, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17U2KMC5	**Marketing**	4	60	25	75	100

Learning Objectives

- To know the basic concept of marketing and various approaches of marketing
- To gain advanced knowledge on functions of marketing and Consumer Behaviour
- To acquaint the concept of Marketing mix and its relevance
- To put on knowledge on Services marketing

Learning Outcomes: Knowledge on Marketing, functions, marketing mix and services marketing. Ability to connect the proper marketing strategies in the business

Unit I: Introductions to Marketing

Definition – Importance – Evolution of Marketing Concept – Marketing Functions – Classification – Approaches to the Study of Marketing – Meaning of market – Kinds of Market – Market Segmentation – Methods of Segmentation - Concept of Market Targeting and Positioning.

Unit II: Functions of Exchange

Introduction - Buying – Meaning – Kinds of buyers – Elements of buying – Methods of buying – Assembling. Selling – Meaning – Elements of Selling – Kinds of Selling. Functions of Physical Supply: Transportation – Importance and Functions – Modes of Transportation – Storage and Warehousing – Meaning – Functions – Types of Warehouses.

Unit III: Consumer Behaviour

Introduction - Buying Motive - Determinants – Buying Process. Standardization & Grading – Meaning – Importance of Standardization & Grading in India – Bureau of Indian Standards – AGMARK – Meaning and uses.

Unit IV: Marketing Mix

Introduction – Meaning - 4 P's - Product, Price, Place and Promotion - Product Planning & Development – Meaning and Importance – Steps involved in the Development of a New Product – Product and Product Line Modification – Diversification – Simplification – Product Life Cycle – Stages in the product life cycle – Reasons for new product failure.

Unit V: Service Marketing

Introduction - Definition - 3 P's- People, Process and Physical evidence - Reasons for Growth - Characteristics of Services – Intangibility – Inseparability – Heterogeneity – Perishability - Ownership - Marketing Mix in Service Marketing - Service Quality.

Text Book

1. R.S.N. Pillai and Bagavati, **"*Modern Marketing Principles & Practices",*** Fourth Edition, 2015, S.Chand & Company Pvt., Ltd., New Delhi.

Reference Books

1. **P**hilip Kotler, Gary Armstrong, Prafulla Y. Agnihotri and Ehsan ul Haque, ***"Principles of Marketing- A South Asian Perspective",*** Thirteenth Edition, 2010, Pearson India.
2. N. Rajan Nair & Sanjith R Nair, ***"Marketing",*** *2011,* Sultan Chand & Sons, New Delhi.11.
3. S.A. Sherlekar**,** ***"Modern Marketing",*** 2016, Himalaya Publishing House, Mumbai, Second Edition.
4. S.M. Jha, ***"Services Marketing",*** Sixth Edition, 2009, Himalaya Publishing House.
5. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
18U2XSM2	**NSE* Learn to Trade (NLT) – II (Lab)**	2	30	25	75	100

Learning Objectives:

- To acquire skill relating to capital market operations through Lab
- To get hands on training on NSE Learn to Trade

Learning Outcomes: Knowledge on NSE portals. Skill on Capital market operations independently.

Unit – I NSS – NOW (NEAT** on Web) Simulation Equity Shares

Unit – II NSD - NOW (NEAT on Web) Simulation Equity Derivatives - I

Unit – III NSD - NOW (NEAT on Web) Simulation Equity Derivatives - II

Unit – IV NSC - NOW (NEAT on Web) Simulation Currency Derivatives

Unit – V NSM – NOW (NEAT on Web) Simulation Mutual Fund Service

Note: 100% Lab.

*NSE – National Stock Exchange

**NEAT – NSE Enterprises Architecture Terminal

Book for Study

Study Material, National Stock Exchange, Mumbai.

Commerce - PG

M.Com

III Semester & IV Semester Course Structure under CBCS Pattern

Second Year							
Semester – III				**Semester- IV**			
Course Code	**Paper**	**Hours**	**Credit**	**Course Code**	**Paper**	**Hours**	**Credit**
17P3KMC11	Security Analysis and Portfolio Management	5	4	17P4KMC15	Human Resource Management	6	4
17P3KMC12	Export Management	5	4	17P4KMC16	Applied Operations Research	6	5
17P3KMC13	Corporate Finance	5	4	17P4KMC17	Strategic Cost Management	6	4
17P3KMC14	Internet and E-Commerce	5	4	17P4KME2	Project Management	6	4
17P3KME1	Applied Direct Taxation	6	5	17P4KME3	Applied Indirect Taxation	6	4
17P3KNM1	Entrepreneurial Skill Development	4	4	17P4KPR1	Project - optional	--	2 Extra
	Total	**30**	**25**		**Total**	**30**	**21 + 2**

Course Code	Course Title	C	H	I	E	T
17P3KMC11	**Security Analysis and Portfolio Management**	4	75	25	75	100

Learning objectives

- To gain knowledge of investments and investment alternatives
- To develop ability to value the securities by fundamental and technical analysis
- To understand the concept of derivatives and ability to construct and evaluate the portfolio

Learning Outcomes: Advanced knowledge on investment management. Skill towards fundamental and technical analysis. Understanding of derivatives market and portfolio management and evaluation

Unit-I Introduction

Nature and scope – Meaning – Objectives of investment – Factors favorable for investment – Features of an Investment Programme – Investment process – Investment opportunities – Investment media – Investment Alternatives – Bonds, Preference Shares and Equity shares – Risk and Returns – Systematic Risk, Unsystematic Risk –Measurement of returns – Traditional Technique, Modern Technique

Unit-II Security Valuation

Security Valuation – Basic Valuation Models – Bonds – Preference Shares – Common Stock. – Dividend concept, Earnings concept – Efficient Market Theory – Efficient Market Hypothesis – Empirical Analysis – Random Walk Model – Recent Trends

Unit – III Fundamental and Technical Analysis

Fundamental analysis – Industrial analysis – Company analysis – Economy analysis –Technical analysis – Timing in investment – Tools of technical analysis – Market movements – Moving average analysis – Dow Theory – Recent Trends

Unit – IV Derivatives

Meaning – Classification – Commodity Derivatives – Financial Derivatives – Basic Derivatives – Complex Derivatives – Exchange Traded Derivatives – OTC Derivatives – Characteristic of Derivatives – Participants in Derivatives Market - Forwards – Futures – Options – Swaps – Derivative Markets in India

Unit V: Portfolio Management & Evaluation

Introduction – Time value of money application to portfolio management – MPT and Dominance concept – SEBI guidelines for portfolio managers and portfolio management service – Importance of Beta – Capital Market Theory – Capital Asset Pricing Model –Security Market Line – Arbitrage Pricing Theory – Recent Trends.

Portfolio evaluation – Need and the Process of evaluation. Portfolio Revision – The formula plan – Rupee Cost Averaging – Constant Rupee Value – The constant ratio and variable ratio plans.

Books for Study

Preethi Singh. ***Investment Management***. Mumbai: Himalaya Publishing House, 2014. Print.

Books for Reference

1. Avadhani V.A. ***Securities Analysis & Portfolio Management***. Himalaya Publishing House, 2013, Mumbai.
2. Pandian Punithavathy - ***Security Analysis And Portfolio Management***, Vikas Publishing House.
3. Lee, Cheng F. ***Advances in Investment Analysis and Portfolio Management***. Science & Technology Books.
4. Bhalla **V.K.** ***Investment Management***. Sultan Chand & Co., New Delhi
5. www.investopedia.com, www.sebi.gov.in

Course Code	Course Title	C	H	I	E	T
17P3KMC12	**Export Management**	4	75	25	75	100

Learning Objectives

- To gain knowledge on export management and INCO terms
- To gain ability to handle export procedure and documentation independently
- To understand and apply export promotion, pricing and logistics.

Learning Outcomes: Higher Knowledge on export management, ability to prepare export documentation independently. Application knowledge of export pricing and distribution logistics

Unit – I Introduction to Export

Meaning – Definition – Nature, Scope and Significance of Export – Balance of Trade and Balance of Payment – Disequilibrium – Methods of Correction of Disequilibrium – Exchange Control. International Commercial Terms (INCO Terms) EXW - FCA– FAS – FoB – C&F – CIP – CPT – DAF – DES – DEQ – DDU – DDP.

Unit – II Export Procedure & Export Documentations

Processing of Export Order – Excise Clearance – Customs Clearance – Quality and pre – shipment inspection – Bank procedures – Duty Draw back.

Export Documentations – Documents Relating to Goods – Documents Relating to Shipping– Combined Transportation Documents – Certificate of Inspection – Appropriate forms.

Unit – III Export Finance & International Institutions

Export Finance – Pre-shipment credit – Post shipment credit.
WTO – Role and Functions of WTO – UNCTAD – Institutions in India – ECGC – EXIM Bank.

Unit – IV Export Promotion

Institutional Support – Other Promotional measures – Special Economic Zones (SEZ) – Export Oriented Units (EOU) - Concessions. EXIM Policy.

Unit – V Export Pricing and Distribution Logistics for Exports

Export Pricing – Factors influencing Export Pricing – Pricing objectives – Steps in Pricing – Different types of Pricing – Dumping and Anti Dumping.,

Distribution logistics for exports – Management of Risk – Marketing plan for export.

Book for Study

Francis Cherunilam, ***International Trade and Export Management***, 20th Revised Edition, 2017, Himalaya Publishing House, Mumbai.

Books for Reference

1. T.A.S Balagobal, ***Export Management***, Himalaya Publishing House, Mumbai
2. C. Jeevanandam, ***Foreign Exchange, Practice, Concepts & Control***, Sultan Chand & Sons, New Delhi.
3. Dr. S. Sankaran, ***International Trade***, Margham Publications, Chennai.
4. Dr. V. Radha, ***International Trade,*** Prassanna Publishers & Distributors, Chennai.
5. www.wto.org.in, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17P3KMC13	**Corporate Finance**	4	75	25	75	100

Learning Objectives

- To understand the concept of finance &finance functions, and familiarize with the various sources of funds
- To calculate cost of capital, Leverages and optimizing EPS though capital structure models.
- To make a decision long term investment proposals by using Payback, NPV, IRR & ARR and prepare statement of working capital requirements independently**.**
- To familiarize the concept of dividend policy and its relevance in corporate

Learning outcomes: In-depth knowledge on corporate finance, ability to determine and calculate optimum capital structure. Independent appraisal of capital investment, working capital and dividend decisions.

Unit – I Introduction to Corporate Finance

Definition - Scope – Objectives – Functions - Responsibility of Financial manager – Financial Decisions – Sources of funds – Long term – Short term sources.

Unit – II Cost of Capital, Capital Structure and Leverages

Cost of Capital-Meaning – Importance – Measurement - Cost of Debenture, Preference share, Equity share, Retained Earnings – Weighted Average Cost. Capital structure - Theories of Capital Structure – Designing Optimum Capital structure – Indifference point – Financial Break Even point. Leverages – Meaning – Financial Leverage – Operating Leverage - Combined Leverage.

Unit – III Capital Budgeting

Meaning – Significances - Methods of appraisal-Pay back method- Discounted cash flow method – Discounted pay back – Net present value – Profitability index – Internal rate of return – Average rate return (ARR) – Capital rationing – Risk Analysing in Capital Budgeting.

Unit – IV Working Capital Management

Meaning – Types of working capital – Factors influencing working capital-Sources of working capital – Operating cycle – Estimation of working capital – Management of Cash – Receivables Management – Working Capital Financing.

Unit – V Dividend Policy

Meaning – Types of Dividend – Factors influencing Dividend Policies – Theories of Dividend Decisions – Relevance of Dividends – MM Theory – Irrelevance Dividend - Walter's Model – Gordon's Model – Dividend Capitalization Model – Determinants of Dividend Policy – Dividend Policy in India.

Note: The Questions should be asked in the ratio of 60% Problems and 40 % for theory

Book for Study

Shasi K. Gupta, ***Financial Management***, Kalyani Publishers, Ludiana.

Books for Reference

1. Ravi M. Kishore, ***Financial Management***, Taxmann Publications, New Delhi.
2. M.Y. Khan & P.K. Jain, ***Financial Management Text, Problems and Cases***, McGraw Hill Education Pvt. Ltd. New Delhi.
3. IM. Pandey, ***Financial Management***, Vikas Publishing House Pvt. Ltd. Noida.
4. Dr. A. Murthy, ***Financial Management***, Margham Publications, Chennai.
5. www.icai.org.in, www.icmai.in, www.investopedia.com, www.managementstudyguide.com

Course Code	Course Title	C	H	I	E	T
17P3KMC14	**Internet and E- Commerce**	4	75	25	75	100

Learning Objectives

- To know the concept of internet and models of E Commerce and its applications
- To familiarize with Electronic Funds Transfer with security
- To have knowledge on Mobile Commerce and E Marketing and their applications.

Learning Outcomes: Application knowledge on internet and e commerce activities. Ability to transact through m commerce and e marketing

Unit – I Introduction to Net works and Internet

Introduction - Types of Net works – Advantages – Disadvantages – Topology – Protocol – Types of Transmission – Characteristics –Modem – Types of Modem – ISDN.

Workings of Internet – Transmission – Utilisation – Access. Basic Requirements for Internet connection – TCP CIP Protocol – FTP, HTTP Protocols.

Unit – II World Wide Web & Services

World Wide Web: Web Sites – Pages – Browsing web index – Search Engine – Browsers. HTML – Creating small HTML Programmes.

Services E- Mail – Mail Service Managing mails – File attachments – E- Commerce – Effective Transaction recorder – On Line Shopping – Video Conferencing.

Unit – III E-Commerce

Definition of Electronic Commerce – E-Commerce and Traditional Commerce – Advantages of E-Commerce – Business, Consumers, Society and Nation – E-Business and E-Commerce – Need for E-business – Factors stressing the need for E-business – Classification of E-Commerce.

Unit – IV E-Marketing & M-Commerce

Meaning – Advantages – E-Customers Relationship Management (E-CRM) – Advantages of using technologies for providing customer support – Phases of E-CRM – Features of E-CRM Software – E-CRM Work Model.

Mobile Commerce (M-Commerce) - Factors drive M-Commerce - Difference between E-Commerce and M-Commerce - Growth of M-Commerce in India - Applications of M-Commerce.

Unit – V Electronic Fund Transfer

Meaning – Benefits of Electronic Payment –Popular Electronic Payment Methods – Financial EDI – Credit Card System on the Internet – Components of Online Credit Processing Security Requirements in E- Payment Systems – Key Security Schemes – Secret Key Cryptography – Public Key Cryptography – Digital Signature.

Books for Study

Dr. K. Abirami Devi & Dr. M. Alagammai, ***E-Commerce***, Margham Publication, Chennai.

Books for Reference

1. Nidhi Dhawan, E-Commerce Concepts and Applications, International Book House Pvt. Ltd. New Delhi.
2. S.V. Srinivasan, E-Commerce, Vijay Nicole Imprints Pvt. Ltd. Chennai.
3. Harley Hahu, ***The Internet – Complete Reference,*** TMH Limited.
4. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17P3KME1	**Applied Direct Taxation**	5	90	25	75	100

Learning Objectives

- To gain knowledge of the provisions of income tax law relating to the topics mentioned in the contents
- To gain ability to solve problems concerning assessees with the status of Individual, HUF, Partnership and companies.

Learning Outcomes: Ability to compute income tax liability independently. Understanding and application of Advance tax and TDS

Unit – I Introduction to Income Tax Act, 1961

Definitions - Previous year, Assessment year, Person, Assessee, Income, PAN etc., - Residential status and incidence of Income tax for individuals, HUF, Firms, Companies, Body of individuals and Association of persons – Incomes exempted from income tax.

Unit – II Computation of Income under various Heads

Computation of taxable income under various heads with reference to individual assesses - Salaries, House property, Profits and gains of business or profession, Capital gains and other sources.

Unit – III Procedure for Assessment

Assessment of Individual, HUF, Partnership and Companies.

Types of assessments - Self assessment, best judgment assessment, summary assessment etc., - Various authorities under the Income Tax Act – List of forms for various types of assesses towards annual filing of Income Tax Return – e-filing procedure.

Unit – IV Clubbing of Income

Set off and carry forward of losses – Deductions from Gross Total Income.

Unit – V Advance Tax & TDS

Meaning of Advance Tax – TAN - Various instalments of Advance Tax – Simple problems on Advance Tax – Penalty for not adhering to Advance Tax provisions – Meaning of Tax Deducted at Sources – Rates of tax to be deducted at source for various payments by a business assessee – Penalty for not adhering to the Tax Deducted at Source Provisions.

Note: The Question paper shall consist of 70% problem and 30% theory.

Book For Study

1.Dr. Vinod K Singhania & Dr. Kapil Singhania, Direct Taxes Lae & Practices, Taxmann Publications,

Books for Reference

1. Gaur and Narang D.B, Income Tax Law and Practice, Kalyani Publication, New Delhi. (Current assessment year)
2. Mehrotra H.C, Income Tax Law and Accounts including Tax planning, Sahitya Bhawan Publishers. New Delhi, (Current assessment year).
3. T.S. Reddy & Y. Hari Prasad Reddy, Income Tax – Theory, Law and Practice, Margham Publications, Chennai.
4. www.incometaxindia.gov.in

Course Code	Course Title	C	H	I	E	T
17P3KNM	**Entrepreneurial Skill Development**	4	60	25	75	100

Learning Objectives

- To know the concept of Entrepreneur, types and factors contributing motivating factors
- To sensitize the importance of women in business and business opportunities for women entrepreneurs
- To identify the business opportunities on Startups
- To prepare a business project report independently

Learning Outcomes: Knowledge on entrepreneurship including women, ability to identify startup and prepare project report independently

Unit – I Introduction to Entrepreneur & Entrepreneurship

Meaning of Entrepreneur – Characteristics – Functions – Entrepreneur Vs Manager – Intrapreneur /Corporate Entrepreneur - Types of Entrepreneur – Motivating Factors – Entrepreneurial Competencies – Entrepreneur and Economic Development.

Unit – II Entrepreneurship

Meaning – Definition – Factors stimulating Entrepreneurship – Factors affecting Entrepreneurship growth – Economic factor – Social Factors – Cultural Factors – Personality factors – Psychological and Sociological Factors. Theories of Entrepreneurship – Economic Theory - Social Theory – Psychological Theory – Motivational Theories.

Unit –III Women Entrepreneurs

Concept of Women Entrepreneurship – Factors Influencing Women Entrepreneurs – Types – Differences between Men Entrepreneur and Women Entrepreneur - Role of Women Entrepreneurs – Business opportunities for Women Entrepreneurs – Growth of Women Entrepreneurship in India – Institutions supporting Women in Entrepreneurship - Problems – Remedial Measures.

Unit – IV Business Idea and Starts Ups

Source of Ideas – Identifying a Business Opportunity – Defining Opportunity – Preliminary Evaluation – Start up Initiatives by Government – Mentors – Accelerators – Incubators – Sources of Finance for Start Ups – Failure of Start Ups – Strategies for Success of Start Ups – Start Up Innovation in India.

Unit – V Project Report

Meaning – Importance – Precautions -Components – Contents of Project Report – General Information – Project Description – Market Potential – Capital Cost and Means of Finance – Source of Finance – Assessment of Working Capital Requirements – Economic and Social Consideration – Reasons for Failure of a Project – Preparation of Model Project Report.

Books for Study

E.Gordon and K. Natarajan, ***Entrepreneurial Development***, Himalaya Publishing House, Mumbai.

Books for Reference.

1. Vasant Desai, ***Entrepreneurship Development***, 2005, Himalaya Publishing House, New Delhi.
2. Jose Paul, N. Ajith Kumar, ***Entrepreneurship Development***, 2003, Himalaya Publishing House, New Delhi.
3. Nandan, ***Fundamentals of Entrepreneurship***, PHI Learning, New Delhi.
4. Dr. Jayashree Suresh, ***Entrepreneurial Development***, Margham Publications, Chennai.
5. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17P4KMC15	**Human Resource Management**	4	90	25	75	100

Learning Objectives

- To know and understand the basic concepts of HRM and its relevance in business.
- To understand the process of manpower planning, recruitment and selection systematically
- To familiarize the concepts of workers participation and conflict in corporate.

Learning Outcomes: Higher learning about Human Resource Management and Manpower planning. Understanding of Employee morale and Job satisfaction. Comprehensive knowledge on workers participation and Trade union activities

Unit – I Introduction to Human Resource Management

Meaning – Definition – Characteristics – Need for HRM - HRM methods – HRM in Indian Industry – Suggestions to make HRM effective in Indian organizations.

Unit – II Manpower Planning

Meaning – Definition – Objectives of Manpower planning – Composition of manpower forecasting – Executive resource planning – meaning – major elements in the process of executive resource planning Development -Individual & Personality development – Theories of Personality.

Unit – III Recruitment, Selection and Training

Recruitment – Meaning – Types of Recruitment - Selection – Process of Selection - Tests and Interviews – Placement and Inductions- Promotions and Transfers – Training – Types of Training..

Unit – IV Employee Morale & Job Satisfaction

Meaning – Definition – Effects of Good and Poor morale – Relationship between morale and productivity. Job satisfaction – Meaning – Relationship between job satisfaction and productivity.

Unit – V Workers Participation in Management, Trade Union and Conflicts

Meaning – Aims and objectives – Methods – Merits and demerits – Workers participation in management in India.

Trade union meaning – Principles – Essentials of a successful trade union – Features and weakness of Trade union. Conflict – Meaning – Stages – Causes of Inter Group Conflict – Consequences of Inter Group conflict. Performance appraisal – meaning – purposes – Factors affecting performance appraisal – methods.

Book for Study

C.B. Memoria, Personnel Management, Himalaya Publishing House, Mumbai.

Books for Reference

1. P.C. Tripathi , Human Resource Management, Sultan Chand & Sons, Delhi.
2. M.N. Rudrabasavaraj , Dynamic Personnel Administration, Himalaya Publishing House, Mumbai.
3. K.Aswathappa, Human Resource & Personnel Management, Tata McGraw-Hill, New Delhi.
4. Edwin Flippo, Personnel Management, McGraw-Hill, New Delhi
5. www.managementstudyguide.com, www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17P4KMC16	**Applied Operations Research**	5	90	25	75	100

Learning objectives

- To have an knowledge on Operations research and its applications to business decisions.
- To gain working knowledge and application of relevant operations research tools in business decisions.

Learning Outcomes: Knowledge on operations research tools and its applicability in business decisions and ability to solve various business problems through OR tools

Unit – I Introduction to Operations Research

Meaning – Definition – Techniques of Operations Research – Uses and Limitations of Operations Research.

Unit – II Linear Programming Problem

Meaning – Definition – Formulation of LPP – Methods for solving LPP – Graphical Method – Simplex Method – Big M Method – Duality Method.

Unit – III Transportation and Assignment Problem

Meaning – Transportation Model – Types of Transportation problem – Methods for solving transportation problem: Vogel's Approximation method – Least Cost Method – North West Corner Rule – Initial Solution – Optimal Solution.

Assignment Problem – Meaning –Types of Assignment problem – Hungarian Method.

Unit – IV Game Theory & Queuing Theory

Game Theory – Applications – Methods for solving Game theory – Saddle point method – Dominance Principle method – Algebraic method – Graphical Method – Sub Game method.

Queuing Theory – Applications – Uses – Limitation – Single Channel Model Only.

Unit – V Replacement Problems, Inventory Models and Simulation

Replacement Problems – Group replacement policy.

Inventory Models – EOQ Model with discount and without discount – Safety Stock.

Simulation – Meaning – Limitations – Monte Carlo Method – Applications.

Note: The Question paper shall consist of 80% problem and 20% theory.

Books for Study:

Kapoor V.K. & Sumant Kapoor, ***Operation Research Techniques for Management***, Sultan Chand & Sons, New Delhi.

Books for Reference:

1. Chawla. K.K, Vijay Gupta & Bhushan K. Sharma, ***Operation Research Quantitative Analysis for Management***, Kalyani Publishers, New Delhi.
2. K. Shridhara Bhat, ***Operation Research,*** Himalaya Publishing House, Mumbai.
3. J.K.Sharma, ***Quantitative Techniques in Management,*** Trinity Press, New Delhi.
4. www.investopedia.com

Course Code	Course Title	C	H	I	E	T
17P4KMC17	**Strategic Cost Management**	4	90	25	75	100

Learning Objectives

- To understand and ability to analyse the cost and make them to take business decisions
- To know the concept of ABC and its relevance in business decisions
- To able to apply relevant cost management tools viz., Target costing, Kaizen, Life cycle costing and six sigma

Learning Outcomes: Advanced Knowledge on cost analysis and management decisions. Baisc understanding and working knowledge of ABC, kaizen costing, Life cycle costing and six sigma

Unit – I Cost Analysis and Management Decisions

Concepts of Cost relevance to purpose of managerial decisions – Break even analysis its applications and limitations – CVP Analysis.

Unit – II Introduction Cost analysis

Analysis of cost of production for managerial decisions involving (i.e.) make or buy, Idle capacity, plant shut down, process further or sell – Equipment replacement etc. Expand or contract, change Vs status Quo- Decision making and limiting factors.

Unit – III Activity based Costing

Introduction - Meaning & Definition Objectives – Assumptions – Steps advantages – ABC Vs Traditional Costing – Need for implementing ABC.

Unit – IV Cost based Decision making

Target Costing – Customer orientation – Target Costing Process – Tear down analysis – Values engineering – Kaizen Costing of Life cycle costing – EVA.

Unit – V Six Sigma

Origin – Theories – Meaning – Conducting (FEMA) – Failure mode and effects analysis – Six Sigma organization – DMAIC – Define measure analysis improve and control – Balance score card.

Books for Study:

S.P.Jain & K.L.Narang, Advanced Cost Accounting, Kalyani Publications, Delhi.

Books for Reference

1. V.K. Saxena, C.D. Vashist, Advanced Cost and Management Accounting, Sultan Chand & Sons, Delhi.
2. Robert
3. Robert S. Kaplan, Anthony A. Atkinson, Advanced Management Accounting
4. Dr. S.N. Maheshwari, Advanced Cost Accounting, Himalaya Publishing House Pvt. Ltd., Mumbai.
5. T.S. Reddy & Y. Hari Prasad Reddy, Cost Accounting, Margham Publications, Chennai.
6. www.icai.org.in, www.icmai.in, www.managementstudyguide.com

Course Code	Course Title	C	H	I	E	T
17P4KME2	**Project Management**	4	90	25	75	100

Learning Objectives

- To understand the concept of project and project management and ability to prepare project report
- To gain working knowledge on project preparation independently
- To evaluate the projects by various feasibility studies.

Learning Outcomes: understanding and comprehensive knowledge on project management and its relevance in business houses. Ability to appraise the projects by various feasibility studies

Unit – I Introduction to Project Management

Meaning – Characteristics - Types- Project Life Cycle – Project formulation - Parameters in Project Selection – Stages in Project Formulation – Pre-feasibility study – Support Studies – Feasibility study – Detailed Project Report.

Unit – II Project Appraisal

Meaning – Types of Project Appraisal – Market and Demand Analysis – Conduct of Market Survey – Demand Forecasting: Uncertainties – Marketing Plan – Technical Analysis: Manufacturing Process – Technical Arrangements – Plant Capacities – Project chart and Layout - Financial Analysis – Economical and Environmental Analysis.

Unit – III Financial Estimates and Risk Analysis

Cost of Project – Means of Finance – Project finance – Sources and Pattern of Finance - Cost of capital- Estimates of Sales and Production – Working Capital Requirements – Profitability Projections – Profitability Statements – Projected Cash Flow Statement. Capital Budgeting – Techniques.

Risk Analysis – Sensitivity Analysis – Break Even Analysis - Decision Tree Analysis – Capital Asset Pricing Model –Social Cost Benefit Analysis.

Unit – IV Project scheduling, Managing & Implementing

Introduction – Project Scheduling – Network Based Scheduling – Critical Path Method (CPM) – Project Evaluation Review Techniques (PERT) – Resource Allocation – Network cost crash. Project Management – Forms Project Organsiation- Project Planning and Control- - Pre Implementation Project – Implementation – Monitoring.

Unit – V Project Evaluation and Post Project Evaluation

Project Evaluation – Meaning – Objectives – Methods. Post Project Evaluation – Meaning - Post Audit – Objectives – Types – Preparation of Project Report – Computer Aided Project.

Books for Study

Prasanna Chandra, ***Projects Planning, Analysis, Selection, Financing, Implementation and Review,*** Tata McGraw Hill Education Pvt. Ltd. New Delhi.

Books for Reference

1. Vasant Desai, ***Project Management***, Himalaya Publishing House, Mumbai.
2. K. Nagarajan, ***Project Management***, New Age International Publishers, New Delhi.
3. www.investopedia.com, www.businessdictionary .com

Course Code	Course Title	C	H	I	E	T
17P4KME3	**Applied Indirect Taxation**	4	90	25	75	100

Learning Objectives

- To gain knowledge on concept of Indirect taxation viz., Customs act, GST act
- To gain concept and simple problems on customs act as working knowledge
- To understand the concept of GST related terms and its relevance in the GST Act
- To be able to solve simple problems on GST

Learning Outcomes: Comprehensive knowledge on concept of Indirect taxation including GST. Ability to solve simple problems on GST

Unit – I Introduction to Applied Indirect Taxation

Meaning of Indirect Taxes- Distinction between Direct Taxes and Indirect Taxes – Constitutional authority to levy and collect indirect taxes – Canons of Taxation – Types of Indirect Taxes prevailing in India at national level such as Goods and Services Tax and Customs Act.

Unit – II Customs Act, 1962

Meaning of Customs Duty – Procedure prescribed under the Customs Act to Import Goods and Services and Export of Goods and Services – Types of customs duty – simple problems in determination of assessable value and determination of Customs Duty liability – Various Documents involved in imports and exports.

Unit – III Introduction of Goods and Services Tax, 2017 (GST)

Meaning of GST – Scope – Features – GST Council - Classification of GST – CGST – IGST – SGST – Definitions – Person – Business – Goods – Services – Registration Procedures - Taxable Person – HSN/SAC classification - Meaning of Supply – Place of Supply – Time and Value of Supply – Charge and Levy.

Unit – IV Input Tax Credit (ITC)

Meaning – Eligible and Ineligible Input Tax Credit – Tax Credit in respect of Capital Goods – Transfer — Reverse charge Mechanisms – Rates of Taxes – Zero Rated - Exemptions – Job work – Works Contract – Composition Scheme.

Unit –V Compounded Levy Scheme for CGST and IGST

Preparation of Tax invoice – Credit and Debit Notes - Filing of Returns – E-Payment of Tax – E-Way Bill - Computation of GST liability – Anti Profiteering – Offences and Penalty – Advance Ruling – Appeals and Revision.

Book for Study

V.S. Datey, ***Indirect Taxation***, Taxmann Publication, New Delhi.

Books for Reference

1. ***Indirect Taxes***, Institute of Chartered Accountants of India Publications, New Delhi.
2. ***Indirect Taxes***, Institute of Cost Accountants of India, Kolkata.
3. V.S. Datey, ***Indirect Taxes***, Taxman Publications Pvt., Ltd., New Delhi.
4. Dr. H.C. Mehrotra and Dr. S.P. Goyal, ***Indirect Taxes***, Bhawan Publications, Agra.
5. www.gst.gov.in

Course Code	Course Title	C	H	I	E	T
17P4KPR1	**Project Report (Optional – Extra Credit)**	2	--	50	50	100

Learning Objectives

- To enable the students to create confidence for preparation of Project report.
- To gain knowledge on the Research methodology
- To equip the students to prepare project report independently.

Learning Outcomes: Comprehensive knowledge on research methodology and research design. Ability to analyze and interpret data. Confidence in preparation of project report independently.

1) This is optional extra credit paper of two credits.
2) The students during the fourth shall undertake the Project report on the following areas during the fourth semester.

Marketing

- Marketing of products and services.
- Behavioral pattern of consumers.
- Customer Relationship Management.
- Supply chain and Logistic Management.
- Advertisement and Sales promotion
- Multi level marketing.

Human Resource Management

- Human Resource Planning and Development.
- Compensation and Rewards Management.
- Performance Appraisal Management
- Motivational Morale
- Women Empowerment
- Work Life Management

Entrepreneurship

- Start Up
- MSME
- Women Entrepreneurship
- Self Help Groups (SHG)

Finance, Accounting and Taxation

- Financial Performance
- Working Capital Management
- Equity financing and Venture Capital Management.
- Valuation Management
- Cost Management in various sectors
- Total Quality Management
- Balance Score Card
- Accounting Standards
- Taxation
- Goods and Service Tax
- Export Documentation

Corporate Management

- Corporate Governance and Corporate Social Responsibility
- Directors and Women Directors

Banking

- Non Performing Assets
- Basel Norms
- Modern Banking services

3) Evaluation Pattern

Dissertation - 50 Marks (Internal 25 marks and External 25 marks)
Vivo Voce - 50 Marks (Internal 25 marks and External 25 mark)

Subject offered to BA Economics

III Semester

Course Code	Course Title	C	H	I	E	T
	Financial and Management Accounting	4	75	25	75	100

Learning Objectives

- To know the basic knowledge on accounting and its principles
- To be able to prepare final accounts independently with depreciation
- To know basic understanding of marginal costing and budgeting

Learning outcomes: Basic knowledge on accounting and ability to prepare final accounts and understanding about marginal cost and budgeti**ng**

Unit I Introduction to Accounting

Definition – Book Keeping – Accounting – Single Entry System Vs Double Entry System – Concepts – Conventions.

Unit II

Journal – Day Book – Ledger – Subsidiary Books – Trial Balance – Final Accounts (simple problems only).

Unit III

Depreciation – Meaning – Causes – Methods – Straight line method – Written down value method – Annuity method (simple problems only).

Unit IV

Marginal Cost – Marginal Costing – Meaning – Fixed and Variable Cost – Profit Volume Ratio – Break Even Point – Margin of Safety (simple problems only).

Unit V

Budgeting – Meaning – Budget and Budgetary Control – Types of Budgets – Cash – Flexible Budget (simple problems only).

Text Book

1. T.S. Reddy and A. Murthy, ***"Advanced Accountancy",*** *Margham Publication, Chennai.*
2. T.S. Reddy and Y. Hari Prasad Reddy, "***Management Accounting",*** *Margham Publication, Chennai*

Reference Books

1. R.S.N. Pillai, Bagavathi & S. Uma, ***"Fundamentals of Advanced Accountancy",*** Third Edition, 2015, S. Chand, New Delhi.
2. SP. Iyengar, "***Advanced Accountancy"*** Vol-I**,** Fourth Edition, 2004.Sultan Chand & Sons, New Delhi.
3. www.icai.org.in, www.icmai.in, www.icsi.edu.in, www.investopedia.com, www.edx.org.

Certificate Courses

Aim of the Certificate courses

- To get added value certificate course during his/her regular course of study.
- To facilitate the students to acquaint knowledge on contemporary issues in the business environment.
- To develop the students to improve their employability skill in the current competitive scenario.

Guidelines

Eligibility:

Open to all students of Madura College. Preference will be given to final year students of UG and PG.

Maximum number of students per batch: 40

Course duration: 45 hours (including exams)

Course Timing: Every Saturday: 10.00 am to 12.00 noon

Examination Pattern (Internal only – 100 marks)

Assignment / Project –	40 marks
Exam I –	30 marks
Exam II –	30 marks
Total	100 marks

Passing minimum: 40 marks

Certificates will be given to the students after completion of students.

Certificate Course
Goods and Services Tax (45 hrs)

Learning Objectives

- To gain concept and simple problems on customs act as working knowledge
- To understand the concept of GST related terms and its relevance in the GST Act.
- To be able to solve simple problems on GST

Learning Outcomes: Comprehensive knowledge on concept of Indirect taxation including GST. Ability to solve simple problems on GST.

Unit – I Introduction of Goods and Services Tax, 2017 (GST)

Meaning of GST – Scope – Features – GST Council - Classification of GST – CGST – IGST – SGST – Definitions – Person – Business – Goods – Services –

Unit – II Registration

Registration Procedures - Taxable Person – HSN/SAC classification - Meaning of Supply – Place of Supply – Time and Value of Supply – Charge and Levy.

Unit – III Input Tax Credit (ITC)

Meaning – Eligible and Ineligible Input Tax Credit – Tax Credit in respect of Capital Goods – Transfer — Reverse charge Mechanisms – Rates of Taxes – Zero Rated - Exemptions – Job work – Works Contract – Composition Scheme –.

Unit – IV Compounded Levy Scheme for CGST and IGST

Preparation of Tax invoice – Credit and Debit Notes - Filing of Returns – E-Payment of Tax – E-Way Bill - Computation of GST liability –

Unit – V Offences and Penalties

Anti Profiteering – Offences and Penalty – Advance Ruling – Appeals and Revision.

Book for Study

V.S. Datey, ***Indirect Taxation***, Taxmann Publication, New Delhi.

Books for Reference

1. ***Indirect Taxes***, Institute of Chartered Accountants of India Publications, New Delhi.
2. ***Indirect Taxes***, Institute of Cost Accountants of India, Kolkata.
3. V.S. Datey, ***Indirect Taxes***, Taxman Publications Pvt., Ltd., New Delhi.
4. Dr. H.C. Mehrotra and Dr. S.P. Goyal, ***Indirect Taxes***, Bhawan Publications, Agra.

Certificate Course

Entrepreneurial Development & Start Ups (45 hrs)

Learning Objectives

- To know the concept of Entrepreneur, types and factors contributing motivating factors
- To sensitize the importance of women in business and business opportunities for women entrepreneurs
- To identify the business opportunities on Startups
- To prepare a business project report independently

Learning Outcomes: Knowledge on entrepreneurship including women, ability to identify startup and prepare project report independently

Unit – I Introduction to Entrepreneur & Entrepreneurship

Meaning of Entrepreneur – Characteristics – Functions – Entrepreneur Vs Manager – Intrapreneur /Corporate Entrepreneur - Types of Entrepreneur – Motivating Factors – Entrepreneurial Competencies – Entrepreneur and Economic Development.

Unit – II Entrepreneurship

Meaning – Definition – Factors stimulating Entrepreneurship – Factors affecting Entrepreneurship growth – Economic factor – Social Factors – Cultural Factors – Personality factors – Psychological and Sociological Factors. Theories of Entrepreneurship – Economic Theory - Social Theory – Psychological Theory – Motivational Theories.

Unit –III Women Entrepreneurs

Concept of Women Entrepreneurship – Factors Influencing Women Entrepreneurs – Types – Differences between Men Entrepreneur and Women Entrepreneur - Role of Women Entrepreneurs – Business opportunities for Women Entrepreneurs – Growth of Women Entrepreneurship in India – Institutions supporting Women in Entrepreneurship - Problems – Remedial Measures.

Unit – IV Business Idea and Starts Ups

Source of Ideas – Identifying a Business Opportunity – Defining Opportunity – Preliminary Evaluation – Start up Initiatives by Government – Mentors – Accelerators – Incubators – Sources of Finance for Start Ups – Failure of Start Ups – Strategies for Success of Start Ups – Start Up Innovation in India.

Unit – V Project Report

Meaning – Importance – Precautions -Components – Contents of Project Report – General Information – Project Description – Market Potential – Capital Cost and Means of Finance – Source of Finance – Assessment of Working Capital Requirements – Economic and Social Consideration – Reasons for Failure of a Project – Preparation of Model Project Report.

Books for Study

E.Gordon and K. Natarajan, ***Entrepreneurial Development***, Himalaya Publishing House, Mumbai.

Books for Reference.

1. Vasant Desai, ***Entrepreneurship Development***, 2005, Himalaya Publishing House, New Delhi.
2. Jose Paul, N. Ajith Kumar, ***Entrepreneurship Development***, 2003, Himalaya Publishing House, New Delhi.
3. Nandan, ***Fundamentals of Entrepreneurship***, PHI Learning, New Delhi.
4. Dr. Jayashree Suresh, ***Entrepreneurial Development***, Margham Publications, Chennai.

Department of Statistics

The Madura College (Autonomous), Madurai – 625 011

Department of Statistics

CBCS Pattern for B.Sc., Statistics - Major Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
I	17U1SMC1	Foundation of Statistics	4	4
	17U1SMC2	Probability Theory	4	4
	17U1SES1	Environmental Studies	2	2
	17U1SSM1	Major Skill Based Elective – I (Theory of equations and Trigonometry)	2	2
II	17U2SMC3	Descriptive Statistics	4	4
	17U2SMC4	Distribution Theory	4	4
	17U2SVE1	Value Education	2	2
	17U2SSM2	Major Skill Based Elective– II (Matrices and Fourier Series)	2	2
III	17U3SMC5	Sampling Techniques	6	6
IV	17U4SMC6	Theory of Estimation	2	2
	17U4SMC7	Elements of Stochastic Processes	2	2
	17U4SSM3	Major Skill Based Elective – III (Mathematical Analysis)	2	2
V	17U5SMC8	Testing of Hypothesis	6	6
	17U5SMC9	Actuarial Statistics	6	6
	17U5SMC10	Operations Research	6	6
	Elective – I Group A Papers(one to be chosen)			
	17U5SME1	Elements Econometrics	6	7
	17U5SME2	Theory of Numbers		
	17U5SME3	Queuing theory		
VI	17U5SMC11	Statistical Quality Control	4	4
	17U5SMC12	Statistical Inference	4	4
	17U5SMC13	Statistics Practical Using Software	4	4
	17U6SSM4	Major Skill Based Elective– IV (Quantitative Aptitude)	2	2
	Elective – I Group B Papers(one to be chosen)			
	17U6SME4	Application of Statistics in Economics	5	6
	17U6SME5	Population Studies		
	17U6SME6	Non- Parametric Tests		
	Elective – I Group B Papers(one to be chosen)			
	17U6SME7	Design of Experiments	5	6
	17U6SME8	Fuzzy Mathematics		
	17U6SME9	Automata Theory		

Course Code	Course Title	C	H	I	E	T
17U3SMC5	**SAMPLING TECHNIQUES**	6	6	25	75	100

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Learning Objectives

- This course enables them to understand the concepts of Sampling Techniques which enhance them to analyse the data.

Learning Outcomes

On satisfying the requirement of this course, students will be able to

- Understand the different types of sampling methods.
- Discuss the relative advantages and disadvantages of each sampling methods.
- Apply the Sampling techniques to analyze the data.

Unit IEqual Probability Sampling

Basic Definitions – Estimation of Population Total – Simple Random Sampling – Estimation of Total - Problems.

Unit IISystematic Sampling

Linear Systematic Sampling – Schemes for Populations with Linear Trend – Autocorrelated Populations – Estimated Variance – Circular Systematic Sampling – Systematic Sampling in Two Dimensions – Problems.

Unit IIIUnequal Probability Sampling

PPSWR Sampling Method – PPSWOR Sampling Method – Random Group Method – Midzuno Scheme – PPS Systematic Scheme – Problems.

Unit IVStratified Sampling

Introduction – Sample Size Allocation – Comparison with Other Schemes - Problems.

Unit VMulti Sampling

Introduction – Estimation under Cluster Sampling – Multistage Sampling – Adaptive Sampling.

Text Book:

1. S. Sampath, Sampling Theory & Methods, 2nd Edition, Narosa Publishing House.

Chapters: 1, 2, 3, 4, 5, 8, 10(10.1)

Reference Books:

1. Daroga Singh, F.S. Chaudary, Theory and Analysis of Sample Survey Designs, New Age International Pvt. Ltd.
2. William G. Cochran, Sampling Techniques, Third Edition, Wiley - India Edition.

Course Code	Course Title	C	H	I	E	T
17U4SMC6	**THEORY OF ESTIMATION**	2	2	25	75	100

Learning Objectives

- This course enables the students to have a good knowledge in Theory of Estimation which will make them to estimate the sample.

Learning Outcomes

After successful completion of this course, students will be able to

- Explain the fundamental concepts of Estimation , methods of estimation and its applications.
- Estimate parameters with multiple criteria : Minimum variance, Maximum Likelihood, Bayesian assumptions.

Unit I Estimators

Introduction – Point Estimators – Interval Estimators – Unbiased Estimators – Asymptotically Unbiased – Efficiency Estimator – Problems.

Unit II Estimators (Continued)

Consistency Estimators – Sufficiency Estimators – Statement of Factorization Theorem – Robustness – Problems.

Unit III Moments

Method of Moments – Method of Maximum Likelihood Estimator – Bayesian Estimation.

Unit IVEstimation of Means

Introduction – The Estimation of Means – The Estimation of Differences between Means – Problems.

Unit VEstimation of Proportions and Variances

The Estimation of Proportions – Differences Between Proportions – Variances – The Ratio of Two Variances.

Text Book:

1. John E. Freund, Mathematical Statistics (1998), Fifth Edition, Prentice Hall of India Private Limited.

Chapters: 10(10.1 - 10.9), (11.1 – 11.7)

Reference Books:

1. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, 9th Revised Edition, Sultan Chand & Sons.
2. J.N. Kapur, H.C. Saxena, Mathematical Statistics, 20th Revised & Enlarged Edition, S. Chand & Company Ltd.

Course Code	Course Title	C	H	I	E	T
17U4SMC7	**ELEMENTS OF STOCHASTIC PROCESSES**	2	2	25	75	100

Learning Objectives

- This course enables them to understand the basic concepts of Stochastic Processes which will enrich them to apply in real life problems.

Learning Outcomes

After successful completion of this course, students will be able to

- Explain the fundamental concepts of Stochastic Processes and its applications.
- Apply the knowledge of family of random variables in real life situations.
- Think of random variables as an intrinsic need for the analysis of the random phenomena.
- Demonstrate the specific applications of Markov chains and Higher Transition Probabilities.

Unit I Differential Difference Equations

Introduction – Properties of Laplace Transforms – Difference Equations – Differential Difference Equations.

Unit II Probability Distributions

Generating Functions – Probability Generating Functions : Mean and Variance – Sum of Random Variables – Sum of a Random Number of Discrete Random Variables – Generating Function of Bivariate Distribution.

Unit III Laplace Transform of a Probability Distribution

Inverse Laplace Transforms – Laplace Transform of a Probability Distribution of a Random Variable – Mean and Variance in Terms of Laplace Transforms – Some Important Distributions - Problems.

Unit IV Stochastic Processes

Introduction – Specification of Stochastic Processes – Stationary Processes – Martingales – Problems.

Unit V Markov Chains

Introduction – Markov Chain – PolyaUrn Model – Higher Transition Probabilities – Problems.

Text Book:

1. J. Medhi, Stochastic Processes, 2nd Edition, Reprint 2008, New Age International Publisher (1984).

Chapters: 1[1.1(1.1.1 - 1.1.5), 1.2,1.3(1.3.1 – 1.3.4)], 2(2.1 - 2.4), 3(3.1, 3.2),

Appendix A (A1-A3).

Reference Books:

1. A. Papoulis, Probability Random Variable and Stochastic Processes, 1991, Tata McGraw – Hill.
2. S. K. Srinivasan, K.M. Mehata, Stochastic processes, 2nd Edition 1978, Tata McGraw – Hill .

Course Code	Course Title	C	H	I	E	T
17U4SSM3	**MAJOR SKILL BASED ELECTIVE – III : MATHEMATICAL ANALYSIS**	2	2	25	75	100

Learning Objectives:

- To provide a strong foundation in basic concepts of Mathematical Analysis which will enrich them to have a good knowledge to apply in statistics.

Learning Outcomes

On satisfying the requirement of this course, students will

- Have the good knowledge of the fundamental mathematical concepts in analysis.
- Understand the basic concepts of Limit Points, Neighbourhood of a point, Open and closed sets, limit of a function.
- Be familiar with Geometric behavior of a continuous and discontinuous functions and able to point out the discontinuities on the graph of a function.
- Understand the consequences of discontinuities for real-world problems in mathematical models.
- Be familiar with the concepts of uniform continuity, derivative, Properties of derivatives and its theorems.
- Demonstrate the ability to solve mathematical problems in Mathematical analysis & be able to prove statements and to formulate precise mathematical arguments.

Unit I Limit Points, Open and Closed Sets

Introduction – Neighbourhood of a Point – Interior Points of a Set – Open Sets – Limit Points of a Set – Bolzano-Weierstrass Theorem – Closed Sets / Closure of a Set – Basic Theorems.

Unit II Limit of a Function

Limits – Left hand and Right hand Limits – Theorems on Limits – Problems.

Unit III Continuity

Continuous Functions – Discontinuous Functions – Types of Discontinuities – Theorems of Continuity – Uniform Continuity – Problems.

Unit IVDerivability

Derivative – Derivability at a Point – Derivability in an Interval – Properties of Derivatives – Darbaux's Theorem – Problems.

Unit V Continuity and Derivability

Rolle's Theorem – Lagrange's Mean Value Theorem – Cauchy's Mean Value Theorem – Problems.

Text Book:

1. S.C. Malik, Principles of Real Analysis, Third Edition 2011, New Age International Publishers.

Chapters: 2, 5 (5.1, 5.2, 5.4), 6(6.1 – 6.7)

Reference Books:

1. S. Arumugam and A. Thangapandi Isaac, Calculus, 2014, New Gamma Publishing House.
2. Richard R. Goldberg, Methods of Real Analysis, Second Edition, John Wiley & Sons, Inc.

The Madura College (Autonomous), Madurai – 625011

Department of Statistics

CBCS Pattern for B.Sc., Statistics - Allied Mathematics

Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
I	17U1SAM1	Allied Mathematics – I: Calculus	6	4
II	17U2SAM2	Allied Mathematics – II: Numerical Methods	4	2
	17U2SAMP1	LAB: Practical in Numerical Methods	2	1
III	17U3SAM3	Allied Mathematics – III: Theory of sets and Groups	4	4
	17U3SAM4	Ancillary Skill based Elective - I: Switching Theory	2	2
IV	17U4SAM5	Allied Mathematics – IV: Differential Equation	4	4
	17U4SAMP2	LAB: Practical in Differential Equation	2	1

Course Code	Course Title	C	H	I	E	T
17U3SAM3	**ALLIED MATHEMATICS – III : THEORY OF SETS AND GROUPS**	4	4	25	75	100

Learning Objectives

- Enable the students to understand the basic fundamentals in Theory of sets and groups which is very essential in algebra.
- Make them to understand the algebraic structures and to enrich them to have a strong mathematical base for logical thinking.

Learning Outcomes

After successful completion of this course, students will be able to

- Explain the basic mathematical concepts such as Sets, Relations and Functions.
- Explain the fundamental concepts of Groups and their role in modern mathematics and applied contexts.
- Demonstrate accurate and efficient use of algebraic techniques.

Unit I Theory of Sets

Introduction – The Concept of a Set – Set Inclusion –Union of Sets – Intersection of Sets – Difference of Sets – Complement of a Set – Symmetric Difference of Two Sets – Cartesian Product of Sets.

Unit II Relations and Mappings

Relations – Definition and Examples of relation – Types of relation – Reflexive, Symmetric and Transitive – Equivalence Relations – Partial Order – Functions – Binary Operations.

Unit III Groups

Definition and Examples of Groups – Elementary Properties of a Group – Permutation Groups.

Unit IV Subgroups

Definition – Cyclic Groups–Order of an Element – Cosetsand Lagrange's Theorem.

UnitV Homomorphisms&Isomorphism

Normal Subgroups and Quotient Groups –Homomorphisms&Isomorphism.

Text Book:

1. S. Arumugam and A. T. Issac, Modern Algebra, Reprint 2011, Scitech Publications.

Chapters: 1, 2, 3

Reference Books:

1. Seymour Lipsechutz and Marc Lars Lipson, Discrete Mathematics, 3rd Edition 2013, Schaum's Outlines Tata McGraw - Hill.
2. Vijay K. Khanna and S.K. Bhambri, A Course in Abstract Algebra, 3rd Edition, Vikas Publishing House Pvt. Ltd.(2009).

Course Code	Course Title	C	H	I	E	T
17U3SAM4	**ANCILLARY SKILL BASED ELECTIVE – I: SWITCHING THEORY**	2	2	25	75	100

Learning Objectives

- T

  his course enables them to understand the codes and enhance thorough knowledge in Switching Theory.

Learning Outcomes

After successful completion of this course, students will be able to

- Understand the conversion of bases and be familiar with codes.
- Use the concepts of switching algebra for the analysis & design of various combinational & sequential logic circuits.
- Design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays.

Unit I Number system and Codes

Number representation – Conversion of bases – Binary arithmetic – Binary codes weighted and non-weighted codes.

Unit II Switching Algebra

Fundamental postulates – Basic properties – Switching expressions and their manipulation – De' Morgan's theorem.

Unit III Switching Function

Definition - Simplification of expression – Canonical forms-functional properties-exclusive-OR operation-functionally complete operations.

Unit IV Isomorphic System

Series – Parallel switching circuits –Propositional calculus – Electronic gate networks – Boolean algebras.

Unit V Minimization of Switching Function

Introduction – The map method – Simplification and minimizing of functions – Determination of the minimal product of the sums – Don't care combination-The five-variable map.

Text Book:

1. Zvikohaviand Niraj K. Jha, Switching and Finite Automata Theory , 3rd Edition 2010, Cambridge University Press.

Chapters: 1(1.1,1.2), 3 & 4 (4.1, 4.2).

Reference Books:

1. Anita Goel and Ajay Mittal, Computer Fundamentals and Programming in C, Second Impression (2014), by Pearson (India).
2. A.P. Godse and D. A. Godse, Switching Theory and Logic Design by, 1st Edition 2009, Technical Publications.

Course Code	Course Title	C	H	I	E	T
17U4SAM5	**ALLIED MATHEMATICS – IV: DIFFERENTIAL EQUATIONS**	4	4	25	75	100

Learning Objectives

- To enable the students to understand the concepts of Ordinary Differential Equations and its applications.
- To model a Simple Physical System to obtain a first order Linear differential equations, Simultaneous differential equations and to solve them using Various Methods and to interpret its solution graphically.
- To provide a good foundation on Ordinary differential equations which will enrich them to apply in real life problems.

Learning Outcomes

After successful completion of this course, students will be able to

- Explain the concepts of Differential Equation and Classify the Differential Equation with respect to their order and linearity.
- Solve First order Ordinary Differential Equation and Exact Differential equations.
- Model a Simple Physical System to obtain a first order Linear differential equations, Simultaneous differential equations and to solve them using Various Methods &able to interpret its solution graphically.
- Apply the concepts of Ordinary Differential Equation in real life problems.

Unit I First Order Differential Equations

Introduction – Definition – Solutions of Differential Equations – Formation of Differential Equations – Differential Equations of the First Order and of the First Degree – Variable Separable Method – Homogeneous Equations – Non-Homogeneous Equations of the first degree in x and y – Linear Differential Equation – Problems.

Unit II Exact Differential Equation

Bernoulli's Equation – Exact Differential Equations – Practical Rule for Solving an Exact Differential Equation – Rules for Finding Integrating Factors – Problems.

Unit III Applications of First Order Differential Equations

Growth, Decay and Chemical Reactions – Falling Bodies and Other Rate Problems – Problems.

Unit IV Linear Differential Equations with Constant Coefficients

Complementary function of a Linear Differential Equation with Constant Coefficients – Special Methods of Finding Particular Integral – Applications to vibrations in Mechanical Systems – Problems.

Unit V Simultaneous Differential Equations

Simultaneous Differential Equation of First Order and First Degree – Methods of Solving $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$ - Simultaneous Linear Differential Equations – Problems.

Text Book :

1. S. Narayanan & T.K. Manicavachagam Pillay, Differential Equations and its Applications, 2011, S. Viswanathan Printers & Publishers Pvt. Ltd.

Chapters: I, II, III (§1, §3), V(§1 to §4, §7(7.1,7.2)) , VI(§1 to §4, §6).

Reference Books:

1. Purna Chandra Biswal, Ordinary Differential Equations, 2008, Eastern Economy Edition, PHI Learning Private Limited.
2. S. Arumugam and A.T. Isaac, Differential Equations and Applications, 2011, New Gamma Publishing House.

Course Code	Course Title	C	H	I	E	T
17U4SAMP2	**LAB: PRACTICAL IN DIFFERENTIAL EQUATIONS**	1	2	50	50	100

S.NO.	LIST OF PRACTICALS
1	Program for Curve Fitting.
2	Program to Solve First Order Linear Differential Equation with Initial Conditions.
3	Program to Solve Radio-active Disintegration Problem.
4	Program to Solve Second Order Differential Equation with Initial Conditions.
5	Program to Solve Ordinary Differential Equation using Runge - Kutta Method of order 2.
6	Program to Solve Ordinary Differential Equation using Runge – Kutta Method of order 4.
7	Program to Plot Motion of a Mass Oscillating at End of a Spring.
8	Program to Solve Simple Harmonic Motion of a Loaded Spring using Euler Method.
9	Program to Solve Motion of a Damped Oscillator.
10	Program to Solve Lorenz Equations.
11	Program for Calculation of Lyapunov Exponents.
12	Program to Solve Simultaneous Differential Equations with Initial Conditions.

The Madura College (Autonomous), Madurai – 625011.

Department of Statistics

CBCS Pattern for B.Sc Statistics–
Ancillary (Computer & Computational Methods)
Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
III	17U3SAC1	Ancillary CCM – I: Office Automation	2	1
	17U3SACP1	LAB: Practical in Office Automation	2	1
IV	17U4SAC2	Ancillary CCM – II: Programming in C	4	2
	17U4SACP2	LAB: Practical in Programming in C	2	1
V	17U5SSA1	Skill Based Elective (CCM): Combinatorics	2	2
	17U5SAC3	Ancillary CCM - IV: Programming with C++	2	1
	17U5SACP3	LAB: Practical in C++	2	1
VI	17U6SAC4	Ancillary CCM - III: Fundamentals of JAVA Programming	4	2
	17U6SACP4	LAB: Practical in JAVA Programming	2	1

Course Code	Course Title	C	H	I	E	T
17U3SAC1	**ANCILLARY CCM– I: OFFICE AUTOMATION**	1	2	25	75	100

Learning Objectives

- To enable the students to study MS Office and to enrich the practical knowledge in MS Office.

Learning Outcomes

After successful completion of this course, students will be

- Able to perform documentation and presenting skills.
- Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and Presentation Graphics Applications.

Unit I MS Word

Introduction to MS Word, Starting word – Creating a Document – Saving and Printing a document – Move and Copy Text – Smart Cut and Paste – Quickly Opening Recently Used Files – Copying Text to Another File – Formatting Text – Using Bullets and Numbering in Paragraphs – Finding Text – Replace Command – Checking Spelling and Grammar – Using Auto Correct to Automatically Fix Typing Errors .

Unit II MS Word (Continued)

Enhancing a Document – Page Setup – Inserting Page Breaks – Looking at a Document in Different Views – Adding Borders and Shading to Paragraphs – Using Headers and Footers in the Document – Print Preview – Print Options – Creating Tables – Formatting a Table – Using Table Autoformat to Format a Table – Calculations in a Table – Using Mail Merge.

Unit III MS Excel

Introduction to Worksheet and MS Excel – Getting Started with Excel – Editing Cells and using Commands and Functions – Excel Functions – Range – Moving and Copying, Inserting and Deleting Rows and Columns – Formatting a Worksheet – Formatting Numbers.

Unit IV MS Excel (Continued)

Creating Charts – Resizing and Moving the Chart – Changing the Chart Type – Controlling the Appearance of a Chart – Updating, Modifying and Deleting a Chart – Previewing and Printing Charts – Using Date and Time in a Worksheet – Naming Ranges and Using Statistical, Math Functions.

UnitV Power Point

Power Point – Creating a Presentation – Power Point Views – Running a Slide Show – Printing a Presentation.

Text Book:

2. R K Taxali, PC Software for Windows 98 Made Simple, 2015, McGraw Hill Education Pvt. Ltd.

Chapters : 9(9.4 – 9.7), 11(11.1 – 11.5),12(12.1, 12.4), 13(13.2-13.4,13.7),15(15.1-15.4, 15.6,15.7,15.9),16(16.1-16.4),18, 20, 21, 22(22.1-22.5), 23, 24(24.2-24.4), 26, 27(27.2 – 27.5, 27.7,27.8), 28(28.1-28.6), Annexure B

Reference Books:

3. Jodi Davenport, Critch Greaves, Michael Groh and Eruce Hall berg, Inside Microsoft Office Professional , 1994, New Riders Publications.
4. CloriaMadumere, 3 – IN – 1 Microsoft Word, Powerpoint and Excel 2010, First Edition 2016, Create space Independent Publishing Platform.

S.NO.	LIST OF PRACTICALS
1	Design a Document Using a MS – Word with the Following Options : Bold, Underline, Italics, Different Styles.
2	Design a Document Using a MS – Word with Tables.
3	Design a Document Using a MS – Word with Header and Footer.
4	Design a Document Using a MS – Word with Mail Merge
5	Design a Document Using MS – Excel To Perform Mathematical Functions.
6	Design a Document Using MS – Excel To Perform String Functions.
7	Design a Document Using MS – Excel To Perform Logical Functions.
8	Design a Document Using MS – Excel To Perform Date & Time Functions.
9	Design a Document Using MS – Excel To Create Different Types of Chart for Some Data.
10	Create a Slide Show Using Power Point.

Course Code	Course Title	C	H	I	E	T
17U3SACP1	**LAB: PRACTICAL IN OFFICE AUTOMATION**	1	2	50	50	100

Learning Objectives

- Enrich the students to have a good foundation and practical knowledge on Programming in C.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Write a C program for simple applications of real life using Structures and files.
- Implement Programs with Pointer arrays.
- Design an algorithmic solution for a given problem.

Unit I Fundamentals

C Fundamentals - The C Character Set - Identifiers and Keywords - Data Types - Constants - Variables and Arrays- Declarations - Expressions - Statements - Symbolic Constants - Arithmetic Operators - Unary Operators - Relational and Logical Operators - Assignment Operators - The Conditional Operator - Library Functions.

Unit II Data Input and Output

The getchar Function - The putchar Function - The Scanf Function - The PrintfFunction -Writing a C Program - Compiling and Executing the Program.

Unit III Control Flow

The if else Statement - The while Statement - The do while Statement - The for Statement - Nested Control Structures - The switch Statement - The break Statement - The Comma Operator - The goto Statement.

Unit IV Functions

Accessing a Function - Function Prototypes - Passing Arguments to a Function - Recursion - Storage Classes - Automatic Variables - External (Global) Variables - Static Variables.

Unit VArrays and Structures

Defining an Array - Processing an Array - Passing Arrays to Functions -Multidimensional Arrays - Arrays and Strings - Structures and Unions - Defining a Structure - Processing a Structure - Structures and Pointers- Unions.

Text Book:

2. Byron S. Gottfried, Programming with C, 2nd edition Thirteenth Reprint 2001, Schaum's Outline Series, Tata McGraw – Hill Publication.

Chapters: 2, 3, 4(4.2- 4.6), 5(5.2- 5.4), 6(6.2- 6.11), 7(7.2- 7.6), 8(8.1- 8.4), 9(9.1- 9.5), 11(11.1, 11.2, 11.4, 11.7).

Reference Books:

3. E. Balagurusamy, Programming in ANSI C, 2nd Edition, 2000, Tata McGraw-Hill.
4. YashavantKanetkar, Let us C, 7th Edition 2007, BPB Publications.

Course Code	Course Title	C	H	I	E	T
17U4SACP2	**LAB: PRACTICAL IN PROGRAMMING IN C**	1	2	50	50	100

S.NO.	List of Programs
1	Program to solve quadratic equation.
2	Program to prepare salary calculation.
3	Program to calculate power function.
4	Program to perform text counting.
5	Program to find product of two matrices.
6	Program to find the binomial coefficient.
7	Program to convert decimal to binary numbers.
8	Program to check whether a word is palindrome or not.
9	Program for sorting of integers.
10	Program to calculate the standard deviation.
11	Program to prepare electric bills.
12	Program for sorting of strings.
13	Program to illustrate recursion.
14	Program to find HCF and LCM of two numbers.
15	Program to generate the Fibonacci series.

The Madura College (Autonomous), Madurai – 625011.

Department of Statistics

CBCS Pattern for U.G – Non-Major Elective

Course Structure

Semester	Sub. Code	Title of the Paper	Hours	Credits
III	17U3SNM1	Mathematics for Competitive Exams	2	2
IV	17U4SNM2	Quantitative Aptitude	2	2

Course Code	Course Title	C	H	I	E	T
17U3SNM1	**MATHEMATICS FOR COMPETITIVE EXAMS**	2	2	25	75	100

Learning Objectives

- The main aim of introducing "MATHEMATICS FOR COMPETITIVE EXAMS"for non-mathematics students is to develop skill to meet the competitive examinations for better job opportunity.
- To lay the foundation in the basic principles of Mathematics for other Major Students.

Learning Outcomes

After successful completion of this course, students will be able to

- Understand the basic concepts which will be helpful to them to clear the competitive exams for better job opportunity.
- Solve the problems easily by using Short-cut method with time management.

Unit I Highest Common factor (H.C.F) and Least Common factor (L.C.M) of Numbers.

Unit II Square roots and Cube roots – Average.

Unit III Profit& Loss.

Unit IV Ratio and Proportion.

Unit V Simple Interest and Compound Interest.

TextBook:

2. R. S. Aggarwal, Quantitative Aptitude, Reprint 2016, S. Chand & Company Pvt. Ltd.

Sections: 2, 5, 6, 11, 12, 21, 22

Reference Books:

3. G. K. Ranganath, C. S. Sampangiram and Y. Rajaram, A text Book of business Mathematics**,** 2008, Himalaya Publishing House.
4. R.V. Praveen, Quantitative Aptitude and Reasoning , 2nd Revised Edition 2013, Prentice-Hall of India Pvt. Ltd.

Course Code	Course Title	C	H	I	E	T
17U4SNM2	**QUANTITATIVE APTITUDE**	2	2	25	75	100

Learning Objectives

- The main aim of introducing "Quantitative Aptitude"for non-mathematics students is to develop skill to meet the competitive examinations for better job opportunity.
- Effort has been made to accommodate fundamental, mathematical aspects to instill confidence among Non-major students.
- Enrich their knowledge and to develop their logical reasoning thinking ability.

Learning Outcomes

After successful completion of this course, students will have the knowledge and skills to

- Solve the problems easily by using Short-cut method with time management which will be helpful to them to clear the competitive exams for better job opportunity.
- Analyze the Problems logically and approach the problems in a different manner.

Unit I Time & Distance – Problems on Trains.
Unit II Logarithms – Properties of Logarithms – Common Logarithms.
Unit III Calender and Clocks.
Unit IV Permutations & Combinations and Probability.
Unit V True Discount - Banker's Discount.

Text Book:

2. R.S. Aggarwal, Quantitative Aptitude, Reprint 2016, S. Chand & Company Pvt. Ltd.

Sections: 17, 18, 23, 27, 28, 30, 31, 32, 33

Reference Books:

3. R.V. Praveen, Quantitative Aptitude and Reasoning, 2nd Revised Edition 2013, Prentice-Hall of India Pvt. Ltd.
4. G. K. Ranganath, C. S. Sampangiram and Y. Rajaram, A text Book of business Mathematics, 2008, Himalaya Publishing House.

COMPONENTS OF C.I.A AND QUESTION PATTERN FOR END SEMESTER EXAMINATIONS

Components of C.I.A

x) Test - 15 marks
xi) Assignment/Quiz/Seminar - 5 marks
xii) Attendance - 5 marks

Total - 25 marks

End Semester Exam Components for U.G.

Time: 3 Hours **Maximum Marks: 75**

Part –A (10 x 1 = 10 Marks)
(Answer ALL questions)

- **Objective type Questions.**
- **Two questions from each unit.**

Part –B (5 x 7 = 35 Marks)
(Answer ALL questions)

- **Either or pattern.**
- **One question from each unit.**

Part –C (3 x 10= 30 Marks)
(Answer any THREE questions)

- **Out of FIVE questions, THREE questions to be answered**
- **One question from each unit.**

Department of Biotechonology

B.Sc., BIOTECHNOLOGY COURSE STRUCTURE

SEM	SUB CODE	COURSE TITLE	HOURS/ WEEK	CREDITS
I	17U1LMC1	Cell biology and Genetics	5	5
	17U1SM1	Bioinstrumentation	2	2
	17U1LES1	Environmental Studies	2	2
		Lab in Cell biology and genetics and bioinstrumentation	3	*
II	17U2LMC2	Biochemistry & Biophysics	5	5
	17U2LSM2	Concepts of Biotechnology	2	2
	17U2LVE1	Value education	2	2
		Lab in Biochemistry & Biophysics, Biotechnology concepts	3	*
	17U2LMP1	Lab for I & II Semester papers	3	6
III	17U3LMC3	Molecular biology	4	4
		Lab in Molecular Biology	2	*
IV	17U4LMC4	Animal Biotechnology	2	2
	17U4LSM3	Bioinformatics	2	2
		Lab in Animal biotechnology and Bioinformatics	2	*
	17U2LMP2	Lab for III & IV semester papers	2	4
V	17U5LME1	Biostatistics	5	6
	17U5LMC5	Immunology	5	5
	17U5LMC6	Industrial Biotechnology	5	5
	17U5LMC7	Plant Biotechnology	3	3
		Lab in Biostatistics and Immunology	3	*
		Lab in Industrial and Plant Biotechnology	3	*
VI	17U6LME2	Food preservation and processing	6	7
	17U6LME3	Medical Biotechnology	6	7
	17U6LMC8	Genetic Engineering	4	4
	17U4LSM4	Fisheries Technology	2	2
		Lab in food preservation and processing, Medical Biotechnology	3	*
		Lab in Genetic Engineering and Fisheries Technology	3	*
	17U2LMP3	Lab for V semester papers	6	6
	17U2LMP4	Lab for IV semester papers	6	6

* Exam will be conducted at the even semester.

B.Sc., Ancillary Biotechnology for B.Sc., Microbiology Course structure

Semester	Sub. Code	Title of the paper	Hours	Credits
III	17U3LAC1	Fundamentals of Biotechnology	2	1
		Lab in fundamentals of biotechnology	2	*
IV	17U4LAC2	Immunology	4	2
		Lab in Immunology	2	*
	17U4LAP1	Lab for III & IV semester ancillary papers	2	2
V	17U5LAC3	Food preservation and processing	2	2
	17U5LSA1	Aquaculture– Skill Based Elective	2	1
		Lab in food preservation and processing	2	*
VI	17U6LAC4	r-DNA Technology	4	2
		Lab in r-DNA Technology	2	*
	17U6LAP2	Lab for V & VI semester ancillary papers	2	2

* Exam will be conducted at the even semester.

NME PAPER

Semester	Sub. Code	Title of the paper	Hours	Credits
III	17U3LNM1	Basics of Biotechnology	2	1

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3LMC3	MOLECULAR BIOLOGY	4	4	25	75	100

OBJECTIVES

- To understand the basics of molecular biology.
- To provide fundamental concepts of DNA and RNA.
- To learn the intricacies of prokaryotic and eukaryotic replication, transcription and translation.

LEARNING OUTCOME

- Gain the significance of central dogma of Molecular biology.
- Compare and contrast mechanisms of replication, transcription and translation in prokaryotes and eukaryotes.
- Applicable to many frontier areas of research.

UNIT I Genome Organization **12 hours**

History and scope of molecular biology, DNA structure – B DNA, Z DNA, super coiled DNA, Watson and Crick model, RNA structure– rRNA, tRNA and mRNA, experimental evidence of DNA and RNA as genetic material - transformation experiment, functions of DNA and RNA, genomic organization of prokaryotes and eukaryotes, chromosomal proteins - histone and non-histone proteins, central dogma of molecular biology.

UNIT II Replication **12 hours**

Prokaryotic and eukaryotic DNA replication - mechanism of DNA replication – initiation, replication fork, chromatin assembly, enzymes and accessory proteins, types of DNA replication- semi conservative, conservative, dispersive, rolling circle and bidirectional replication, inhibitors of DNA synthesis.

UNIT III Transcription **12 hours**

Prokaryotic and eukaryotic transcription - RNA polymerases, general and specific factors, regulatory elements and mechanism, transcriptional and post transcriptional modification in RNA - gene silencing, 5'cap formation, 3' end processing, polyadenylation, editing, splicing, nuclear export of mRNA and mRNA stability.

UNIT IV Translation **12 hours**

Genetic code - characteristics of genetic code, Wobble hypothesis. Prokaryotic and eukaryotic translation - structure and chemical composition of ribosomes, mechanism - initiation, elongation and termination, post translational modification of proteins, inhibitors and modifiers of protein synthesis.

UNIT V DNA damage and repair **12 hours**

Mutation – spontaneous and induced, mutagens- physical, chemical and biological, molecular mechanisms of mutagenesis – transition, transversion, frameshift, mis-sense and non-sense mutation, DNA repair mechanism - photo reactivation, excision, recombination and SOS.

TEXT BOOKS

1. David Freifelder,2015. Molecular Biology,4th Edition. Narosa Publishing house New Delhi.

2. Verma and Agarwal, 2016. Cell and Molecular Biology. S.Chand publications, New Delhi.

REFERENCE BOOKS

1. Ramawat and Shaily Goyal, 2010. Molecular Biology and Biotechnology. S.Chand publications, New Delhi.

2. Benjamin Lewin, 2008. Gene VII, 7th Edition. Oxford university press, Nelson cox.

3. Burton E.Tropp, 2012. Molecular Biology Genes to proteins. Jones and Bartlett learning, LLC.

4. S.Wolf, 1993. Molecular and Cellular Biology. Wadsworth Publishing Co., California. USA.

WEBSITE REFERENCES

- https://biology.duke.edu/undergraduate/major/concentrations/cell-molecular
- https://www.elte.hu/en/molecular-biology-selected-topics

YOU TUBE LECTURE VIDEOS

- https://www.youtube.com/watch?v=yRDpOiTXQwI
- https://www.youtube.com/watch?v=MHr9yoPWv90

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4LMC4	ANIMAL BIOTECHNOLOGY	2	2	25	75	100

OBJECTIVES

- To study the role of different media used in animal cell culture.
- To understand the gene transfer techniques in mammalian cells.
- To learn the significance of transgenic animals.

LEARNING OUTCOME

- Provides essentials of animal cell culture and techniques.
- Gain knowledge on characteristics of cultured cells.
- Acquires the significance and applications of transgenic animals.

UNIT I Introduction to animal cell culture 6 hours

History, scope, minimal requirements for cell culture, culture media- definition, types - natural media, artificial media, serum media, serum free media, physiochemical properties of media – pH, CO_2, O_2, temperature and osmolality.

UNIT II Animal cell culture techniques 6 hours

Primary cell culture – definition, techniques - mechanical, enzymatic disaggregation, primary explants, secondary culture – finite, continuous cell line, selection and maintenance.

UNIT III Characterization of cultured cells 6 hours

Characteristics of cultured cells – cell adhesion, proliferation, differentiation, metabolism, initiation, evolution and development, measurement of growth parameters of cultured cell, cell synchronization, senescence and apoptosis.

UNIT IV Transgenic animals **6 hours**

Animal cloning – introduction, importance, methods - retroviral, micro injection, embryonic stem cell in transgenic mice, sheep and its applications.

UNIT V Embryo transfer technology **6 hours**

Animal propagation - In vitro fertilization technology, artificial insemination in cattle, embryo transfer technique and superovulation in farm animals.

TEXT BOOKS

1. P.K.Gupta 2017. Animal Biotechnology, first edition, Rastogi publication, Meerut.
2. U.Satyanarayana, 2015. Biotechnology. Books and Allied P (Ltd), Kolkata, India V.
3. Srivastava Singh and M.P. Yadhav. 2005, Animal Biotechnology. Oxford publishing Co.Pvt. Ltd., New Delhi.
4. Kumaresan 2010. Animal Biotechnology, revised edition, Saras publication, Kanyakumari.

REFERNCE BOOKS

1. B.R.Glick, and J.J. Pasternak, 2003. Molecular Biotechnology, Principles and application of recombinant DNA. ASM Press, Washington.
2. M. Prakash and K.Arora, 1999. Cell tissue culture, Anormal Publication.
3. S.N.Jogdand, 2001. Advanced in biotechnology, Himalaya Publication, Mumbai.

WEBSITE REFERENCE

- https://www.cliffsnotes.com/study-guides/biology/biology/recombinant-dna-and-biotechnology/transgenic-animals
- http://www.biotechnology4u.com/animal_biotechnology_animal_cell_culture.html

YOU TUBE LECTURE VIDEOS

- https://www.youtube.com/watch?v=qCIvAuwaf-o
- https://www.youtube.com/watch?v=ie8wjl2ETNo

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4LSM3	BIOINFORMATICS	2	2	25	75	100

OBJECTIVES

- To understand the role of computer in biological research.
- To analyze the biological data.
- To learn the concepts involved in protein structure prediction.

LEARNING OUTCOME

- Basic knowledge on Bioinformatics and its applications.
- Gain information on many biological databases and software tools for research analysis.
- Basic idea in structure prediction and phylogenetic analysis.

UNIT I Overview of Bioinformatics **6 hours**

Introduction to Bioinformatics, history of Bioinformatics, scope of Bioinformatics, Bioinformatics- a multi-disciplinary approach, application of Bioinformatics.

UNIT II Biological Databases **6 hours**

Major bioinformatics databases- NCBI, Nucleotide database -Genbank, EMBL and DDBJ, protein database - primary sequence database– Swissprot and PIR, secondary sequence database- PROSITE, PRINTS and pfam, protein structural database- PDB, SCOP and CATH.

UNIT III Sequence Alignment **6 hours**

Retrieval of sequence – SRS and ENTREZ, sequence alignment, BLAST, FASTA, local and global alignment. Pair wise sequence alignment – Dot-matrix and K-tuple method, multiple sequence alignment – CLUSTALW, applications of multiple sequence alignment.

UNIT IV Phylogenetic analysis **6 hours**

Phylogenetic tree- structure of typical phylogenetic tree, rooted and unrooted tree, construction of phylogenetic tree, phenetic method - UPGMA and neighbour joining, cladistic method - maxium parsimony and maximum likelihood, phylogenetic softwares available in the web.

UNIT V Protein structure prediction **6 hours**

Protein structure – classification and protein structure prediction – *ab initio* modelling, comparative modelling - homology modelling, SWISS modeller, protein threading, evaluation of predicted structure -Ramachandran plot, molecular visualisation tools -Rasmol and Swiss PDB viewer.

TEXT BOOKS

1. S.C.Rastogi et al., 2006. Bioinformatics concepts, skills and applications.2nd edition, CBS Publishers and Distributors, Pvt. Ltd.

2. C.Subramanian, 2015. A text book of Bioinformatics. 1st edition, Dominant publishers, NewDelhi.

3. B.G. Curran et al., 2010. Bioinformatics.1st edition, CBS Publishers and Distributors, Pvt. Ltd.

REFERENCE BOOKS

1. Z. Ghoshand, B. Mallick. 2008. Bioinformatics: Principles and Applications. Oxford University Press, New Delhi.

2. Lesk, A.M. 2002. Introduction to Bioinformatics. Oxford University Press, London.

3. N.J.Chikale and V.S.Gomase.2007. Bioinformatics.1st edition. Himalaya publishing house ltd, Mumbai.

4. Vittal R. Srinivas, 2005. Bioinformatics a modern approach. Prentice Hall of India pvt.Ltd. New Delhi.

WEBSITE REFERENCES

- https://www.ncbi.nlm.nih.gov/
- http://www.rcsb.org/

YOU TUBE LECTURE VIDEOS

- https://www.youtube.com/watch?v=liNblw4x50E
- https://www.youtube.com/watch?v=eZfyWdHnzR0

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4LMP2	PRACTICAL –II	4	2	50	50	100

LABORATORY EXPERIMENTS

1 Isolation of DNA from plant tissue

2 Isolation of chromosomal DNA from bacterial cells

3 Isolation of total RNA from chick liver

4 Preparation of media for animal cell culture

5 Cell viability test by Trypan Blue Exclusion

6 To build query for retrieving scientific records and chemical structure from Pubmed and Pubchem database

7 Retrieving sequence records with NCBI's Entrez Nucleotides and EMBL

8 Sequence similarity searching using NCBI BLAST and its variants

9 Understanding the homology between different Eukaryote and prokaryote species using Multiple sequence alignment

10 Understanding evolutionary relationship (orthology and paralogy) using Phylogenetic Analysis.

REFERENCE BOOKS

1. Dr.S.Rajan and R.Selvi Christy. 2011. Experimental Procedure in Life Science, 1st edition, Anjana publication.
2. N.Arumugam, Dulsy Fatima.2013. Practical Zoology, 1st edition , Saras publication
3. Aparana Mathur.2013. Laboratory instrumentation, Black printers India Inc.,
4. S.Shanmugam, T.Sathish kumar and K.Panner selvam.2010. Laboratory Hand Book on Biochemistry, PHI learing Pvt. Ltd., New Delhi- 1.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3LAC1	FUNDAMENTALS OF BIOTECHNOLOGY	2	2	25	75	100

OBJECTIVES

- To understand the basic concepts in frontier areas of biotechnology.
- To learn the applications of the biotechnology and its products.
- To inculcate the students on current scenario in biotechnology.

LEARNING OUTCOME

- Gain the significance of fundamental aspects in biotechnology.
- Provides information on emerging cloning techniques and bioremediation.
- Provides an insight about IPR and patenting.

UNIT I Biotechnology: Scope and Importance **6 hours**

History of biotechnology, traditional and modern biotechnology, potentials of modern biotechnology, biotechnology as an interdisciplinary area- biotechnology tree. Achievements in biotechnology.

UNIT II Gene concept and Tools **6 hours**

Definition, size of a gene, cistron, muton and recon. Tools in biotechnology-restriction enzymes - types, naming, target sites, nature of cut ends – cohesive and blunt end.

UNIT III Animal Biotechnology **6 hours**

Animal cloning- introduction, method - nuclear transfer- dolly. Assisted reproductive technology- definition, methods- artificial insemination, gamete intra-fallopian transfer, embryo transfer.

UNIT IV Environmental biotechnology **6 hours**

Xenobiotics - definition, biodegrading agents, superbug- construction of superbug- application of superbug, modification of bacterial strains, treatment of toxic pollutants- bioremediation – phytoremediation.

UNIT V Regulations in biotechnology **6 hours**

Biosafety guidelines - definition, possible dangers of GEO's, biohazardous of rDNA technology. Intellectual Property Rights, patenting of biotechnological products, copyrights, design and trademark.

TEXT BOOKS

1. V.Kumaresan, 2010. A text of biotechnology, 5th edition, Saras publication.
2. R.C.Dubey, 2010. A text book of Biotechnology, 1st revised edition, S.Chand Publication.

REFERENCE BOOKS

1. U.Sathyanarayana, 2016. Biotechnology 9th edition, Books and allied (P) ltd.
2. S.C.Rastogi,2016. Biotechnology principles and Applications, Narosa publication.
3. S.S. Purohit, 2010. Biotechnology fundamentals and Applications, Fourth edition, STUDENT EDITION, Jodhpur.
4. H.K.Das, 2017. Text book of Biotechnology, 5th edition, Willey India publication, NewDelhi.

WEBSITE REFERENCES

- https://www.swissbiotech.org/biotechnology/applications-biotechnology
- https://www.tc.cz/files/projekty/czbiotechnology

YOU TUBE LECTURE VIDEOS

- https://www.youtube.com/watch?v=OVf_ASEGuns
- https://www.youtube.com/watch?v=5ffl-0OYVQU
-

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4LAC2	IMMUNOLOGY	4	4	25	75	100

OBJECTIVES

- To understand the basic principles of Immunology.
- To study the organs and cells involved in the immune system.
- To learn the mechanism of immune response.
- To gain knowledge on antigen-antibody reactions and their applications.

LEARNING OUTCOME

- Acquire knowledge on basic concepts in Immunology.
- Create awareness to hypersensitivity, transplantation and tumour immunology.
- Gain information on applications of immunotechniques in various fields.

UNIT I Cells and organs of immune system 12 hours

Immunity- definition, history, types of immunity- innate and acquired, lymphoid organs- primary and secondary-structure and functions, cells of the immune system- stem cells – origin and differentiation, lymphocytes- T cell-types , B cell , plasma cells, null cells, macrophages, eosinophils, basophils, antigen presenting cells, mast cells and platelets.

UNIT II Antigen and Antibody 12 hours

Antigen, Immunogen, Hapten- definition, immunogenicity, types of antigens. Immunoglobulin- structure, different classes of immunoglobulins- structure and biological properties, Allotypes, Idiotypes, principle of antigen - antibody interactions- Agglutination, Precipitation, Opsonization, C-Activation, Neutralization and Cell lysis.

UNIT III Complement and Hypersensitivity 12 hours

Immune response - kinetics of immune response, primary and secondary immune response, cell mediated immune response. Complement pathways- classical and alternative. Hypersensitive Reactions- Type I, Type II, Type III and Type IV.

UNIT IV Transplantation and Tumour immunology 12 hours

Transplantation antigens, types of transplantation, GVHD, prevention of graft rejection. Tumour antigens, immunity to tumour, immune evasion to tumour, tumour immunodiagnosis.

UNIT V Applications of immunotechniques 12 hours

Applications of Antigen- Antibody reactions- Mancini and Ouchterlony technique, ABO blood grouping, Enzyme linked Immunosorbent assay, Hybridoma technology, vaccine –killed, attenuated and recombinant.

TEXT BOOKS

1. Akram Hossain, Md.2003. Immunology: A short Textbook, Medical publishers, New Delhi.

2. Benjamini E., Sunshine G and Leskowitz S, Immunology: A short course, 5th Ed, New York: John Wiley &Sons - Inc, 2003.

REFERENCE BOOKS

1. Abbas A.K and Lichtman A.H, Cellular and Molecular Immunology, 5th Ed, Philadelphia, Saunder's Publishers, 2003.

2. Abbas A.K and Lichtman A.H, Basic Immunology, 2nd Ed, New Delhi, Elsevier Inc, 2004.

3. Chakravarthy A.K, Immunology and Immunotechnology, New Delhi, Oxford University Press, India, 2006.

4. Coleman R.M, Fundamental Immunology, 3rd Ed, USA, Wm.C.Brown Publishers, 1994.

WEBSITE REFERENCES

- www.mednotes.net/notes/immunology/
- www.easybiologyclass.com/immunology-free-lecture-notes-online-tutorials-lecture-notes

YOU TUBE LECTURE VIDEOS

- https://www.youtube.com/watch?v=Jshw2sHrk8Y
- https://www.youtube.com/watch?v=lhkOLJ5A5BQ

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U4LAP1	**PRACTICAL -I**	4	2	50	50	100

LABORATORY EXPERIMENTS

1. Isolation of DNA from plant tissue.
2. Isolation of DNA from animal tissue.
3. Isolation of total RNA from plant tissue.
4. Isolation of total RNA from chick liver.
5. Isolation of lymphoid organs in chick.
6. ABO blood grouping- Haemagglutination.
7. Rh typing.
8. Differential count of WBC

REFERENCE BOOKS

1. Dr.S.Rajan and R.Selvi Christy, 2011. Experimental Procedure in Life Science, 1st edition, Anjana publication.

2. N.Arumugam and Dulsy Fatima, 2013. Practical Zoology, 1st edition, Saras publication.

3. Aparana Mathur, 2013. Laboratory instrumentation, Black printers India Inc.

4. R.C.Dubey and Maheswari, 2012. Practical Microbiology, 3rd edition, S.Chand Publications.

COURSE CODE	COURSE TITLE	C	H	I	E	T
17U3LNM1	**BASICS OF BIOTECHNOLOGY**	2	2	25	75	100

OBJECTIVES

- To educate the essentials of Biotechnology in various fields.
- To appraise the ethical and regulatory issues of Biotechnology.
- To gain knowledge on the applied aspects of Biotechnology.

LEARNING OUTCOME

- Provides basic knowledge on the subject – Biotechnology.
- Inculcate the role of biotechnology in various fields.
- Provides an insight about bioethics and biosafety.

Unit I Biotechnology in Animal husbandry 6 hours

Introduction, history and scope of animal biotechnology, Biotechnology in India – DBT, Transgenic animal – Dolly.

Unit II Biotechnology in Agriculture 6 hours

Plant tissue culture – definition, history, techniques – microinjection and electroporation, advantages and disadvantages, transgenic plant – *Bt* Cotton.

Unit III Biotechnology in Food industry 6 hours

Single cell protein- sources, nutritive values and uses. Fermented foods - processing of idli, dosa batter, butter milk, cheese and yoghurt.

Unit IV Environmental Biotechnology 6 hours

Role of biotechnology in environmental protection – global warming, waste water treatment – activated sludge method, biogas production and advantages, bioremediation-superbug.

Unit V Bioethics and biosafety 6 hours

Ethical, legal and social implications of biotechnology, biosafety - positive and negative effects of GMO foods.

TEXT BOOKS

3. U. Satyanarayana. 2015. Biotechnology. 9th edition. Books and Allied P (Ltd), Kolkata, India.

4. V. Kumaresan. 2010. Biotechnology, revised edition, Saras publication, Kanyakumari.

REFERENCE BOOKS

1. R.C. Dubey. 2014. A Text book of Biotechnology, 5th revised edition, S.Chand publication, NewDelhi.

2. S.S Purohit and S.K. Mathur 2002. Biotechnology – Fundamentals and applications, Agro-Bios publishers, New Delhi.
3. S.N. Jogdand, 2010. Environmental biotechnology, 5th edition, Himalaya Publication, Mumbai.

WEBSITE REFERENCES

- http://www.biologydiscussion.com/biotechnology/biotechnology-introduction-scope-and-applications-of-biotechnology/11608
- https://byjus.com/biology/application-biotechnology-medicine/

YOU TUBE LECTURE VIDEOS

- https://www.youtube.com/watch?v=DNysyCG_U9c
- https://www.youtube.com/watch?v=2NUEMpL9kfk

Department of Micro Biology

B.Sc., MICROBIOLOGY COURSE STRUCTURE

SEM	SUB CODE	COURSE TITLE	HOURS / WEEK	CREDITS
I	17U1RMC1	General Microbiology	5	5
	17U1RSM1	Basic Techniques in Microbiology	2	2

	17U1RES1	Environmental Studies	2	2
		Lab in Microbiology and Basic Techniques *	3	

II	17U2RMC2	Microbial Taxonomy	5	5
	17U2RSM2	Cell and Molecular Biology	2	2
	17U2RVE1	Value Education	2	2
		Lab in Microbial Taxonomy , Cell and Molecular Biology	3	
	17U2RMP1	Lab for I & II Semester papers	3	6

III	17U3RMC3	Biochemistry	4	4
		Lab in Biochemistry *	2	

IV	17U4RMC4	Microbial Physiology	2	2
	17U4RSM3	Biostatistics	2	2
		Lab in Biochemistry, Microbial Physiology and Biostatistics	2	
	17U4RMP2	Lab for III & IV Semester papers	3	4

V	17U5RME1	Microbial Genetics	5	6
	17U5RMC5	Environmental Microbiology	5	5
	17U5RMC6	Medical Microbiology	5	5
	17U5RMC7	Bioinformatics	3	3
		Lab in Microbial Genetics and Environmental Microbiology *	3	
		Lab in Medical Microbiology and Bioinformatics*	3	

VI	17U6RME2	Food Microbiology	6	7
	17U6RME3	Biotechnology	6	7
	17U6RMC8	Pharmaceutical & Forensic Microbiology	4	4
	17U6RSM4	Fermentation Technology	2	2
		Lab in Food microbiology and Biotechnology	3	
		Lab in Pharmaceutical , Forensic Microbiology and Fermentation Technology	3	
	17U6RMP3	Lab for V Semester papers	6	6
	17U6RMP4	Lab for VI Semester papers	6	6

***Exam will be conducted at the even semester.**

B.Sc. Ancillary Microbiology for B.Sc Biotechnology Course structure

Semester	Sub. Code	Title of the paper	Hours	Credits

I	18U1RAC1	Basic Microbiology	4	2
		Ancillary Practical I*	2	
II	18U2RAC2	Medical Microbiology	4	2
		Ancillary Practical II		
	18U2RAP1	Practical I & II papers	2	2
III	18U3RAC3	Environmental Microbiology	2	2
	18U3RSA1	Mushroom cultivation (Skill Based Elective)	2	1
		Ancillary Practical III*	2	
IV	18U4RAC4	Applied Microbiology	2	1
	18U4RNM1	Microbes in Human Welfare (NME Paper)	2	1
		Ancillary Practical IV		
	18U4RAP2	Practical III and IV papers	2	1

***Exam will be conducted at the even semester.**

Course Code	Course Title	C	H	I	E	T
17U3RMC3	**BIOCHEMISTRY**	**4**	**4**	**25**	**75**	**100**

Course Objectives:

- To introduce the structure and properties of various biomolecules.
- To learn the concepts involved in the mechanism of enzyme action.

Learning Outcomes:

- Students gathered indepth informations about biomolecules and their mechanisms.
- Students acquire knowledge on role of lipids and vitamins to human population.

Unit I **12 Hrs**

Carbohydrates – definitions, biological significance - Classification, Structure, chemical and physical properties of Monosaccharides - Glucose, Disaccharides- lactose, Polysaccharides – starch.

Unit II **12 Hrs**

Amino acids -classification, essential and non – essential amino acids, structure and properties. Proteins – definitions, classification based on composition, solubility. structural levels of organization – primary, secondary, tertiary and quaternary structure and functions.

Unit III **12 Hrs**

Enzymes – definitions, IUB classification with example, Structure, mechanism of enzyme action-lock and key model. Enzyme inhibition-competitive and non competitive, factors affecting enzymes activity.

Unit IV **12 Hrs**

Lipids - classifications , physical and chemical properties, saturated and unsaturated fatty acids. Lipid metabolism - β-oxidation, biosynthesis of saturated fatty acid eg. Palmitic acid.

Unit V **12 Hrs**

Vitamins- classification, occurrence, deficiency, symptoms and importance of vitamins- water soluble vitamins (Vitamin B and C). Fat soluble vitamins (Vitamin A, D, E and K).

Text Book :

1. Jain, J. L. (2000). Fundamentals of Biochemistry. S. Chand & Co. Ltd., New Delhi

Reference Book(s):

1.Nelson, D.L., and M.M.Cox., (2000). Lehninger, Principles of Biochemistry, Third edition, Macmillan Worth publishers
2.David, B.D., Delbecco,. R., Eisen, H.N and Ginsburg, H.S (1990). "Microbiology" 5th Edition. Harper & Row, New York.

3.Stryer. L. (1995). Biochemistry, 4th Edn , W.H. Freeman &Co. NY.
4.Rober K. Murray, Daryl K. Grammer, (1990) -Harper's Biochemistry- McGraw Hill, Lange Medical Books. 25th edition.
5.Satyanarayana, U (2005). Essentials of Biochemistry, Books and Allied (P) Ltd., Kolkata.
6.Veerakumari, L (2004). Biochemistry. MJP Pubilshers, A Unit of Tamil Nadu Book House, Chennai.

Web reference(s):

1.www.biochemistry.org/
2. www. bookboon.com/en/biology-biochemistry
3.www.ncbi.nlm.nih.gov/books/NBK21154

You tube reference(s):

1. www. Biochemistry Introductory Lecture for Kevin Ahern's BB 450/550 youtube.com
2. www .Biochemistry Lecture (Introduction) from Kevin Ahern's BB 350 youtube.com

Course Code	Course Title	C	H	I	E	T
17U4RMC4	**MICROBIAL PHYSIOLOGY**	**2**	**2**	**25**	**75**	**100**

Course Objectives:

- To study the various physiological phenomena involved within microbes.
- To study different types of extremophilic organisms.

Learning Outcomes:

- The learners acquire knowledge about various physiological activities of the microbes and their survival under extreme atmospheric conditions.
- Students learn the concepts of physiological cycles mainly the importance of gluconeogenesis.

Unit I **6 Hrs**

Nutritional requirements of microorganisms -autotrophs, heterotrophs, phototrophs and chemotrophs. Energy production- Phosphorylation - types. Structure of ATP and its significance.

Unit II **6 Hrs**

Metabolism- Types, Aerobic, anaerobic respiration and fermentation. Catabolism – Glycolysis, Kreb cycle and ED pathway. Fermentation – alcoholic and lactic acid .Homo and heterolactic fermentation.

Unit III **6 Hrs**

Anabolism - Photosynthesis- Classification and properties of prokaryotic photosynthetic microbes. Light reaction of Cyanobacteria, Purple and green bacteria. Dark reaction - C3 cycle and reductive TCA cycle.

Unit IV **6 Hrs**

Biosynthetic Pathway of Aminoacids – leucine, valine, isoleucine, methionine, lysine. Biosynthesis of Peptidoglycan.

Unit V **6 Hrs**

Biosynthetic Pathway - Purine and Pyrimidine pathways. Glyoxylate Pathway and Gluconeogenesis and their significance.

Text Book :

1. Moat G, John E. Foster and Michael P.Spector (2002). Microbial physiology. Fourth edition, A John Wiley sons, Inc publication. New Delhi.

Reference Book(s):

1.Dall, D.O and Rao, K.K (1995). "Photosynthesis" –Cambridge University press.
2.Stainer, R.Y., Ingraham, J.L., Wheelis, M.L and Painter, P.R. (1986). "General Microbiology" -Mac Milan Education Ltd. London.
3.Dubey, R.C. and Maheswari, D.K. (2005). A Text book of microbiology. S. Chand & Company Ltd. New Delhi.
4.Sale, A.J (1992). "Fundamentals Principles of Bacteriology", 7th Edition. McGraw Hill Publishing Co. Ltd., New York.
5.Stanier, R.Y., J.L.Ingraham, M.L.Whellis and P.R.Painter, (1986). The Microbial World, Fifth edition, Prentice Hall of India, New Delhi.
6.Sundara Rajan ,S. (2003). Microbial Physiology, Anmol Publication ,NewDelhi

Web reference(s):

1.www.omicsonline.org/microbial-physiology/..
2.www.omicsonline.org/scholarly/microbial..
3. www mib.uga.edu/research/content/microbial-physiology

You tube reference(s):

1. www Microbial Physiology youtube.com.
2. www .Dr. S. R. Dave's lecture on Microbial Physiology and Growth youtube.com

Course Code	Course Title	C	H	I	E	T
17U4RSM3	**BIOSTATISTICS**	**2**	**2**	**25**	**75**	**100**

Course Objectives:

- To train the students to collect, organize and analyze data.
- Learn to apply different statistical tools in presenting biological data.

Learning Outcomes:

- The students obtain analytical knowledge to apply various statistical tools in their higher studies.
- Students have the methods of sampling, collection of data.
- Students know the methods of data presentation.

Unit I 6 Hrs

Biostatistics - definitions , types of data, sources of data in life science – Limitations and uses of statistics – collection of data – Primary data – Secondary data – classification of data – Tabulation and presentation of data.

Unit II 6 Hrs

Theory of sampling – Introduction, types of sampling- random and non random sampling methods.

Unit III 6 Hrs

Measures of central tendency – Mean, Median and Mode – Measures of dispersion – range, quartile deviation, standard deviation.

Unit IV 6 Hrs

Data presentation - introduction, presentation of three forms - textual form, tabular form and graphical form. Frequency – types of diagram – bar, pie, histogram and line diagram.

Unit V 6 Hrs

Chi square distribution - F and T test. Analysis of Variance - One way and two way classifications.

Text Book :

1.Gurumani, N. (2004). An Introduction to Biostatistics. MJP publishers, Chennai.

Reference Book(s):

1. Arora, P.N and P.K.Malhan (2008). Biostatistics. Himalaya Publications, Mumbai.

2. Daniel, W.W (2006) Biostatistics-A foundation for analysis in health sciences, John Wiley (Asia) & sons, Singapore.
3. Gupta S.P. (1987). Statistical Methods. Sultan Chand & Sons Publishers, New Delhi
4. Sokal, R.R. and Rohif, F.J. (1987). Introduction to Biostatistics. W.H. Freeman and company, New York.
5. Sundar Rao, P.S.S. and Righard, J. (2002). An Introduction to Biostatistics. III edn. Prentice Hall of India, New Delhi.
6.Misra, B.N. and Misra, B. K. (1998). Introductory Practical Biostatistics. Naya Prakash, Calcutta.

Web reference(s):

1.www.researchgate.net/publication/2
2.www.stat.ufl.edu/~winner/sta6934/st4170
3.www.sanfoundry.com/-biostatistics

You tube reference(s):

1. www Biostatistics introduction youtube.com.
2. www Biostatistics SUMMARY STEP 1 - The Basics USMLE youtube.com

Course code	Course title	C	H	I	E	T
17U4RMP2	**PRACTICAL –II** **LAB IN BIOCHEMISTRY,MICROBIAL**	**4**	**3**	**50**	**50**	**100**

	PHYSIOLOGY AND BIOSTATISTICS					

S.No	Experiments
1	Measurement of pH of various samples using pH meter
2	Verification of Beer's Law
3	Buffer preparation (Verification of Henderson-Hasselbalch equation)
4	Separation of amino acids by paper chromatography
5	Separation of leaf pigments by Column chromatography
6	Separation of amino acids by TLC
7	Quantitative estimation of glucose by anthrone method.
8	Quantitative estimation of DNA by Diphenylamine method
9	Quantitative Estimation of Protein by Lowry's Method
10	Qualitative analysis of carbohydrate (mono, di and polysaccharides).
11	Biochemical characterization of bacterium--IMVIC, oxidase and catalase
12	Starch, casein and lipid hydrolysis
13	Diagrammatic and graphical representation of data.
14	Problems in Mean, Median, Mode.
15	Problems in Chi square Test/ SD

Text Manual:

1.Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
2.Palanivel, P. (2000). Laboratory Manual for Analytical Biochemistry & Separation Techniques, School of Biotechnology, Madurai Kamaraj University, Madurai

Reference Book(s):

1.James G Cappuccino & Natalie Sherman (2004). Microbiology: A Laboratory Manual. 6th Edition, Published by Pearson Education.

2. Bajpai, P.K. (2010). Biological Instrumentation and Methodology.S.Chand & Company.New Delhi.
3. Jeyaraman, J., (1985), Laboratory Manual in Biochemistry, Wiley Eastern Limited,New Delhi.
4. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas (2000). Vogel`s Textbook of quantitative chemical analysis. 6th edition. Pearson Education.New Delhi.
5. Bailey, N.J.J. (1994). Statistical methods in Biology. Cambridge University Press. Cambridge.
6. P.Mariappan, (2013). Biostatistics an introduction. Pearson.
7.Sawhney, S.K. and Nandhir singh, (2000). Introductory practical Biochemistry, Narosa Publishing house, New Delhi.
8.Veerakumari, L. (2009). Bioinstrumentation. MJP Publishers, Chennai.

Web reference(s):

1.www.jaypeedigital.com
2.www.biolympiads.com
3.www.elearningbiostatistics.com/

You tube reference(s):

1.www.applied biostatistics.youtube.com
2.www.practical biochemistry.youtube.com

Course Code	Course Title	C	H	I	E	T
17U5RME1	**MICROBIAL GENETICS**	**6**	**5**	**25**	**75**	**100**

Course Objectives:

- To learn the fundamentals of Microbial genetics.
- To expose the students to the structure and functions of genetic material and gene transfer methods.

Learning Outcomes:

- Enables the students to understand the relevance of microbial genetics with day today life.
- Students gathered the information regarding the structure and chemistry of genetic molecule.
- They learn the types and functions of various forms of DNA and RNA.
- Students can understand the gene transfer mechanisms and gene regulation.

Unit I **15 Hrs**

Cell cycle –G_1 phase, S phase (synthesis), G_2 phase (interphase), mitosis, amitosis and meiosis - significance.

Unit II **15 Hrs**

DNA - structure, types and chemical composition , replication- semiconservative- Meselson stahl experiment. Replication of double strand DNA, synthesis of Okazaki fragment and enzymes involved. RNA – types and significance.

Unit III **15 Hrs**

Translation in prokaryotes- Genetic Code, wobble hypothesis, Ribosome. tRNA, Initiation, Elongation and Termination of polypeptide biosynthesis. Post transcriptional and post translational modifications of proteins.

Unit IV **15 Hrs**

Prokaryotic gene transfer mechanism - Bacterial conjugation –F Factor, Hfr Transfer. Gene mapping. Bacterial Transformation- *E.coli* Transduction- Generalized and specialized transduction.

Unit V **15 Hrs**

Gene Regulation – introduction, Operon concept , types – positive and negative regulations, Lac operon and Trp operon concept.

Text Book :

1.David Frifielder (2005). Molecular Biology. 2nd Edition. Narosa Publishers, New Delhi.

Reference Book(s):

1.Maloy, S.R. Cronan Jr. J.E, Freifelder D (1994), Microbial genetics. Jones and Barlett publishers.
2.Tortora GJ, Funke BR, and Case CL. (2008). Microbiology: An Introduction. 9th edition. Pearson Education.
3.Lodish, H. Baltimore Daerk . A. Zipsury, S.L. Marsudaisa. P. Darnel. J. (1995). Molecular cell biology.
4.Gardner- Simon Snustad. (2008). Principles of genetics, 8th Edition. John Wiley & sons. Inc. New York.
5.Hayes.W. (1968). Genetics of Bacteria and their viruses, Black Well Publication, London.
6. Allison, L.A., (2007). Fundamental Molecular Biology, Blackwell Publishing, USA.

Web reference(s):

1.www.omicsonline.org/scholarly/microbial-genetics.
2.www.lamission.edu/lifesciences/Steven/Micro20
3.www.indiabix.com Microbiology

You tube reference(s):

1. www Microbial Genetics youtube.com
2. www Microbial Genetics Part 2 youtube.com

Course Code	Course Title	C	H	I	E	T
17U5RMC5	**ENVIRONMENTAL MICROBIOLOGY**	**5**	**5**	**25**	**75**	**100**

Course Objectives:

- To understand the role of microbes in different spheres of life.
- Make them to learn analytical techniques of Quality control sector in microbiological industry.

Learning Outcomes:

- Students acquire the concept of omnipotence of microorganisms.
- Students will be able to know the role and interaction of microbes in biogeochemical cycle.
- They are able to analyze the role of microbes in the air and their sampling.
- They will know the various biochemical characteristics and treatment of sewage.

Unit I **15 Hrs**

Introduction to soil Microbiology – Types and significance of soil microbes – Bacteria, fungi, actinomycetes and algae . Factors affecting microbial population.

Unit II **15 Hrs**

Biochemical cycle – carbon, phosphorus, nitrogen – Biological nitrogen fixation. Biofertilizer – *Rhizobium* and *Azotobacter*, Cyanobacteria – Mass multiplication.

Unit III **15 Hrs**

Microbial interaction – neutralism, comensalism, synergism, mutualism, ammensalism, competition, parasitism and predation. Interaction of microbes with plants – Rhizosphere.

Unit IV **15 Hrs**

Microbiology of air – Aeromicrobial pathways – Enumeration of bacteria from air – Air sampling devices – Air sanitation. Microbiology of water- Potability of water quality – Indicator organisms – Water purification – Waterborne diseases – Typhoid and Amoebic dysentery and their control measures.

Unit V **15 Hrs**

Microbiology of sewage – chemical and biochemical characteristics of sewage. Sewage treatment – physical, chemical and biological treatment -trickling filter, activated sludge and oxidation pond.

Text Book :

1.Atlas, R.A. and Bartha, R. (2000). Microbial Ecology. Fundamentals and Application, Benjamin Cummings, New York.

Reference Book(s):

1. Rangasami G & Bagyaraj D.J(1993). Agricultural Microbiology , Prentice-Hall publications.
2. Alexander. (1997). Introduction to soil Microbiology. John Wiley and Sons. N.Y.
3. Subba Rao, N.S. (1995) .Soil Micro organisms and plant growth, Oxford and IBH publishing Co. Pvt. Ltd.
4. Prescott L.M, Harley J.P. & Klein D.A.,(2006). Microbiology , McGraw Hill Publishers.
5. Madigan M.T., Martinko J.M. & Brock P.J.(1997). Biology of Microorganisms , Prentice-Hall Inc.
6. Kanika Sharma, (2011). Textbook of Microbiology – Tools and Techniques. 1st Edition, Ane Books Pvt. Ltd., New Delhi.

Web reference(s):

1.www.highveld.com/microbiology/environmental-microbiology.
2.www.sfam.org.uk/en/journals/environmental-microbiology.cfm
3.www.sciencedirect.com/science

You tube reference(s):

1.www.Environmental Microbiology youtube.com
2.www .BI280 Chapter 26 Environmental Microbiology - Part 1 of 2youtube.com

Course Code	Course Title	C	H	I	E	T
17U5RMC6	**MEDICAL MICROBIOLOGY**	**5**	**5**	**25**	**75**	**100**

Course Objectives:

- To recognize the significance of immune system and vaccines for maintaining human health.
- To understand the pathogenesis mechanism of different pathogens.

Learning Outcomes:

- Students acquire various basic concepts of medical microbiology.
- The paper presents an overview of the organization and function of clinical microbiology laboratory
- The students have analyzed the mechanism of pathogenicity and vaccines.

Unit I **15 Hrs**

History of Immunology – Host-parasite relationship – Immunity – Innate and acquired immunity – Humoral and Cell-mediated immunity.

Unit II **15 Hrs**

Cells and organs of immune system - Structure and functions of Cells and organs involved in immune system. Primary and secondary lymphoid organs. Antigens – Types, properties – Immunoglobulins – Structure, types and properties . Monoclonal antibodies – production and applications.

Unit III **15 Hrs**

Antigen – Antibody reactions – Agglutination – Precipitation – Complement fixation – Immunofluorescence – ELISA-RIA. Hypersensitivity reactions – Type I and Type II.

Unit IV **15 Hrs**

Mechanism of microbial Pathogenicity -Morphology, cultural characteristics, biochemical, pathogenicity, lab diagnosis and prevention of bacterial diseases - *Mycobacterium tuberculosis, Salmonella typhi* and *Escherichia coli.* Viral diseases- *Pox, Herpes, Hepatitis* and *HIV.* Fungal diseases -systemic mycoses- Histoplasmosis. Protozoan diseases- *Plasmodium.*

Unit V **15 Hrs**

Vaccines – Historical background, types of vaccine- live , inactivated vaccines , recombinant vaccines and edible vaccines . Immunization schedule for infants, children and teens.

Text Book :

1.Ananthanarayanan R. and Jayaram Panicker C.K. (1994). Text book of Microbiology. Orient Longman.

Reference Book(s):

1.Baron, E.J. and Finegold S.M. (1995). Scientific Company. Diagnostic Microbiology. Blackwell Scientific Company.
2.Salle, A.J. (1992). Fundamental Principles of Bacteriology. 7th Edition, Mc. Graw Hill Publishing Co. Ltd., New York.
3.Rajesh Bhatia & Rattan Lal Ichhpujani (2004). Essentials of Medical Microbiology. 3rd Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi
4.Roitt, I.M (1998) Essential Immunology Blackwell Scientific Publishers.
5.Kuby, J. (1994). Immunology, 2nd edition, W.H. Freeman and Company. New York.
6.Rajan, S. 2009. Medical Microbiology, MJP Publishers, Chennai.

Web reference(s):

1.www.immunology.org/.
2.www.omicsonline.org/clinical-cellular-immunology.php
3.www.omicsonline.org/medical-microbiology

You tube reference(s):

1.www immunology 101: The Basics and Introduction to our Patient- youtube.com
2.www .immunology and medical microbiology Lecture Mini. youtube.com

Course Code	Course Title	C	H	I	E	T
17U5RMC7	**BIOINFORMATICS**	**3**	**3**	**25**	**75**	**100**

Course Objective

- Learn "from sequence to structure prediction" –concept.
- To familiarize students in applying bioinformatic tools in biomedical research.

Learning Outcomes:

- Students acquire knowledge on computers and various programmes.
- Students have collection of biological database and know how to use it.
- Students get familiarize with sequence analysis and information retrieval systems.

Unit I **9 Hrs**

Introduction to Computers - Characteristics and Classification of Computers – Input and Output Devices, Storage devices. Operating system : MS,DOS & Windows . Intranet , Internet, World Wide Web, Browsers, Search Engines – Google, Yahoo. Information access, LAN, WAN.

Unit II **9 Hrs**

Introduction to Bioinformatics- History and scope of Bioinformatics. Bioinformatics in India- the flourishing future.. General Introduction of Biological data bases- Nucleic acid databases - Gen Bank, DDBJ and EMBL.

Unit III **9 Hrs**

Biological Sequence Databases- Protein data bases- eg. SWISS PROT, primary, composite and secondary. Applications of Bioinformatics

Unit IV **9 Hrs**

Sequence analysis- Sequence alignment, pairwise and multiple sequence alignment, local and global alignment, BLAST, FASTA.

Unit V **9 Hrs**

Information retrieval systems- Medline, NCBI, Pubmed, OMIM. Genomics and proteomics (Basic concepts), Data mining, ENTREZ and SRS.

Text Book :

1.Ignacimuthu, S.J., (2001). Basic bioinformatics, Phoenix Publishing House Pvt., Ltd., New Delhi.

Reference Book(s):

1. Murthy, C.S.V, (2003).Bioinformatics, Himalaya publishing house.

2. Rastogi, S.C Mendiratta,N and Rastogi,P(2003). Bioinformatics – Concepts, Skills & Applications, CBS Publishers & Distributors.

3. Arthur M. Lesk,(2003). Introduction to Bioinformatics, Oxford University Press, New Delhi.

4. Higgins,D and Taylor, W (Eds), (2000)Bioinformatics- Sequence, structure and databanks, Oxford University Press, New Delhi .

5. Attwood, T.K and Parry-Smith, D.J (2004)Introduction to Bioinformatics, Pearson Education Ltd., New Delhi.

6 Lesk, M.A. (2008). Introduction to Bioinformatics. Oxford Univ. Publishers Ltd., New Delhi.

Web reference(s):

1.www.bioinformatics.org/wiki/...to_Bioinformatics.

2.www.goodreads.com/shelf/show/bioinformatics.

3.www.biostars.org/

You tube reference(s):

1.Introduction to Bioinformatics - Week 1 - Lecture 1 youtube.com

2.Bioinformatics part 3 Sequence alignment introduction youtube.com

Course Code	Course Title	C	H	I	E	T
17U6RME2	**FOOD MICROBIOLOGY**	**7**	**6**	**25**	**75**	**100**

Course Objectives :

- To learn the role of microbes in food preparation, preservation and spoilage
- To understand the quality of food and dairy products.

Learning Outcomes:

- Students understand the role of microbes in food microbiology.
- They get adequate information regarding food preservation and food spoilage.
- Students have gathered information regarding dairy technology.
- Students are able to classify the food borne diseases and food sanitation.

Unit I **18 Hrs**

Food as a substrate for microbes – Microbes involved in food microbiology – Mould, Yeast, Bacteria – Factors affecting the growth of Microorganisms in food.

Unit II **18 Hrs**

Food preservation – Asepsis – Removal of microorganisms, anaerobic conditions – high and low temperatures – drying – radiation – chemical preservatives – food additives.

Unit III **18 Hrs**

Food spoilage – General principles – underlying food spoilage and contamination – Cereals, vegetables, fruits, and poultry products, meat, fish and sea foods.

Unit IV **18 Hrs**

Microorganisms in milk and milk products – Yoghurt, butter milk, butter and cheese – Quality control of Milk – Methylene blue reductase test , Standard plate count and Phosphatase tests.

Unit V **18 Hrs**

Food-borne diseases – Food poisoning – infective and toxic bacterial food borne diseases- *Staphylococcus aureus* -Staphylococcal food poisoning , *Clostridium botulinum* - Botulism and their diagnosis – Food sanitation and its control measures eg Hazard analysis & critical control points (HACCP).

Text Book :

1. Frazier WC and Westhoff DC (1988). Food Microbiology, 4th Edition, Mc Graw Hill, New York.

Reference Book(s):

1.Garbutt,J., (1997). Essentials of Food Microbiology, Arnold-International Students' edition, London.
2.Atlas,R.M., (1997). Principles of Microbiology, Second edition, WCB/McGraw Hill, U.S.A.,
3.Deak, T, and L.R.Beuchat, (1996). Hand Book of Food Spoilage Yeasts, CRC Press, New York.
4.Adams MR & MO Moss (2005). Food Microbiology. 1st Edition. Reprinted, Published by New Age International (P) Limited. Publishers, New Delhi
5.James M Jay (2004). Modern Food Microbiology. 4th Edition, CBS Publishers & Distributors, New Delhi.
6.Banwart,G.J., (1987). Basic Food Microbiology, CBS Publishers & Distributors, New Delhi.

Web reference(s):

1.www.highveld.com/microbiology
2.www.sciencedirect.com/food-microbiology
3.www.omicsonline.org/scholarly/food-microbiology.

You tube reference(s):

1.www.Food Microbiology youtube.com
2.www. introduction to food microbiology-youtube.com

Course Code	Course title	C	H	I	E	T
17U6RME3	**BIOTECHNOLOGY**	**7**	**6**	**25**	**75**	**100**

Course Objectives:

- To introduce the basic principles of genetic engineering.
- To learn various methods of gene transfer and manipulation.

Learning Outcomes:

- Students are able to trace the development of biotechnological field.
- They are able to classify the plasmids.
- Students gain knowledge about GATT, IPR and patenting of biological material.
- They get information regarding transgenic plants and animals.

Unit I - History and Scope of Biotechnology **18 Hrs**

Biotechnological organizations in India. Significance, types of cloning vectors. Plasmids - pBR322, pUC18, Ti plasmids , Lamba phage, cosmids & their applications.

Unit II - Gene manipulation techniques **18 Hrs**

Restriction enzymes - Types & properties -*E*coRI, *Hind*III, *Alu*I, *Sca*I . DNA ligation- methods of gene transfer- gene gun method, electroporation and microinjection methods . Ti plasmids- *Agrobacterium* mediated gene transfer.

Unit III -Microbial production of recombinant protein **18 Hrs**

Expression vectors–Constitutive and inducible promoters - Production of recombinant DNA proteins using microbial hosts – Production of Insulin.

Unit IV - Intellectual property rights **18 Hrs**

GATT & IPR, different forms of IPR, IPR in India, patent co operation treaty, forms of patent, process of patenting, patenting of biological material – A case study of turmeric and basmati rice.

Unit V – Applications of Biotechnology **18 Hrs**

Transgenic plant- Bt cotton, Bt brinjal,Basmati rice. Transgenic animals- Dolly, Mice, Fishes. Biosafety aspects.

Text Book :

1.Gupta, P.K., (2004). Biotechnology and Genomics, Rastogi & Co., Meerut

Reference Book(s):

1.Winnacker E.L.(1987). From Genes to Clones: Introduction to Gene Technology, VCH Publications, Germany.
2.Glick B.R. & Pasternak, J.J., (2006).Molecular Biotechnology- Principles and Applications of Recombinant DNA technology, ASM press, Washington.
3.Ratledge C & Kristiansen B.,(2008). Basic Biotechnology 3/e, Cambridge University Press.
4.Old, R.W. and S.B. Primrose, (2003). Principles of Gene Manipulation, Blackwell Scientific, London.
5.Mitra S., (2001). Genetic Engineering, Macmillan, India Limited, New Delhi.
6.Satyanarayana V. (2010). Biotechnology, Books and Allied (P) Ltd. Kolkata, India

Web reference(s):

1.www.bio.org/what-biotechnology
2.www.nature.com › subjects
3.www.khanacademy.org/science/biology/biotech-dna-technology

You tube reference(s):

1.www. Applications of Biotechnology -youtube.com/watch
2.www. Introduction to Biotechnology youtube.com/watch

Course Code	Course Title	C	H	I	E	T
17U6RMC8	PHARMACEUTICAL	4	4	25	75	100

	& FORENSIC MICROBIOLOGY					

Course Objectives:

- Students achieve a detailed knowledge and understanding of the sciences underpinning the forensic, pharmaceutical and analytical fields.
- Experience in pharmaceutical and forensic science combined with a range of analytical techniques.

Learning Outcomes:

- After completing the students get placement in Pharma industry and in forensic department.
- They obtain information regarding discovery and designing of drugs.
- They are able to identify microbial contamination of drugs.
- Students will gather information regarding the role of microbes in forensic study and gather various case study.
- They get information regarding bioterrorism i.e., biological warfare.

Unit I **12 Hrs**

Aim and Scope of Microbial Pharmacology- Definitions, Pharmacology, Pharmocognosy, Pharmacodynamic and Pharmacogenomics. Microbial drugs and edible vaccines. Biopharmaceuticals- source, production methods, cytokines, haemopoetic growth factors, hormones and therapeutic enzymes.

Unit II **12 Hrs**

Drug discovery and developments – Role of molecular recognition in drug design, enzymes and receptors as drug targets, pro drug design and applications.

Unit III **12 Hrs**

Microbial contamination of drugs - preventive measures and practices. Concepts of quality control in Biopharmaceuticals, testing the quality of drug, validation and certification of drugs- ISO, WHO and USFDA.

Unit IV **12 Hrs**

Microbes in forensic –Principles, characteristics, opportunities and challenges. Guidelines to legal proceeding of forensic biology and sub-disciplines. Microbial ethics, superbug- strain escape, case studies and examples.

Unit V **12 Hrs**

Bioterrorism- biological warfare, Biocrime, Bioweapons, new disease outbreak, national and international dimensions, diagnostic methods, sampling methods, sample preservations and analysis. Tools for forensic microbiology. Scientific working group in forensic microbiology.

Text Book :

1. Parikh C. K. (1999). Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology. Sixth Ed., CBS Publishers & Distributors Pvt. Ltd., India.

Reference Book(s):

1. Hugo, W.B., Russell, A.D,(1999). Pharmaceutical Microbiology 4th edition. Blackwell scientific publications / Oxford.
2. Russell and Ayliffe, G.A.J(1982) Principles and practice of Disinfection, preservation and sterilization Oxford:
3. Ashutosh Kar, (2008).Pharmaceutical Microbiology, New Age International Publishers, New Delhi.
4. Microbiology in Pharmaceutical Manufacturing – II edition – Richard Prince.
5. The United States Pharmacopoeia (USP 32) NF 27 – Volume 1 (General Chapters)
6. Nanda, B.B. and Tewari, R.K. (2001): Forensic Science in India: A vision for the twenty first century Select Publisher, New Delhi.

Web reference(s):

1.www.pharmacy.umich.edu/pharmsci
2.www.scientiaricerca.com/cops.php
3.www.crimesceneinvestigatoredu.org/what-is-forensic-science/

You tube reference(s):

1.www. The Real Science of Forensics - YouTube.com
2.www. The Pharmaceutical world - youtube.com

Course Code	Course title	C	H	I	E	T
17U6RSM4	FERMENTATION	2	2	25	75	100

	TECHNOLOGY					

Course objectives:

- To learn the process involved in the industrial production of microbial products
- To learn processing and recovery of the product.

Learning Outcomes:

- Students understand the concepts of fermentation and role of microbes.
- They get idea regarding media formulation and fermentors.
- Students acquire knowledge on industrial production of various products like Wine , Citric acid, Penicillin, Vitamin B12 and α amylase.
- Students can develop small scale industries with self employment.

Unit I **6 Hrs**

Industrially important microorganisms – screening techniques – primary and secondary. Preservation of cultures – Strain improvement .

Unit II **6 Hrs**

Aerobic respiration-sulphur, nitrogenous compounds and CO_2 as a final electron acceptor. Fermentation – Alcoholic fermentation.

Unit III **6 Hrs**

Media for industrial fermentation – Submerged and solid state fermentation – Down stream processing – Recovery and purification of intracellular and extracellular products

Unit IV **6 Hrs**

Fermentors –Components of fermentor – Types of bioreactors – Heat production – heat transfer – Oxygen transfer – Stirring and mixing – Scale up – control of temperature – p^H , Foam pressure – computer applications in fermentation technology.

Unit V **6 Hrs**

Industrial production methods - wine, organic acids – citric acid, Antibiotics – penicillin, vitamin – B12, Enzyme - α amylase.

Text Book :

1. Patel, A.H., (1996). Text Book of Industrial Microbiology, MacMillan India Ltd., New Delhi

Reference Book(s):

1. Atlas, R.M., (2000). Microbiology Fundamentals and Applications, MacMillan Pub. Co., New York.
2. Crueger, W. and Crueger, A. (2000). Biotechnology: A Test Book of Industrial Microbiology, Second Edition, Panima Publishing corporation, New Delhi.
3. Demain A.L. and Davies, J.E. (1999). Manual of Industrial Microbiology & Biotechnology. ASM press.
4.Kalaichelvan, P.T. and Arul Pandi, I. (2007). Bioprocess Technology, MJP publishers, Chennai.
5.Casida, J.F. (2010). Industrial Microbiology, New Age International India Pvt. Ltd., New Delhi.
6.Waites, M.J., Morgan, N.L., Rockey, J.S. and Higton, G. (2001). Industrial Microbiology: An Introduction, Blackwell Science, London.

Web reference(s):

1.www.sciencedirect.com/topics/agricultural-and.../industrial-microbiology
2.www.contentextra.com/lifesciences/unit2/unit2home.aspx
3.www.crcpress.com/Modern-Industrial-Microbiology

You tube reference(s):

1.www. Industrial Microbiology introduction youtube.com
2.www. Industrial Microbiology youtube.com

Course code	Course title	C	H	I	E	T

17U6RMP3	**PRACTICAL III** **LAB IN MICROBIAL GENETICS, ENVIRONMENTAL MICROBIOLOGY, MEDICAL MICROBIOLOGY AND BIOINFORMATICS**	**6**	**6**	**50**	**50**	**100**

S.No	Experiments
1	Isolation of petite mutants
2	Isolation of auxotrophic mutants
3	Isolation of streptomycin resistant mutants using gradient plate technique.
4	Agarose gel electrophoresis of DNA
5	Isolation of *Rhizobium* sps. from root nodules of legumes
6	Isolation of Phosphate solubilizing Microorganisms from soil.
7	Potability analysis of drinking water. (MPN test)
8	Isolation and Enumeration of RBC from human blood.
9	Isolation and Enumeration of WBC from human blood.
10	Direct agglutination to determine ABO blood grouping
11	Agar gel Ouchterlony double immunodiffusion.
12	Mancini single radial immunodiffusion.
13	Isolation & identification of *Streptococci* – α, β and γ haemolysis
14	Isolation & identification of UTI infection – *E.coli, Proteus, Pseudomonas.*
15	Serodiagnosis of Bacterial Infection - Widal Test
16	Kirby – Bauer disc diffusion technique.
17	Qualitative analysis for carbohydrates – Fehling's test & Benedict's test
18	Qualitative analysis for proteins – Biuret test
19	Pairwise sequence alignment (BLAST)
20	Multiple sequence alignment (CLUSTAL –W)

Text Manual:

1.Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
2..James G Cappuccino & Natalie Sherman (2004). Microbiology: A Laboratory Manual. 6th Edition, Published by Pearson Education.

Reference Book(s):

1. Ashok, R. (2000). Antimicrobials in Laboratory Medicine, B.I. Churchill Livingstone. New Delhi.
2. Collee, J.G., A.G.Fraser, B.P.Marmion and A.Simmons (2007). Mackie and McCartney Practical medical Microbiology. Elsiever, New York.
3. Ranjan Kumar De, (2007). Diagnostic Microbiology, Jaypee Brothers publishing, New Delhi.
4.Garvey J.S., Cremer N.E., Sussdorf D.H., (1983). Methods in Immunology, 3rd ed., Benjamin / Cummins Publishing, London.
5.Gunasekaran, P. (1995). Laboratory Manual in Microbiology, New Age International (P) Ltd. Publishers, New Delhi.
6.Kannan, N. (1996). Laboratory Manual in General Microbiology, Palani Paramount Publication, Palani.

Web reference(s):

1.www.juliantrubin.com
2.www.uvi.eu.com
3.www.academia.edu.com

You tube reference(s):

1.www.bacterialgenetics.m.youtube.com
2.www.medicalmicrobiology.m.youtube.com

Course	Course title	C	H	I	E	T

code						
17U6RMP4	**PRACTICAL IV** **LAB IN FOOD MICROBIOLOGY, BIOTECHNOLOGY, PHARMACEUTICAL & FORENSIC MICROBIOLOGY AND FERMENTATION TECHNOLOGY**	**6**	**6**	**50**	**50**	**100**

S.No	Experiments
1	Isolation and enumeration of micro – organisms from food sample by the serial dilution agar plating method.
2	Determination of total bacterial population by standard plate count technique
3	Resazurin dye reduction test.
4	Methylene blue test-milk quality determination
5	Vitamin C assay
6	Isolation of bacterial Genomic DNA
7	Isolation of Plasmid DNA
8	Restriction digestion analysis
9	Detection of proteins by S D S - P A G E method
10	Western blotting - demonstration
11	Replica plating method for identifying antibiotic resistant mutants
12	Production of Citric acid by *Aspergillus niger* by Solid State fermentation.
13	Yeast cell immobilization
14	Alcohol fermentation by *Saccharomyces cerevisiae*.
15	Estimation of alcohol using Potassium Di-chromate method.
16	Screening of antibiotic producing microbes
17	Screening of bacterial strains for enzyme production.
18	Production and estimation of alcohol
19	Screening of bacterial strains for enzyme alpha amylase production.
20	Yeast biomass estimation by turbidity method

Text Manual:

1.Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
2..James G Cappuccino & Natalie Sherman (2004). Microbiology: A Laboratory Manual. 6th Edition, Published by Pearson Education.

Reference Book(s):

1. Anuj Kumar Rana, (2012). Downstream Processing Techniques in Biotechnology. Global Academic Publishers, New Delhi.
2. Kulanthaivel, S and S. Janarthanan (2012). Practical Manual on Fermentation Technology. I.K. International publishing house. New Delhi 3.
3.Swami, P.M. (2009). Lab Manual of Biotechnology. Rastogi Publications, Meerut.
4.Janarthanan, S. and Vincent, S. (2007). Practical Biotechnology: Methods and protocols, University Press.
5.Gunasekaran, P. (1995). Laboratory Manual in Microbiology, New Age International (P) Ltd. Publishers, New Delhi.
6.Kannan, N. (1996). Laboratory Manual in General Microbiology, Palani Paramount Publication, Palani.

Web reference(s):

1.www.academic.oup.com
2.www.lincoln.ac.com
3.www.microbeonline.com

You tube reference(s):

1.www.microbialfermentation.m.youtube.com
2.www.foodmicro procedure.m.youtube.com

COMPONENTS OF C.I.A AND QUESTION PATTERN FOR END SEMESTER EXAMINATIONS

Components of C.I.A

xiii) Test - 15 marks
xiv) Assignment/Quiz/Seminar - 5 marks
xv) Attendance - 5 marks

Total 25 marks

End Semester Exam Components for U.G.

Time: 3 Hrs **Maximum Marks: 75**

Part –A (10 x 1 = 10 Marks)
(Answer ALL questions)

- **Objective type Questions.**
- **Two questions from each unit.**

Part –B (5 x 7 = 35 Marks)
(Answer ALL questions)

- **Either or pattern.**
- **Two question from each unit.**

Part –C (3 x 10= 30 Marks)
(Answer any THREE questions)

- **Out of FIVE questions, THREE questions to be answered**
- **One question from each unit.**

B.Sc. Ancillary Microbiology for B.Sc Biotechnology Course structure

Semester	Sub. Code	Title of the paper	Hours	Credits
I	18U1RAC1	Basic Microbiology	4	2
		Ancillary Practical I*	2	
II	18U2RAC2	Medical Microbiology	4	2
		Ancillary Practical II		
	18U2RAP1	Practical I and II papers	2	2
III	18U3RAC3	Environmental Microbiology	2	2
	18U3RSA1	Mushroom cultivation– Skill Based Elective	2	1
		Ancillary Practical III*	2	
IV	18U4RAC4	Applied Microbiology	2	1
	18U4RNM1	Microbes in Human Welfare (NME)	2	1
		Ancillary Practical IV		
	18U4RAP2	Practical III and IV papers	2	1

***Exam will be conducted at the even semester.**

Course Code	Course Title	C	H	I	E	T
18U1RAC1	BASIC MICROBIOLOGY	2	4	25	75	100

Course Objectives:

- To learn the fundamentals of microbiology.
- To understand the morphology, structural organization of microbes.

Learning Outcomes:

- This paper introduce the foundation of Microbiology. Students traced the history and contribution of various microbiologists. This is a motivation to the students in the field of Microbiology.
- Students are able to isolate the microbes in the lab and note their morphology and staining of bacteria of various types.
- Students properly understood the techniques, types and importance of sterilization in the field of microbiology.
- Students get the information about various antibiotics, biofertilizers and their significance.

Unit I **12 Hrs**

Introduction and History of Microbiology – History and recent developments – Spontaneous generation – Biogenesis Contributions of Leeuwenhoek, Louis Pasteur, Robert Koch, Elie Metchinkoff and Fleming.

Unit II **12 Hrs**

Morphology and structure of bacteria – types of bacteria based on morphology and flagella, Ultrastructure of bacteria eg. *E.coli* , flagella, fimbriae and Pili. Endospore – Structure, formation and significance.

Unit III **12 Hrs**

Cell wall structure and staining of bacteria – Gram positive and Gram negative bacteria. Staining techniques – Simple, differential and special staining. Fungal staining.

Unit IV **12 Hrs**

Sterilization and its methods – Principles – dry heat – moist heat – Radiation – Filtration. Disinfection- sanitization , antisepsis and fumigation..

Unit V **12 Hrs**

Antibiotics and Biofertilizer - Antibiotics – mode of actions – antimicrobial resistance – Tests for sensitivity to antimicrobial agents. Biofertilizers -*Mycorrhizae* , Biopesticides- *Bacillus thuringiensis*.

Text Book :

1. Dubey RC & Maheswari DK (2005). A text book of Microbiology, Revised Multicolour Edition, Published by S. Chand & Company Limited, New Delhi.

Reference Book(s):

1. Prescott M (2005). Microbiology. 6th Edition, Tata McGraw – Hill, New Delhi.
2. Albert G Moat & John W Foster (2004). Microbial Physiology. 4th Edition, John Wiley & Sons, New York.
3. Robert F Boyd (1984). General Microbiology. Times Mirror / Mosby College Publishers.
4. Purohit SS (2005). Microbiology – Fundamentals and Applications. Reprinted & Published by Student Edition, Behind Nasrani Cinema, Chopasani Road, Jodhpur.
5. Pelczar TR, Chan ECS & Kreig NR (2006) Microbiology. 5th Edition, Tata McGraw – Hill, New Delhi.
6.Schlegel, H.G., (1993).General Microbiology, Seventh edition, Cambridge University Press.

Web reference(s):

1.www.periobasics.com/basic-microbiology.
2.www.microbiologynutsandbolts.co.basic-concepts.
3.www.microbiologyinfo.com/category/basic-microbiology

You tube reference(s):

1.www. Microbiology - Overview -youtube.com
2.www. Introduction to microbiology. youtube.com

Course Code	Course Title	C	H	I	E	T
18U2RAC2	MEDICAL MICROBIOLOGY	2	4	25	75	100

Course Objectives:

- To know about morphology and pathogenesis of different bacteria, fungi & parasites.
- To understand the pathogenesis mechanism.
- To learn the technique of prevention, control and therapy.

Learning Outcomes:

- This field emphasize in response to dreadful disease such as Cholera, Typhoid, Tuberculosis, Pneumonia, Smallpox.
- This paper helps the students to classify various types of diseases i.e., bacterial, fungal, protozoan, viral etc.
- Students able to know the method of transmission, prevention and control of diseases.

Unit – I Micro flora of human body **12 Hrs**

General features of normal flora. Microflora of human body, germ theory of diseases, Contribution of Robert Koch and his postulates and Edward Jenner. Non specific defense mechanisms- general factors- physical, mechanical and chemical barriers.

Unit – II Bacterial disease **12 Hrs**

Morphology, Culture, biochemical, pathogenicity, Lab diagnosis and prevention of bacterial diseases – *Staphylococcus aureus, Streptococcus pyogenes, Salmonella typhi, Vibrio cholera* and *Escherichia coli.*

Unit – III Fungal disease **12 Hrs**

Superficial Mycosis – black and white piedra, Cutaneous mycosis – Trichophyton, Subcutaneous mycosis – sporothrix, Systemic mycosis – Histoplasmosis, Opportunistic mycosis-Aspergillosis, Candidiasis.

Unit – IV Parasitology **12 Hrs**

Life cycle of *Entamoeba histolytica, Giardia intestinalis, Plasmodium vivax, Toxoplasma gondii,* & *Wuchereria bancrofti.*

Unit - V Viral Disease **12 Hrs**

DNA viruses – Pox, Adeno, Herpes, Hepatitis. RNA viruses – Picorna, Rhabdo, Retero, Orthomyxo .

Text Book :

1.Ananthanarayan R & Jayaram Paniker CK (2005). Text Book of Microbiology. 7th Edition, Orient Longman Private Limited.

Reference Book(s):

1.Baron EJ, Peterson LR and Finegold SM (1994). Bailey and Scott's – Diagnostic Microbiology. 9th Edition, Mosby Publications.

2. Morag C 7 MC Timbury (1994). Medical virology. 10th Edition, Churchill Livingstone, London.

3. Patric R Murray (1990). Medical Microbiology. Mosby Publications.

4. Satish Gupte (2006). The Short Text books of Medical Microbiology. 9th Edition, Jaype Brothers, Medical Publishers (P) Ltd., New Delhi.

5.Chakraborty P. (1995). A Text Book of Microbiology, New Central Book Agency (P) Ltd., Kolkata.

6.Rajan, S. (2009). Medical Microbiology, MJP Publishers, Chennai.

Web reference(s):

1.www.microbiologynutsandbolts.co.uk/medical-students.html
2.www.takealot.com/lecture-notes-medical-microbiology-
3.www.microbiologybytes.wordpress.com/.../instant-notes-in-medical-microbiology

You tube reference(s):

1.www. Introduction to Medical Microbiology - youtube.com
2.www. Staphylococcus - Medical Microbiology- youtube.com

Course code	Course title	C	H	I	E	T
18U2RAP1	**PRACTICAL –I & II** **LAB IN BASIC MICROBIOLOGY AND MEDICAL MICROBIOLOGY**	**2**	**2**	**50**	**50**	**100**

S.No	Experiments
1.	Microscopic observation of bacteria –Simple and Differential staining
2.	Sterilization methods – moist heat, dry heat, filtration and radiation.
3.	Aseptic transfer of microorganisms.
4.	Preparation of culture media –solid (Selected and differential)and liquid
5.	Isolation of single colonies on solid media – Slant, Streak –Simple and Quadrant
6.	Isolation and identification of pathogenic bacteria from clinical specimens using selection plate methods
7.	Isolation & identification of UTI infection
8.	Kirby – Bauer disc diffusion technique.

Text Manual:

1.Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
2.James G Cappuccino & Natalie Sherman (2004). Microbiology: A Laboratory Manual. 6th Edition, Published by Pearson Education.

Books for Reference:

1. Ashok, R. (2000). Antimicrobials in Laboratory Medicine, B.I. Churchill Livingstone. New Delhi.
2. Collee, J.G., A.G.Fraser, B.P.Marmion and A.Simmons (2007). Mackie and McCartney Practical medical Microbiology. Elsiever, New York.
3. Ranjan Kumar De, (2007). Diagnostic Microbiology, (For DMLT Students) Jaypee Brothers publishing, New Delhi.

4. Gunasekaran, P. (2008). Laboratory Manual in Microbiology, New Age International (P) Ltd. Publishers, New Delhi

5. Harry W. Seeley, J.R., Paul, J.VanDemark and John J.Lee. (1997). Microbes in Action – A Laboratory Manual of Microbiology. W.H.Freeman and Company, New York.
6. Kanika Sharma, (2009). Manual of Microbiology – Tools and Techniques. 2nd Edition, Ane Books Pvt. Ltd., New Delhi.

Web reference(s):

1.www.biocourseware.com
2.www.microbiologyonline.com
3.www.ncbionetwork.com

You tube reference(s):

1.www.introduction to microbiology culture.m.youtube.com
2.www.practical microbiology.m.youtube.com

Course Code	Course Title	C	H	I	E	T
18U3RAC3	**ENVIRONMENTAL MICROBIOLOGY**	**2**	**2**	**25**	**75**	**100**

Course Objectives:

- To understand the role of microbes in different spheres of life.
- Make them to learn analytical techniques of quality control sector in microbiological industry.

Learning Outcomes:

- Students are able to isolate and observe the soil micro flora. They will be able to measure bacterial content of air and identify the airborne diseases.
- Students gather knowledge to analyze the nature of microorganisms and potability of water.
- Students familiarize with specific test for water analysis and sewage water treatment.
- Students are able to analyze the role of microbes in the field of biodegradation.

Unit I **6 Hrs**

Microbiology of soil – Rhizosphere, soil microflora, significance of soil microbes. Role of microbes in Biogeochemical cycle- Carbon , Nitrogen and Phosphorus .

Unit II **6 Hrs**

Microbiology of air – Enumeration of bacteria from air – Air sampling devices – Air sanitation- Air borne diseases –Tuberculosis , Influenza.

Unit III **6 Hrs**

Microbiology of water – Potability of water quality -MPN test – Indicator organisms -IMVIC test – water purification – waterborne diseases and their control measures – Amoebic dysentery, Cholera & Typhoid.

Unit IV **6 Hrs**

Microbiology of sewage – chemical and biochemical characteristics of sewage – Sewage treatment – Physical, chemical and biological methods -trickling filter, activated sludge, Lagoon and sewage farming.

Unit V **6 Hrs**

Role of microbes in biodegradation – Xenobiotics –Biomining eg. (copper). Biodegradation of paper, oil, pesticide, dyes and heavy metals. Phytoremediation.

Text Book :

1. Vijaya Ramesh K (2004). Environmental Microbiology. 1st Edition, MJP Publishers (A unit of Tamil Nadu Book house), Chennai.

Reference Book(s):

1.Mithell R (1974). Introduction to Environmental Microbiology. Prantice Hall. Inc., Englewood Cliffs, New Jersey.
2.Atlas, RN and Bartha R (1992). Microbial Ecology: Fundamentals and applications. 3rd Edition, Redwood city, Benjamin/Cummings.
3.Joseph C Daniel (1999). Environment Aspects of Microbiology. 1st Edition, Bright sun Publications, Chennai.
4.Subba Rao, N.S., (2000). Advances in Agricultural Microbiology, Oxford & IBH Publ. Co. Pvt. Ltd., New Delhi.
5.Metting, Jr. F.B., (1993). Soil Microbial Ecology, Harcel Dekker Inc., New York.
6.Atlas, M., (2000).Microbiology-Fundamentals and Applications, Collier MacMillan Publication, London

Web reference(s):

1.www.highveld.com/microbiology/environmental-microbiology.
2.www.sfam.org.uk/en/journals/environmental-microbiology.cfm
3.www.sciencedirect.com/science

You tube reference(s):

1.www.Environmental Microbiology youtube.com
2.www .BI280 Chapter 26 Environmental Microbiology - Part 1 of 2youtube.com

Course Code	Course Title	C	H	I	E	T
18U3RSA1	MUSHROOM CULTIVATION	1	2	25	75	100

Course Objectives:

- To acquire the basic knowledge and develop suitable skills involved in mushroom cultivation.
- To study the common cultivation methods for mushrooms and to realize the nutritive and medicinal value of mushrooms.

Learning Outcomes:

- This paper aims to develop students to acquire skills in mushroom cultivation.
- Students are able to develop their mushroom cultivation farm as a self employment.
- Students learn to differentiate edible from poisonous mushroom.
- Students acquire knowledge on storage, marketing of mushroom and trained themselves to prepare various mushroom recipes.
- This paper mainly makes the students to acquire self employment.

Unit I **6 Hrs**

Introduction- History- Scope and importance of mushroom cultivation. Present status of mushroom industry in India.

Unit II **6 Hrs**

Breeding conditions of mushroom strains -Pure Culture- Media- Preparation and maintenance of mother culture in test tube slants -Petriplates- saline bottle - poly propylene bags.

Unit III **6 Hrs**

Cultivation Technology - Infrastructure - culture rack - thatched house - substrates - vessels- inoculation methods. Mushroom bed preparation. Mother spawn and commercial spawn preparation- types , methods of storage. Preservation technology- long term storage - short term storage.

Unit IV **6 Hrs**

Cultivation and importance of edible mushroom in India. *Pleurotus species & Volvariella species* . Mushroom contamination - disease caused by viruses and fungi. Poisonous Mushrooms.

Unit V **6 Hrs**

Significance and applications - Nutritional and Medicinal values of Mushroom - protein - carbohydrates - vitamins - minerals - fibre content. Preparation of mushroom recipes – Pickles and soup.

Text Book :

1.Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991). Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.

Reference Books(s):

1.Aneja, K.R. (1993). Experiments in Microbiology, Plant pathology, Tissue culture and mushroom cultivation, Wishwa Prakashan, New Age International (P) Ltd., New Delhi.
2.Chang,S. and Miles, P.G. (2004). Mushrooms: Cultivation, Nutritional Value, Medicinal Effect, and Environmental Impact, CRC Press online.
3. Swaminathan, M. (1990) .Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore.
4.Nita Bahl. (1996). Hand Book on Mushrooms. Oxford and IBH Publishing Company Ltd., New Delhi. 2.
5. Kapoor, J.N. (1989). Mushroom Cultivation, ICAR, New Delhi.
6.Banwari George, J. (1998). Basic food microbiology, 2nd Edition. CBS publishers and distributors, New Delhi.

Web reference(s):

1.www.mushroomcouncil.com/...mushrooms/six-steps-to-mushroom-farming
2.www.krishisewa.com/articles/.../46-technology-for-mushroom-cultivation.
3.www.indiamart.com › Vocational Education and Training

You tube reference(s):

1.www. Mushroom Production Technology -youtube.com
2.www. .mushroom cultivation- youtube.com

Course Code	Course Title	C	H	I	E	T
18U4RAC4	APPLIED MICROBIOLOGY	1	2	25	75	100

Course Objectives:

- To learn the role of microbes in food preparation, preservation, spoilage and control.
- To learn the process involved in the industrial production of microbial products.

Learning Outcomes:

- Students know the applications of microbes in various fields i.e., microbes in food industry and they have gathered more information regarding prevention of food borne disease.
- Students familiarize with prevention and control of food spoilage.
- Students get information regarding biofertilizers and their significance.

Unit I **6Hrs**

Microorganisms in food –Food preservation – Principles, Asepsis-anaerobic condition, high temperature, low temperature & drying, Food additives, Canning.

Unit II **6Hrs**

Fermented foods – Dairy products –(Cheese, Bread) Vegetable –Sauerkraut. Food borne disease – Bacterial disease -*Bacillus*, *Clostridium* and fungal disease- *Candida* and *Aspergillus*.

Unit III **6Hrs**

Contamination & spoilage – Meat & meat products, milk & milk products. Spoilage of canned foods. Detection of spoilage, Characterization, prevention and control.

Unit IV **6Hrs**

Biofertilizer –Introduction and significance- Bacterial biofertilizer - *Rhizobium* –Algal biofertilizer- *Azolla* - *Cyanobacteria* and its Mass multiplication.

Unit V **6Hrs**

Microbial production - Organic acid – (Citric acid), Antibiotics – (Penicillin), Enzyme – (α amylase), Alcohol- (Wine).

Text Book :

1.Pelczar, M.J., E.C.S. Chan and N.R. Kreig. (2009). Microbiology, fifth edition. McGrawHill. Book Co. Singapore

Reference Book(s):

1. Adams MR & MO Moss (2005). Food Microbiology. 1st Edition. Reprinted, Published by New Age International (P) Limited. Publishers, New Delhi.

2. James M Jay (2004). Modern Food Microbiology. 4th Edition, CBS Publishers & Distributors, New Delhi.

3.Singh DP & SK Dwivedi (2005). Environmental Microbiology and Biotechnology. 1st Edition, New Age International (P) Ltd., Publishers, New Delhi.

4.Vijaya Ramesh K (2004). Environmental Microbiology. 1st Edition, MJP Publishers (A Unit of Tamil Nadu Book House) Chennai.

5. Patel A.H . (1996). Industrial microbiology .2nd edition ,Macillan India Ltd.

6. Kulshreshtha, S.K. 1994, Food Preservation, Vikas Publishing House Pvt. Ltd.,New Delhi

Web reference(s):

1.www.highveld.com/microbiology
2.www.sciencedirect.com/food-microbiology
3.www.omicsonline.org/scholarly/food-microbiology.

You tube reference(s):

1.www.Food Microbiology youtube.com
2.www. introduction to food microbiology-youtube.com

Course Code	Course Title	C	H	I	E	T
18U4RNM1	**MICROBES IN HUMAN WELFARE (NME Paper)**	**1**	**2**	**25**	**75**	**100**

Course Objectives:

- To get a fundamental knowledge about microbial world for other major students.
- To motivate the non microbiology students to appreciate the role and importance of microbes in day today life.

Learning Outcomes:

- This paper gives a basic and elementary aspects of microbiology to non major / non microbiology students.
- Students acquire knowledge on history and development of microbiological world.
- The students have a clear idea about the beneficial and harmful aspects of microbes in a lucid manner.

Unit I **6 Hrs**

History and scope of Microbiology- Spontaneous generation of organism. Contributions of Louis Pasteur, Robert Koch and Edward Jenner.

Unit II **6 Hrs**

Role and applications of microorganisms - in food and dairy industries- *Saccharomyces* - *Lactobacillus, Agaricus* and *Spirulina* .

Unit III **6 Hrs**

Role of microbes in Pharma field- Industrial production of Insulin. Antibiotics – industrial production of Penicillin. Immunization- Vaccines, immunization schedule for children, role of vaccines for Small pox, Rabies and Polio.

Unit IV **6 Hrs**

Role of microbes in Agriculture- Soil microflora, Rhizosphere, organic manure. Biofertilizer - *Blue green algae*. Bioinsecticides – *Bacillus thuringiensis*,.

Unit V **6 Hrs**

Role of microbes in sewage treatment -Trickling filter, activated sludge, oxidation pond, oxidation ditch. Microbes in the production of biogas. Industrial production of alcohol.

Text Book :

1. Dubey RC and Maheswari DK (2005). A Text book of Microbiology. S.Chand &Company Ltd., New Delhi.

Reference Book(s):

1. Adams, M.R.and Moss. M.O. (1995) .Food Microbiology. New International (P) Ltd. Publishers.
2. Frazies ,W.C. and Westhoff, D.C. (1988) .Food microbiology. 4th Edition. McGraw Hill NY.
3. Alexander. (1997). Introduction to soil Microbiology. John Wiley and Sons. N.Y.
4. Subba Rao, N.S. (1995) .Soil Micro organisms and plant growth, Oxford and IBH publishing Co. Pvt. Ltd.
5. Sundara Rajan S (2003). College Microbiology. Volume 1 & 2. Revised Edition, Vardhana Publications, Bangalore.
6. Powar CB and Daginawala HF (2005). General Microbiology, Volume I & II, 8th Edition, Himalaya Publishing House, Mumbai.

Web reference(s):

1.www.periobasics.com/basic-microbiology.
2.www.microbiologynutsandbolts.co.basic-concepts.
3.www.microbiologyinfo.com/category/basic-microbiology

You tube reference(s):

1.www. Microbiology - Overview -youtube.com
2.www. Introduction to microbiology youtube.com

Course code	Course title	C	H	I	E	T
18U4RAP2	**PRACTICAL –III & IV** **LAB IN ENVIRONMENTAL MICROBIOLOGY, MUSHROOM CULTIVATION AND APPLIED MICROBIOLOGY**	**1**	**2**	**50**	**50**	**100**

S.No	Experiments
1.	Examination of plant diseases – Blast disease in paddy, Blight of rice.
2.	Isolation of Nitrogen fixing bacteria from root nodules of legumes
3.	Study of morphology of cyanobacteria.
4.	Enumeration of bacteria from soil.
5.	Standard plate count technique (SPC)
6.	MPN test.
7.	Methylene Blue Reductase Test
8.	Resazurin dye reduction test.
9.	Yeast cell immobilization
10.	Cultivation of oyster mushroom (*Pleurotus spp*.) (Demonstration)

Text Manual:

1. Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
2. James G Cappuccino & Natalie Sherman (2004). Microbiology: A Laboratory Manual. 6th Edition, Published by Pearson Education.

Books for Reference:

1. Dubey RC and Maheswari DK (2004). Practical Microbiology 1st Edition, S.Chand & Company Ltd., New Delhi.
2. Kannan N (2003). Handbook of Laboratory Culture Media, Reagents, Stains and Buffers. Panima Publishing Corporation, New Delhi.

3.Kanika Sharma, (2009). Manual of Microbiology – Tools and Techniques. 2nd Edition, Ane Books Pvt. Ltd., New Delhi.
4. Kulanthaivel,S and S. Janarthanan (2012). Practical Manual on Fermentation Technology. I.K. International Publishing house. New Delhi.
5. Gunasekaran, P. (1995). Laboratory Manual in Microbiology, New Age International (P) Ltd. Publishers, New Delhi.
6. Harry W. Seeley, J.R., Paul, J.VanDemark and John J.Lee. (1997). Microbes in Action – A Laboratory Manual of Microbiology. W.H.Freeman and Company, New York.

Web reference(s):

1.www.jmm.microresearch.com
2.www.environmenalmicro.weebly.com
3.www.sciencedirect.com

You tube reference(s):

1.www.appliedmicro.m.youtube.com
2.www.foodmicro.m.youtube.com

COMPONENTS OF C.I.A AND QUESTION PATTERN FOR END SEMESTER EXAMINATIONS

Components of C.I.A

i) Test - 15 marks
ii) Assignment/Quiz/Seminar - 5 marks
iii) Attendance - 5 marks

Total 25 marks

End Semester Exam Components for U.G.

Time: 3 Hrs **Maximum Marks: 75**

Part –A (10 x 1 = 10 Marks)
(Answer ALL questions)

- **Objective type Questions.**
- **Two questions from each unit.**

Part –B (5 x 7 = 35 Marks)
(Answer ALL questions)

- **Either or pattern.**
- **Two question from each unit.**

Part –C (3 x 10= 30 Marks)
(Answer any THREE questions)

- **Out of FIVE questions, THREE questions to be answered**
- **One question from each unit.**

DEPARTMENT OF MICROBIOLOGY

REGULATIONS FOR M.Phil., Biology

1. Name of the Course:

M.Phil. Biology (Full Time)

2. Department offering the Course:

The Department of Microbiology, The Madura College, Madurai is going to offering the course from academic year 2018.

3. Eligibility for admission:

A candidate, who has qualified the Master's Degree not less than 55% of marks or 5.51 in 10.00 grade point average scale under CBCS in any one of the following interdisciplinary subjects (Botany, Zoology, Plant Science, Microbiology, Animal Sciences, Molecular biology Biochemistry, Biotechnology, Marine biology, Bioinformatics, Genetics, Biology and Life Sciences). The SC/ST candidates are given 5% relaxation from the prescribed minimum marks.

4. Duration of the course:

The duration of the M.Phil., programme shall be one year consisting of two semesters. For the candidate's core paper - I, core paper – II will be covered in the first semester, core paper - III and dissertation will be covered in the second semester.

M.PHIL BIOLOGY COURSE PATTERN

SEM	SUBJECT CODE	COURSE	SUBJECT TITLE	HOURS/ WEEK	CREDIT	INTERNAL		EXTERNAL		MARKS
I	18M1RMC1	CORE I	RESEARCH METHODOLOGY	6	6	40		60		100
	18M1RMC2	CORE II	MOLECULAR BIOLOGY	6	6	40		60		100
II	18M2RME1	COREIII	BIOTECHNOLOGY (Elective paper)	6	6	40		60		100
			DISSERTATION		12	100		100		
						Int	**Int**	**Ext**	**Ext**	
						Thesis val.	Viva voce	Thesis val.	Viva voce	
						50	50	50	50	200
			TOTAL		**30**					**500**

Course Code	Course Title	C	H	I	E	T
18M1RMC1	RESEARCH METHODOLOGY	6	6	40	60	100

Course Objectives:

- To understand the basic principles of Biotechniques.
- To apply Biotechniques in different fields of biology.

Learning Outcomes:

- Students used the principles of effective learning including SQ4R- survey, question, read, revise, record and review the techniques and applications of different fields of biology.
- Understand the importance of the techniques used to isolate, culture, observe and identify the useful and harmful organisms.
- Students learned the methods of biostatistics and applied aspects in the field of biology.

Unit – I : Introduction to Research **18Hrs**

Definition, Types and objectives, Identification of problems, Hypothesis- Null and alternative hypothesis, Characteristics, Literature collection, Writing review and Journal article, Structure of thesis. Impact factor: Plagiarism, Retraction, Writing research proposals.

Unit – II: Biostatistics **18Hrs**

Sampling techniques, data collection, classification, and presentation of data, Measures of central tendency – Mean. Median, Mode ., Dispersions –Standard deviation . Theoretical distribution, Binomial, Poisson and Normal distributions and their properties. Correlation- regression, equation X on Y, Y on X., Testing of hypothesis – parametric eg., T test and non parametric eg., Chi square test. ANOVA- one and two ways.

Unit – III: Separation techniques **18Hrs**

Centrifugation - preparative and analytical, ultra centrifugation, density gradient centrifugation. GC & HPLC - Electrophoresis – Principle, types and applications - PAGE (proteins), Agarose (Nucleic acids), Pulse field Gel Electrophoresis (PFGE), Two dimensional electrophoresis (IEF), DGCE, TGGE and TRFLP.

Unit – IV: Analytical instrumentations **18Hrs**

Atomic absorption spectrophotometer, NMR, Mass spectrometry, GC & MS, MALDI ToP, IR spectrum, X-ray crystallography. Measurement of radioactivity – X –ray film, GM counter & scintillation counting methods. Application of Radioisotopes in biological sciences.

Unit – V: Microscopy **18Hrs**

Bright field, Dark field, Phase contrast, Fluorescent and Polarization microscopes - Electron microscopy – TEM & SEM – principle structure and applications – specimen preparation of electron microscope.

Text Book :

1.Gurumani,N. (2006). Research Methodology for biological Sciences. MJP Publishers, Chennai.

Reference Book(s):

1.Jayaraman.J. (1981). Laboratory Manual in Biochemistry.Whiley Eastern Limited,New Delhi.
2.Gurumani, N. (2006). An introduction to Biostastistics (second edition). MJP Publishers, Chennai
3.Jogdand SN (2004). Gene Biotechnology Published by Himalaya Publishing House,Mumbai.
4.Glick BR and Pasternak JJ. (2010). Molecular Biotechnology: Principles and applications of recombinant DNA, 4th Ed. ASM Press, Washington, USA.
5.Palanivelu P (2001).Analitical biochemistry and separation Techniques A Laboratory maual. 2nd edition ,Published by Tulsi Book Centre, Madurai, Tamilnadu.
6.Plummer, D.T. (2003). An Introduction of practical biochemistry III rd edn. Tata Mc Graw Hill Publishing Company Ltd. New Delhi.
7.Sawhney, S.K. and Randhir S. (2006). Indroduction to Practical Biochemistry, II nd edn. Narosa Publishing House Pvt. Ltd New Delhi.
8.Wilson, K. And Walker, J. (1995). Principle and Techniques of Practical Biochemistry IV th edn. Cambridge University Press, Cambridge.

Web reference(s):

1.www.vu.edu.au/units/UGR7001
2.www.wiredspace.wits.ac.za/bitstream/
3.www.static1.squarespace.com/static/.../Dang-Tung-Hoa_Methodology

You tube reference(s):

1.www.Research Methodology : Introduction - youtube.com/watch
2.www.Intro to Research Methodology - YouTube youtube.com/watch

Course Code	Course Title	C	H	I	E	T

18M1RMC2	MOLECULAR BIOLOGY	6	6	40	60	100

Course Objectives:

- To appreciate the life process at the molecular level.
- To understand the regulatory mechanisms in the flow of genetic information.

Learning Outcomes:

- This paper focuses on genetic recombination in microbes.
- This paper gives a general overview of bacterial recombination, a basis for mutation study and understood how the organism might have been evolved.
- By the isolation and study of genetic material the students are able to decide the harmful microorganisms nature i.e., Bacteria, Fungi , Virus (or) Protozoans etc.
- Isolation of plasmids and they study the nature of plasmids i.e., virulence or drug resistance plasmids. This will be helpful in the Medical field.
- This paper makes substantial contribution to biological research, medicine, industry and agriculture. Future benefits are probably much greater.

Unit – I **18Hrs**

Prokaryotic and eukaryotic genome organization: structure of chromatin, cot curves, respective DNA, interrupted genes, chromatin remodeling. DNA replication, enzymes, accessory proteins and mechanism of prokaryotic & eukaryotic DNA replication, Replication of telomeric sequences.

Unit – II **18Hrs**

Molecular mechanism of Gene Regulation: Transcription- Organization of transcription unit, mechanism of transcription & its regulation in prokaryotes & eukaryotes - general and specific transcription factor, regulatory elements. Translation, genetic code, prokaryotic & eukaryotic translation, regulation of translation, post translational modification of proteins.

Unit – III **18Hrs**

Operon & regulation- +ve and -ve regulation, lac operon, trp operon. Mutation - DNA damage- UV & repair – light dependent and light independent mechanism. Chromosomal aberration, sex linked inheritance and genetic disorders- Turner syndrome, sickle cell anaemia.

Unit – IV **18Hrs**

Transposons- Bacteria, Drosophila, Maize, reterotransposons. Regulation of gene expression in eukaryotes, levels & mechanism of gene expression, Protein targeting, DNA methylation.

Unit – V **18Hrs**

Cellular signaling and Trafficking: Cell Signaling and signal transduction. Genomics - Gene cloning, gene sequencing, Human genome project and Proteomics- protein detection methods with antibodies – MALDI, ESI.

Text Book :

1.David Frifielder (2005). Molecular Biology. 2nd Edition. Narosa Publishers, New Delhi

Reference Book(s):

1.Lodish, H. Baltimore Daerk . A. Zipsury, S.L. Marsudaisa. P. Darnel. J. (1995). Molecular cell biology.
2.Gardner- Simon snustad Principles of genetics, 8th Edition. John Wiley & sons. Inc. New York.
3.Powar.C.B, Cell Biology- (1983).Himalaya publishing house, New Delhi.
4..Singh & Tomar, Cell biology, 10th revised edition, (2012). Rastogi publication, Meerut.
5. Brown. T.A (2013). Gene cloning and DNA analysis- An introduction(6th edition) Wiley Blackwell.
6.Gupta, S.P., (1987). Statistical Methods, thirty third edition, Sultan Chand and Sons Publishers, New Delhi
7.Kothari: C.R. (2004).Research Methodology: Method and Techniques, Wiley Eastern Ltd., New Delhi.
8.Maloy, S.R. Cronan Jr. J.E, Freifelder D (1994). Microbial genetics. Jones and Barlett publishers.

Web reference(s):

1.www.sciencedaily.com/terms/molecular_biology.htm
2.www.biology.arizona.edu/molecular_bio/molecular_bio.html
3.www.imedpub.com/genetics-molecular-biology-

You tube reference(s):

1.www. Basic Molecular Biology youtube.com
2.www. Molecular and Cellular Biologyyoutube.com

Course Code	Course Title	C	H	I	E	T
18M2RME1	BIOTECHNOLOGY	6	6	40	60	100

Course Objectives:

- To learn the basic principles of the biotechnological innovations.
- To understand the techniques involved in gene transfer.

Learning Outcomes:

- Able to know the construction of chimeric DNA, cDNA library, DNA finger print methods. These are highly important in the field of forensic study and legal disputes.
- The students understood about the gene transfer mechanism and know the techniques how to produce transgenic plants and animals.
- By this they will get placement in reputed Pharma companies, hybrid seed production, plant breeding centers, multinational companies and in the field of horticulture and thereby able to introduce novel varieties of plants. They are able to join in animal farming, ornamental fish production industry, poultry , dairy farm etc.
- We initiate scientific temper and research attitude to students by the way of project work. The project work is prelude for future research work.

Unit – I **18Hrs**

Introduction – definitions – Scope and significance of biotechnology. Recombinant DNA technology. Restriction endonucleases - types, nomenclature, recognition sequences, cleavage patterns . Construction of chimeric DNA, molecular probes and applications, genomic library by shotgun experiment , cDNA library from m RNAs , Plaque hybridization.

Unit – II **18Hrs**

Plasmids- classification and properties of cloning vectors. Characteristic features and restriction map of the following vectors- pBR322, pUC18, Ti Plasmid, Lambda phage , M13, cosmid, Phagemids , BAC and YAC.

Unit – III Techniques in Biotechnology **18Hrs**

Polymerase chain reaction (PCR)-Applications; microarrays (DNA chips)- characteristic features, production of microarrays, two color- vs one color detection, applications. Gene transfer in animal cells-DNA mediated transformation, viral transduction, expression systems for animal cells, role of stem cells, production and importance of monoclonal antibodies. Gene transfer in plant cell- Agrobacterium mediated transformation. Transfer of gene into plant cells with reference to TGMV, Arabidopsis and Nicotiana.

Unit – IV Genomics **18Hrs**

a. Plant genomics- *Arabidopsis* genome, *Oryzae* genome, *Zea mays* genome. Functional genomics – mutagenesis for gene disruption, RNA interferance and virus induced gene silencing transcriptomics and proteomics.

b. **Animal genomics** - Introduction to different breeds of cattle, buffalo, sheep, goats, pigs, canines and poultry. Different methods for characterization of animal genomes, SNP, STR, RFLP, RAPD, proteomics, metabolomics.

Unit – V Applications **18Hrs**

a. Transgenic plants - Introduction, role of promoter, reporter and terminator genes. Antisense RNA mechanism. Production of transgenic tomato, brief account on the importance of Bt cotton, Bt brinjal, herbicide resistant, drought resistance plant productions.

b.Transgenic animals – Introduction, objectives, transfection methods- calcium phosphate mediated co- transfection – Microinjection- Liposome mediated – electroporation and ultrasonication.

Text Book :

1. Gupta, P. K . (2000). Elements of Biotechnology, Rastogi Publications, Meerut.

Reference Book(s):

1. Ratledge C & Kristiansen B.(2008). Basic Biotechnology 3/e, Cambridge University Press.
2.Darnell J. Lodish H. & Baltimore D.(2006). Molecular Cell Biology, Scientific American Books Inc., Iowa.
3.Mitra S., (2001).Genetic Engineering, Macmillan, India Limited, New Delhi.
4. Chawla H.S (2002). Introduction to plant biotechnology, oxford and IBH publishing and co. pvt. Ltd. New Delhi.
5.Glick B.R. & Pasternak, J.J., (2006).Molecular Biotechnology- Principles and Applications of Recombinant DNA technology, ASM press, Washington.
6.Dubey R.C., (2002). A Text Book of Biotechnology, S. Chand and Co. New Delhi.
7.Slater, A., N.W. Scott and M.R.Fowler. (2009). Plant Biotechnology: the genetic manipulation of plants, Oxford University Press, US.
8.Singh B.D., (1998). Biotechnology. Kalyani Pubs. New Delhi.

Web reference(s):

1.www.bio.org/what-biotechnology
2.www.nature.com › subjects
3.www.khanacademy.org/science/biology/biotech-dna-technology

You tube reference(s):

1.www. Applications of Biotechnology -youtube.com/watch
2.www. Introduction to Biotechnology youtube.com/watch

FROM THE BOARD OF STUDIES IN PART V ACTIVITIES

NCC

Course Code& Qn. No.	Course Title	C	H	I	E	T
2NPN 4001	**INTRODUCTION TO N. C. C.**			50	50	100

UNIT I. N.C.C. Organization

History of NCC – NCC act 1948 – NCC organization-starting from college up to Directorate.NCC song – Motto, Cardinal principles of discipline and Aims of NCC.

UNIT II. Geography & Current affairs in India

Geography: Geography of India, boundary lines with neighboring countries.
Current affairs:Entire cabinet of Indian government – Governor, Chief Minister and capital city of all Indian states – President and Prime Minister of our neighboring countries.

UNIT III. Armed services

Various military organizations in Army, Navy & Airforce.

a. Various commands and their headquarters.
b. Rank of equivalents in Army, Navy & Airforce.
c. Employment opportunities in the armed forces – OTS, NDA, UPSC, IMA, etc.

UNIT IV. Leadership, civil defense& hygiene

Leadership: Basic traits and development. *Civil defense*: Organization – importance during civil and war times. *Hygiene*: Brief account of hygiene, sanitation and significance.

UNIT V. Role of NCC in social service activities

Social services: Adult education – Road safety: Traffic rules and regulations. AIDS awareness: causes– mode of transmission – diagnosis – prevention of AIDS.
Pollution: Types and control.
Malaria :Origin and control.
Tree plantation and its importance.

Text Book:

NCC Guide – Army Wing, Priya Publications, Major R. Ramasamy, Karur, 2010.

Reference Books:

1. Precis, Published by Officer Training School, Kamptee, 2009.
2. Cadet's diary, Published by cadets' center, Chennai, 2000.
3. NCC: Handbook of NCC cadets, R. Gupta, Ramesh Publishing House, 2015.
4. A hand book of NCC-Army wing, Lt. S. N. Saravanamoorthy, Jayalakshmi publications, Madurai, 2015.

Websites:

1. www.nccinida.nic.in
2. www.joinindianarmy.nic.in
3. www.joinindiannavy.gov.in
4. www.indianairforce.nic.in

Course Code& Qn. No.	Course Title	C	H	I	E	T
4NPN 4005	**FIELD TRAINING IN N. C. C.**			50	50	100

UNIT I. Geography & Current affairs of world

Geography of the world – Continents. Important nations: Capitals and leaders. Important world organizations: NATO, various UN organizations, peace keeping activities – important agreements – current affairs – important achievements in social activities – Adventure activities in mountaineering, trekking, voyage, etc.

UNIT II. Drill

Important drill movements – measurements, distance degree, etc. of each drill movement.
Drill without arms: Attention, stand at ease, marching, saluting, halt formation of squad.
Drill without arms: With rifle, Attention, shoulder arm, present arm and saluting with arms.

UNIT III. Map reading

Introduction – aim, definition and importance – Technical terms and uses of service protractor – parts and uses of prismatic compass. Conventional signs – Grid systems – reference of four and six figures – Types of north – finding north and won positions – bearing – map to ground and ground to map.

UNIT IV. Field craft&Battle craft

Definition –Judging the distance: various methods of judging the distance– Types of grounds – why things are seen? (7 sisters & 1 mother).
Camouflage & concealment: definition & principles.
Patrol: Definition, types, strength, tasks and stages of patrol – patrol moves, briefing and debriefing in patrol.
Ambush: Definition, Types, aims, parties, functions and essentials of ambush. *Section and Platoon formations*: Definition, types and uses.

UNIT V. Weapon training

Weapon training: Parts, strippling, assembling, effecting range and weight of the following weapons:
Rifle, Self-loading rifle (SLR) and Light machine gun (LMG).

Text Book:

NCC Guide – Army Wing, Major R. Ramasamy, Priya Publications, Karur, 2010.

Reference Books:

1. Precis, Published by Officer Training School, Kamptee, 2009.
2. Cadet's diary, Published by cadets' center, Chennai, 2000.
3. NCC: Handbook of NCC cadets, R. Gupta, Ramesh Publishing House, 2015.
4. A hand book of NCC-Army wing, Lt. S. N. Saravanamoorthy, Jayalakshmi publications, Madurai, 2015.

Websites:

1. www.nccinida.nic.in
2. www.joinindianarmy.nic.in
3. www.joinindiannavy.gov.in
4. www.indianairforce.nic.in

QUESTION PAPER PATTERN - NCC

INTERNAL : 50 marks

EXTERNAL : 50 marks

TOTAL : 100 marks

- **INTERNAL ASSESMENT**

TOTAL : 50 MARKS

Following components are fixed for internal assessment:

Fieldwork/Camp/Rallies/Special camp, etc.: 20 marks

Assignment : 10 marks

Attendance : 20 marks

- **EXTERNAL EXAMINATION : 50 MARKS**

QUESTION PAPER PATTERN

Duration: 3 Hrs **Max Marks: 50**

Part – A.	Answer any five questions from eight questions.	5 x 4 = 20
Part – B.	Answer any three questions from five questions.	3 x 10 = 30

NATIONAL SERVICE SCHEME (N.S.S.)

TITLE: INTRODUCTION TO NATIONAL SERVICE SCHEME (2NPN)

Max. Marks: 100
Theory Paper: 50
Internal assessment: 20
Field Work: 30

OBJECTIVES:

- To Understand the community in which they work and their relation.
- To identify the needs and problems of the community and involve them in problem-solving.
- To develop capacity to meet emergencies and natural disasters.
- To develop competences required for group living and sharing responsibilities.
- To acquire leadership qualities and democratic attitude.

Unit-I: Basics of National Service Scheme

History of NSS - Motto – Aim – Role of Programme officer – Role of NSS Group leader and NSS volunteers in the implementation.

Unit-II: Administrative structure of NSS

Organisational structure of NSS at World level, Regional level, University level, College level- Advisory body -functions- planning and execution.

Unit- III: Programmes and activities

Regular activities of NSS- Traffic regulation –Working with Police Commissioner's Office - Working with Corporation of Madurai - Working with Health Department -Blind assistance - Garments collection during disaster - Non-formal education - 'Environmental Education, Awareness and Training (EEAT)' - Blood donation

Unit – IV: **Community Development**

Special camp- fund allocation- procedure for special camp activities to be carried out in adopted village – general awareness programs during camp.

Unit – V: Development and participation with social issues

Social – economic survey- first aid – disaster management (flood) – communicable and non-communicable diseases- HIV, DENGUE – people participation.

REFERENCE BOOKS:

1. Hand book of National Service Scheme Empanelled Training Institution, Avinashilingam University for Women, Coimbatore.

2. National Service Scheme Manual (Revised), Ministry of Human Resource Development of India.

3. A. Kumar (2006), "Health and Nutritional Status of Indian Women", Anmol Publications Pvt. Ltd., New Delhi.

Online Resources:

1. www.nss.nic.in
2. www.icmr.nic.in

NATIONAL SERVICE SCHEME (N.S.S.)

TITLE: COMMUNITY SERVICES (4NPN)

Max. Marks: 100
Theory Paper: 50
Internal assessment: 20
Field Work: 30

OBJECTIVES:

- To Understand the community in which they work and their relation.
- To identify the needs and problems of the community and involve them in problem-solving.
- To develop capacity to meet emergencies and natural disasters.
- To develop competences required for group living and sharing responsibilities.
- To acquire leadership qualities and democratic attitude.

Unit-I: SOCIAL AWARENESS

History, Philosophy, Ideology - Relationship of Social Work with Social Service, Social Services, Social Welfare, Social Security & Social Reforms - Drugs abuse.

Unit-II: ENVIRONMENTAL AWARENESS

Environment conservation, enrichment and Sustainability -Climate Change, Global Efforts for environment conservation- Waste management - Natural resource management: Rain water harvesting, Energy Conservation, Waste land development, Soil conservations and Afforestation.

Unit- III: GENDER EQUALITY

Family and Society - Concept of family and society -Growing up in the family-dynamics - Human Values-Concept & Importance - Concept of Gender Justice & its need

Unit – IV: HEALTH AWARENESS

Hygiene & Sanitation - Definition, needs and scope of health education - Food and Nutrition, Concept of Balance Diet- Safe drinking water, water borne diseases- National Health Programme - Home Nursing and First Aid

Unit – V: SOCIAL AND POLITICAL AWARENESS

Basic Features of Constitutions of India - Fundamental Rights and Duties - Human Rights - Consumer awareness and the legal rights of the consumer - Right to Information Act. 2005 – Right to Education Act- Right to Employment Act.

REFERENCE BOOKS:

1. T. Eugine (2010), “Environmental Economics”, Vrinda Publishers, New Delhi.
2. A. Kumar (2006), “Health and Nutritional Status of Indian Women”, Anmol Publications Pvt. Ltd., New Delhi.
3. C.N. Shankar Rao (2012), “Principles of Sociology”, S. Chand & Co. Pvt. Ltd., Ram Nagar, New Delhi.
4. Dr. P. Saravanan & P. AndiChamy (2011), Value Education, Merit India Publications, Madurai.

Online Resources:

1. www.rtionline.gov.in
2. www.nhrc.nic.in

QUESTION PAPER PATTERN - NATIONAL SERVICE SCHEME

End of Semester Exam Theory	50 Marks
Components of CIA	50 Marks
Field Work : 30 Marks	
Assignment : 10 Marks	
Attendance : 10 Marks	
Total	100 Marks

END SEMESTER EXAMINATION PATTERN FOR NSS

Part A (5 X 4 = 20)

- Answer any 5 out of 8 questions

Part B (3 X 10 = 30)

- Answer any 3 out of 5 questions

AEEP

ADULT EDUCATION AND EXTENSION PROGRAMME

INTRODUCTION TO ADULT EDUCATION AND EXTENSION PROGRAMME

I Year UG

Unit-I Education-

Definition-Importance-Types of Education-General Education-Technical Education-Vocational Education.

Unit-II Adult

Education-Ageing-problems faced by aged people-measures to overcome-importance of Adult Education.

Unit-III Extension

Activities-Role of students in extension activities-Home Tution by student volunteers to adopted villages.

Unit-IV Extension

Programme in Health-First Aid-importance of Yoga, Health Awareness Programmes-measures to overcome the communicable and non-communicable diseases.

Unit-V

Higher Education-Opportunities – problems-Research in Higher Education.

Text Book:

Prepared Text materials will be given to the students.

QUESTION PAPER PATTERN - AEEP

End of Semester Exam	Theory	50 Marks
Components of CIA		50 Marks
Field Work	: 30 Marks	
Assignment	: 10 Marks	
Attendance	: 10 Marks	

	Total	100 Marks

END SEMESTER EXAMINATION PATTERN FOR NSS

Part A (5 X 4 = 20)

- Answer any 5 out of 8 questions

Part B (3 X 10 = 30)

- Answer any 3 out of 5 questions

ADULT EDUCATION AND EXTENSION PROGRAMME

LITERACY PROGRAMMES

II Year UG

Unit-I Role of Teachers-Good Qualities of Teachers-students participation in social services.

Unit-II School Education-Types of School Education- Montessori, Nursery-Primary-Secondary-Higher Secondary-CBSE-ICSE.

Unit-III Collegiate Education-Scope and Opportunities of Higher education-Degree courses offered by the colleges-Research and Innovation in Higher Education.

Unit-IV Literacy programmes in India-National Adult Education Programme-Rural and Functional literacy programme – National Literacy Mission and their objectives.
Unit-V Impact of literacy programmes-problems and prospects of education in India.

Text Book:

Prepared Text materials will be given to the students.

PHYSICAL EDUCATION

HISTORY OF PHYSICAL EDUCATION

I Year UG

Unit-I

Physical Education in Greece-Sparta-Athens-Views on eminent experts on Physical Education-Socrates-Aristotle.

Unit-II

Ancient Olympics-Modern Olympics-Olympic flag-Olympic Torch-Ancient v/s Modern Olympics-A comparison-Marathon race.

Unit-III

History and Development of Physical Education in India-National Reaching Schemes-Sports Authority of India-Schemes.

Unit-IV

Sports Organisations in India-IOA-National Sports Federation-Association of Indian Universities.

Unit-V History of Games-Badminton-Basket ball-Foot ball-Hand ball-Hockey-Volley ball

Text Book:

Bevinson Perinbaraj. S, J. Sathiah, A.S. Nageswaran (2002), **History of Physical Education**, Vinsi Publication, Karaikudi.

DEPARTMENT OF PHYSICAL EDUCATION

YOGA, FITNESS AND WELLNESS

II Year UG

Unit-I

Yoga-meaning-benefits-Essentials of Yoga-Suriyanamaskar-Asanas-Pranayama-Kriyas-Meditation.

Unit-II

Fitness-meaning-scope-components of fitness-speed-strength-Endurance-flexibility-Benefits of exercises-physical growth and development.

Unit-III

Exercise-meaning- weight training-sand running-uphill running-usage of gadgets-overload principle-uses.

Unit-IV

Differences of Yogic and Physical exercises-Stretching- Aerobics-need for exercises-Neuro muscular co-ordination-injury prevention.

Unit-V

Wellness-meaning-components of wellness-Physical-Mental-Social-challenges of wellness-Stress-Food, Nutrition-Health behaviour gap-Benefits of wellness.

Text Book:

Wuest Deborah, A. and Charles A. Bucher (1987), **Foundations of Physical Education**, B.I. Publication Pvt. Ltd., New Delhi.

Hoeger Werner W.K. and Sharon A. Hoeger (1990), **Fitness and Wellness**, Morton Publishing Company, Colorado.

Chandrasekaran K. (1999), **Sound Health through Yoga**, Prem Kalyan Publications, Sedapatti.

QUESTION PAPER PATTERN – PHYSICAL EDUCATION

End of Semester Exam Theory 50 Marks

Components of CIA **50 Marks**

Battery of Test	--30 Marks
Major Games	-- 10 marks
Attendance	--10 marks
Total	100 marks

END SEMESTER EXAMINATION PATTERN

Part A (5 X 4 = 20)

- Answer any 5 out of 8 questions

Part B (3 X 10 = 30)

- Answer any 3 out of 5 questions