

BOOKS FOR REFERENCE

1. Modern physics – R. Murugesan
2. Engineering physics – Gaur & Gupta
3. Engineering physics – M. Arumugam
4. Laser Physics – Thiagarajan
5. Principles of Electronics – V.K. Metha
6. Basic Electronics – B.L. Theraja
7. Fundamentals of digital computers – Bartee
8. Digital principles and Applications – Malvino & Leech

**ALLIED PHYSICS PRACTICALS FOR B.SC
(MATHS/CHEMISTRY)
2014-15 BATCH AND ONWARDS
LIST OF EXPERIMENTS
(ANY 10 EXPERIMENTS ONLY)**

1. Acceleration due to gravity-Compound pendulum method
2. Moment of inertia – Torsional pendulum method
3. Young's modulus - Uniform bending - Optic lever method
4. Young's modulus - Non-uniform bending - Pin and microscope
5. Rigidity modulus – Static torsion method.
6. Frequency of A.C - Sonometer
7. Thermal conductivity - Lee's disc method.
8. Refractive index of a solid prism - Spectrometer
9. Refractive index of a liquid prism – Spectrometer
10. (i-d) curve - solid prism - Spectrometer
11. Wavelengths of spectral lines – Grating - Normal incidence - Spectrometer
12. Wavelength of spectral lines – Grating - Minimum deviation - Spectrometer
13. Radius of curvature of lens - Newton's rings method.
14. Viscosity of highly viscous liquid - Stoke's method.
15. Surface tension - Drop weight method
16. Characteristics of Pn Junction diode
17. Characteristics of Zener diode
18. Verification of truth tables of logic gates.

NON-MAJOR ELECTIVE - II

BIOFERTILIZER TECHNOLOGY

Objectives

The aim of the course is to make the student to learn importance of biofertilizers in agriculture and to know about field application and production technologies.

UNIT I

Definition and types, importance of biofertilizers in agriculture, Application technology: Standards and quality control, application for field and tree crops, nursery plants and seedlings. National and Regional Biofertilizers Production and Development centers.

Biofertilizers – carrier materials - storage, shelf life, foliar applications, quality control and marketing.

UNIT II

Isolation, identification, characterization, mass multiplication, formulation, field application and benefits of Rhizobium, Cyanobacteria and Frankia.

UNIT III

Isolation, identification, characterization, classification, mass cultivation, formulation, field application and benefits of Azospirillum and Azotobacter.

UNIT IV

Phosphate solubilizing bacteria - isolation, identification, characterization, mass cultivation, formulation, field application and benefits.

UNIT V Mycorrhizae – Ecto and Endo (Arbuscular mycorrhizae). Isolation, identification, characterization, mass cultivation, formulation, field application and benefits.

ALLIED PHYSICS PAPER – II

UNIT- I Modern physics:

Einstein's photo electric equation – verification of Einstein's photo electric equation by Millikan's experiment – photo electric cells – applications

Wave mechanics: De Broglie concept of matter waves – characteristics and calculation of De Broglie wave length -Study of De Broglie matter wave by G.P.Thomson experiment.

UNIT- II Nuclear physics:

Nuclear forces –characteristics - nuclear structure by liquid drop model – Binding energy – mass defect – particle accelerators – cyclotron and betatron – nuclear Fission and nuclear Fusion – introduction to elementary particles – Leptons, Mesons and Baryons

UNIT III Laser physics:

Principles of laser– population inversion – meta stable state – conditions for laser actions - Types –Nd-Yag – Helium – neon laser – applications of lasers – Raman effect – Raman shift – stokes and anti stokes lines

UNIT IV Semiconductor physics:

Volt – Ampere Characteristics of P-N junction Diode – Zener diode – applications of Zener diodes - Volt – Ampere Characteristics of FET, UJT and SCR – Principles of LED and LCD – Frequency Modulation and Amplitude modulation –principles and applications of RADAR.

UNIT V Digital Electronics:

Number systems – conversion of binary into decimal – conversion of decimal to binary – binary addition and subtraction – Basic logic gates – NAND and NOR as an universal logic gates – Demorgan's theorems – Boolean algebra – applications of Demorgans theorems – Half adder and full adder circuits.

UNIT V CHEMICAL KINETICS

- 5.1. Rate of reaction - rate equation, order and molecularity of reaction. Rate Laws rate constants - derivation of first order rate constant and characteristics of zero order, first order and second order reactions - derivation of time for half change ($t_{1/2}$) with examples.
- 5.2. Methods of determination of order of reactions - experimental methods determination of rate constant of a reaction by volumetry, colorimetry and polarimetry.
- 5.3. Effect of temperature on reaction rate - concept of activation energy, energy barrier, Arrhenius equation. Theories of reaction rates - collision theory derivation of rate constant of bimolecular reaction - failure of collision theory Lindemann's theory of unimolecular reaction.
- 5.4. Theory of absolute reaction rates - derivation of rate constant for a bimolecular reaction - significance of entropy and free energy of activation. Comparison of collision theory and absolute reaction rate theory (ARRT).

REFERENCES

1. B.R. Puri, L.R. Sharma, K.K. Kalia, Principles of Inorganic Chemistry, 23rd edition, New Delhi, Shoban Lal Nagin Chand & Co., (1993).
2. R.D. Madan, "Modern Inorganic Chemistry", 2nd edition, S. Chand & Company Ltd., 2000.
3. J.D. Lee, "Concise Inorganic Chemistry", 20th revised edition, Sultan Chand & Sons, 2000.
4. Morrison R.T. and Boyd R.N., Bhattacharjee S.K. Organic Chemistry (7th edition), Pearson India, (2011).
5. Bahl B.S. and Bahl A., Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (2010).
6. Puri B.R., Sharma L.R. and Pathania M.S. (2013) Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin Chand and Co.
7. Samuel Glasstone (1974), Thermodynamics for Chemists (3rd printing), East - West Edn.
8. Puri B.R., Sharma L.R. and Pathania M.S. (2013), Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin Chand and Co.
9. Gurtu J.N. and Amit Gurtu (1979), Chemical Kinetics, 5th Edn, Mittal K.K.

REFERENCES

1. Dinesh K Maheswari. Bacteria in Agrobiolgy, Springer Heidelberg, New York. 2012.
2. Kannaiyan S. Biotechnology of biofertilizers, Narosa publishing house, New Delhi. 2002. 23
3. Kannaiyan S. Biotechnology of biofertilizers, CHIPS, Texas. 5th edition, McGraw Hill, New York. 2003.
4. Kannaiyan S and Kumar K. Azolla biofertilizers for sustainable rice production, Daya publishing house, Delhi. 2005.
5. Mahendra K Rai. Hand book microbial biofertilizers. 9th edition. The Haworth press, Inc. New York. 2015.
6. Mukerji KG, Manoharachary C and Chamola BP. Techniques in Mycorrhizal studies. Kluwer Academic Publishers. 2002.
7. Ramesh Chandra and Raverkar KP. Bioresources for sustainable plant nutrient management, scholars world publishers, New Delhi. 2014.
8. Reddy SMLV, Gangwane P, Prakash and Kunwar IK. Bioinoculants for sustainable agriculture and forestry. Scientific publishers, Jodhpur. 2002.
9. Siddiqui ZA, Sayeed Aktar M and Kazuyoshi Futai. Springer science and business media, New York. 2008.
10. Subba Rao NS. Soil microorganisms and plant growth. 4th edition. Oxford and IBH publishing co Pvt. Ltd, New Delhi. 2002.
11. Tilak KVBR, Pal KK and Dey R. Microbes for sustainable agriculture, I.K. International Publishing house, Pvt. Ltd. New Delhi. 2010.

DESKTOP PUBLISHING
SKILL BASED ELECTIVE - I (SEMESTER IV)
PAGE MAKER

Unit I

Getting started with Adobe Page Maker 7.0, Creating a Publication, Working with Text.

Unit II

Modifying Text, Working with Multiple Pages.

Unit III

Working with Graphics, Formatting Text

Unit IV

Using Advanced Graphics, Adding Color and Using Mail Merge.

Unit V

Working with Long Publications, Publishing Electronically.

Text Book

Adobe Page Maker 7.0, Kevin Proot, Cengage Learning.

UNIT III CHEMISTRY OF ALCOHOLS, PHENOLS AND ETHERS

- 3.1 Nomenclature – industrial source of alcohols – preparation of alcohols: hydration of alkenes, oxymercuration, hydroboration, Grignard addition, reduction – physical properties – chemical properties - uses – glycols from dihydroxylation, reduction, substitution reactions and glycerols and their uses.
- 3.2 Preparation of phenols including di- and trihydroxy phenols – physical and chemical properties - uses – aromatic electrophilic substitution mechanism – theory of orientation and reactivity.
- 3.3 Preparation of ethers: dehydration of alcohols, Williamson's synthesis – silyl ether. epoxides from peracids - Sharpless asymmetric epoxidation – reactions of epoxides – uses – introduction to crown ethers – structures – applications.

UNIT IV THERMODYNAMICS-I

- 4.1. Definitions - system and surrounding - isolated, closed and open system - state of the system - Intensive and extensive variables. Thermodynamic processes- reversible and irreversible, isothermal and adiabatic processes- state and path functions.
- 4.2. Work of expansion at constant pressure and at constant volume. First law of thermodynamics - statement - definition of internal energy (E), enthalpy (H) and heat capacity. Relationship between C_p and C_v .
- 4.3. Calculation of w , q , dE and dH for expansion of ideal and real gases under isothermal and adiabatic conditions of reversible and irreversible processes.
- 4.4. Thermochemistry - relationship between enthalpy of reaction at constant volume (q_v) and at constant pressure (q_p) - temperature dependence of heat of reaction Kirchoff's equation - bond energy and its calculation from thermochemical data integral and differential heats of solution and dilution.

CORE COURSE - IV
GENERAL CHEMISTRY – IV

SEMESTER IV

Hours/Week: 5
Credits: 5

OBJECTIVES

1. To learn the general characteristics of d and f block elements.
2. To understand the reactions of organometallic compounds, alcohols, phenols and ethers.
3. To learn about the fundamental concepts of first law of thermodynamics, to relate heat, work and energy and to calculate work from pressure – volume relationships.
4. To learn about the fundamental concepts of rate of the reaction, determination of order of the reaction and theories of reaction rates.

UNIT I d-BLOCK & f-BLOCK ELEMENTS

- 1.1 General characteristics of d-block elements, comparative study of zinc group elements, extraction of Mo & Pt - Alloys of copper, amalgams and galvanization. Evidences for the existence of Hg ions.
- 1.2 General characteristics of f-block elements – Lanthanide contraction and its consequences. Extraction of Th.
- 1.3 Arrhenius, Lowry – Bronsted and Lewis concept of acids and bases.

UNIT II CHEMISTRY OF ORGANOMETALLIC COMPOUNDS

- 2.1 Introduction – preparation of organomagnesium compounds - physical and chemical properties - uses. Organozinc compounds – general preparation, properties and uses.
- 2.2 Organolithium, organocopper compounds – preparation, properties and uses.
- 2.3 Organolead, organophosphorous and organoboron compounds – preparation, properties and uses.

CORE COURSE - V
INORGANIC CHEMISTRY - I

SEMESTER V

Hours/Week: 5
Credits: 5

OBJECTIVES

1. To understand the basics and theories of coordination compounds.
2. To study a few biologically important coordination compounds.
3. To understand the preparation and properties of nitrosyl compounds
4. To learn the basic principles and applications of magnetic properties.

UNIT I COORDINATION COMPOUNDS-I

- 1.1 Introduction - Types of ligands: unidentate, bidentate and polydentate ligands, chelating ligands and chelates- IUPAC nomenclature of coordination compounds.
- 1.2 Isomerism in coordination compounds: Structural isomerism, hydrate isomerism, coordination isomerism, ionisation isomerism, linkage isomerism, coordination position isomerism.
- 1.3 Stereoisomerism: Geometrical isomerism of four and six coordinate complexes, optical isomerism of four and six coordinate complexes, Werner and Sidgwick theories, methods of detecting complex formation.

UNIT II COORDINATION COMPOUNDS-II

- 2.1 Theories of coordination compounds: Valence bond theory, limitations of valence bond theory, crystal field theory – splitting of d orbitals in octahedral, tetrahedral and square planar fields, CFSE, factors affecting CFSE, colour, geometry and magnetic properties of coordination compounds, Jahn – Teller distortion (an elementary idea).
- 2.2 Molecular orbital theory: Molecular orbital diagram for $[\text{Co}(\text{NH}_3)_6]^{3+}$. Ligand field theory. (An elementary treatment only).

UNIT III COORDINATION COMPOUNDS-III

- 3.1 Labile and inert complexes, stability of coordination compounds – thermodynamic and kinetic stability, relationship between stepwise formation constant and overall formation constant, factors affecting the stability of complexes.

- 3.2 Unimolecular and biomolecular nucleophilic substitution reactions in octahedral and square planar complexes, trans effect – theories of trans effect and applications.
- 3.3 A few biologically important coordination compounds: Chlorophyll, haemoglobin and vitamin B12.

UNIT IV CARBONYLS AND BINARY METALLIC COMPOUNDS

- 4.1 Metal carbonyls: Mono and binuclear carbonyls of Ni, Fe, Cr, Co and Mn – preparation, structure, reactions, bonding and uses.
- 4.2 Structure and bonding in π -metal alkenyl and π -metal alkynyl complexes of $[\text{PtCl}_3(\text{C}_2\text{H}_4)]^-$, $[\text{Co}(\text{CO})_6(\text{RC}\equiv\text{CR})]$ and ferrocene.
- 4.3 Binary metallic compounds: borides, carbides, hydrides and nitrides – classification, preparation, properties and uses.

UNIT V NITROSYL COMPOUNDS AND MAGNETIC PROPERTIES

- 5.1 Nitrosyl compounds: Classification - nitrosyl chloride and sodium nitroprusside - preparation, properties and structure.
- 5.2 Magnetic properties-meaning of the terms-magnetic susceptibility-magnetic moment-types of magnetism-Gouy balance - applications of magnetic properties.
- 5.3 Dipole moment-determination, application in the study of simple inorganic molecules.

REFERENCES

1. R.D. Madan, "Modern Inorganic Chemistry", 2nd edition, S. Chand & Company Ltd., 2000.
2. W.U. Malik, G.D. Tuli and R.D. Madan, S. Chand and Company Ltd., Selected topics in Inorganic Chemistry", 7th edition, 2001.
3. Gopalan R, Text Book of Inorganic Chemistry, 2nd Edition, Hyderabad, Universities Press, (India), 2012.
4. P.L. Soni, "Text Book of Inorganic Chemistry", 20th revised edition, Sultan Chand & Sons, 2000.
5. B.R. Puri, L.R. Sharma, K.C. Kalia, "Principles of Inorganic Chemistry", 21st edition, Vallabh Publications, 2004-2005.
6. J.E. Huheey, "Inorganic Chemistry", 4th edition, Pearson Education. Inc. 1993.
7. F.A. Cotton, "Advanced Inorganic Chemistry", 6th edition, John Wiley & Sons, Pvt. Ltd., 2003 – 2004.
8. R. Gopalan, P.S. Subramanian and K. Rengarajan, "Elements of Analytical Chemistry", 2nd edition, Sultan Chand & Sons, 1991.

Semester IV : Short Stories for Effective Communication

Unit – I

- Rabindranath Tagore : *The Auspicious Vision*
 Bhabani Bhattacharya : *Glory at Twilight*

Unit –II

- Oscar Wilde : *The Nightingale and the Rose*
 John Galsworthy : *Acme*

Unit – III

- Isaac Bashevis Singer : *The Son from America*
 Ray Bradbury : *The Pedestrian*

Unit – IV

- Anton Chekhov : *A Nincompoop*
 Guy de Maupassant : *The Diamond Necklace*

Unit –V

- Katherine Mansfield : *Sun and Moon*
 Saki : *Fur*

Textbook:

Syamala, V, ed. *Story Time*. Chennai: Anu Chithra Publications, 1988.

தமிழ் இலக்கிய வரலாறு

பார்வை நூல்கள்

(நான்கு பருவங்களுக்கும்)

1. தமிழ் இலக்கிய வரலாறு முனைவர் ச.சுபாஷ் சந்திரபோஸ் இயல்பு பதிப்பகம், 23பி/2739, தொப்புள் பிள்ளையார் கோவில் தெரு, தெற்கலங்கம், தஞ்சாவூர் - 613 001. அலைபேசி எண் : 9940558934 விலை ரூ.120/-
2. தமிழ் இலக்கிய வரலாறு முனைவர் லட்சுமணன் கிருஷ்ணா வெளியீடு, 7, பிரகாஷ் நகர், திருவெறும்பூர், திருச்சிராப்பள்ளி-13. அலைபேசி எண் : 9442210128 விலை ரூ.140/-
3. பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு முனைவர் க. வாசுதேவன் தேவன் பதிப்பகம் 16/43, திருநகர் திருவாணைக்கோவில் திருச்சிராப்பள்ளி - 620 005. அலைபேசி : 98948447005 விலை ரூ.110/-
4. தமிழர் இலக்கிய வரலாறு முனைவர் கி. இராசா பார்த்திபன் பதிப்பகம் ஏ12, எல்.ஐ.சி. காலனி திருச்சிராப்பள்ளி 620 001. அலைபேசி : 9003730416 விலை ரூ.120/-
5. வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு முனைவர் பாக்யமேரி நியூ செஞ்சுரிபுக் ஹவுஸ் பி. லிமிடெட் 41B, சிட்கோ தொழிற்பேட்டை அம்பத்தூர், சென்னை - 600 098 அலைபேசி : 9443778719 விலை ரூ.150/-

CORE COURSE - VI

ORGANIC CHEMISTRY - I

SEMESTER V

Hours/Week: 5

Credits: 5

OBJECTIVES

1. To learn the reactions of carbonyl compounds, carboxylic acids, amines, heterocycles.
2. To know the requirement of the oxidation and reducing agents for synthesis.

UNIT I CHEMISTRY OF CARBONYL COMPOUNDS

- 1.1 Nomenclature - structure of carbonyl compounds - chemical properties - nucleophilic addition mechanism at carbonyl group (eg: HCN, ROH, RNH₂) - acidity of alpha hydrogen - keto-enol Tautomerism (proof for the two forms).
- 1.2 Reduction and oxidation reactions of carbonyl compounds - paraformaldehyde, metaformaldehyde - uses of aliphatic carbonyl compound - Claisen condensation - Aldol condensation - Robinson annulation.
- 1.3 General methods of preparation of aromatic carbonyl compounds - physical and chemical properties - uses - Effect of aryl group on the reactivity of carbonyl group.

UNIT II CHEMISTRY OF CARBOXYLIC ACIDS

- 2.1 Nomenclature - Acidity of carboxylic acids based on substituent effect - comparison of acid strengths of halogen substituted acetic acids - acid strengths of substituted benzoic acids - Acid derivatives - Nucleophilic substitution mechanism at acyl carbon.
- 2.2 Preparation, properties and uses of acid derivatives: acid chloride, anhydrides, esters, amides - chemistry of compounds containing active methylene group - synthesis and synthetic applications of acetoacetic ester and malonic ester.

- 2.3 Preparation of dicarboxylic acid - physical and chemical properties - uses. Introduction to oils and fats - fatty acids - manufacture of soap - mechanism of cleaning action of soap.

UNIT III CHEMISTRY OF NITROGEN COMPOUNDS

- 3.1 Nomenclature - nitro alkanes - alkyl nitrites - differences - aromatic nitro compounds - preparation and reduction of nitro benzene under different conditions, TNT.
- 3.2 Amines – effect of substituents on basicity of aliphatic and aromatic amines - Reactions of amino compounds (primary, secondary, tertiary and quaternary amine compounds) - Mechanism of carbylamine reaction, diazotization and comparison of aliphatic and aromatic amines.
- 3.3 Diazonium compounds - preparation and synthetic applications of diazomethane, benzene diazonium chloride and diazo acetic ester.

UNIT IV CHEMISTRY OF HETEROCYCLIC COMPOUNDS AND DYES

- 4.1 Introduction – nomenclature of heterocyclic compounds having not more than two heteroatoms such as oxygen, nitrogen and sulphur - structure, synthesis and properties of furan, pyrrole, thiophene. Pyridine – structure, preparation - compare the basicity of pyridine with pyrrole and amines.
- 4.2 Quinoline - structure and Skraup synthesis. Isoquinoline – structure and Napieralski synthesis and Indole – structure and Fischer-indole syntheses.
- 4.3 Dyes - color and constitution-chromophore-auxochrome- classification according to application and structure - preparation and uses of - methyl orange, fluorescein, Alizarin, Indigo and malachite green dyes.

UNIT V OXIDATION AND REDUCTION

- 5.1 Oxidation: Osmium tetroxide – Chromyl chloride – Ozone – DDQ – Dioxiranes.

அலகு – III

6. அகநானூறு

1. 'அகல் அறை' எனத் தொடங்கும் பாடல் (பா.எ. 105)
2. 'நோகோ' எனத் தொடங்கும் பாடல் (பா.எ. 153)

7. புறநானூறு

1. 'வள்ளியோர்' எனத் தொடங்கும் பாடல் (பா.எ. 47)
2. 'நின்னயந்து' எனத் தொடங்கும் பாடல் (பா.எ. 163)
3. 'உண்டாலம்' எனத் தொடங்கும் பாடல் (பா.எ. 182)
4. 'ஈயென்' எனத் தொடங்கும் பாடல் (பா.எ. 204)
5. 'நினைக்குங்கலை' எனத் தொடங்கும் பாடல் (பா.எ. 217)

அலகு – IV

8. திருக்குறள்

1. புறங்கூறாமை (அதிகாரம் 19)
2. மானம் (அதிகாரம் 97)
3. நெஞ்சொடு கிளத்தல் (அதிகாரம் 125)

9. நாலடியார்

1. 'அரும்பெறல்' எனத் தொடங்கும் பாடல் (பா.எ. 34)
2. 'கல்லாதுபோகிய' எனத் தொடங்கும் பாடல் (பா.எ. 169)
3. 'கோட்டுப்பூப்போல' எனத் தொடங்கும் பாடல் (பா.எ. 215)
4. 'நன்னிலைக்கண்' எனத் தொடங்கும் பாடல் (பா.எ. 248)
5. 'ஒருநன்றி' எனத் தொடங்கும் பாடல் (பா.எ. 357)

10. பழமுழி நானூறு

1. 'புலமிக்கவரை' எனத் தொடங்கும் பாடல் (பா.எ. 07)
2. 'முல்லைக்கு' எனத் தொடங்கும் பாடல் (பா.எ. 74)
3. 'பூத்தாலும்' எனத் தொடங்கும் பாடல் (பா.எ. 93)
4. 'செயல்வேண்டா' எனத் தொடங்கும் பாடல் (பா.எ. 263)
5. 'நாடிநமரென்று' எனத் தொடங்கும் பாடல் (பா.எ. 346)

அலகு – V

1. இலக்கிய வரலாறு - சங்க இலக்கியம்
2. பொதுக்கட்டுரை தலைப்புகள்: மனித நேயம்
வாழ்வியல் அறங்கள்,
மொழி உணர்ச்சி,
அறிவியல் வளர்ச்சி ஆகியன.

நான்காம் பருவம் - தாள் - IV
பண்டைய இலக்கியம்

பாட நோக்கம்

1. பழந்தமிழ் இலக்கிய வளத்தை உணர்த்துதல்.
2. சங்க அக, புற பாடல் மரபுகளைப் பயிற்றுவித்தல்
3. புற இலக்கியங்கள் காட்டும் வாழ்வியல் அறங்களை உணர்த்துதல்.

மாணவர் பெறும் திறன்

1. பழந்தமிழ் இலக்கிய மரபை அறிவர்
2. சங்க இலக்கிய மரபை அறிவர்.
3. வாழ்வியல் அறங்கள் மற்றும் வரலாற்றுச் செய்திகளை அறிவர்.

அலகு - I

1. குறுந்தொகை

1. 'வில்லோன்' எனத் தொடங்கும் பாடல் (பா.எ. 07)
2. 'அகவன்' எனத் தொடங்கும் பாடல் (பா.எ. 23)
3. 'கான்' எனத் தொடங்கும் பாடல் (பா.எ. 38)
4. 'தலைப்புணை' எனத் தொடங்கும் பாடல் (பா.எ. 222)
5. 'பாலும்' எனத் தொடங்கும் பாடல் (பா.எ. 396)

2. நற்றிணை

1. 'நின்றசொல்லர்' எனத் தொடங்கும் பாடல் (பா.எ. 01)
2. 'தடமருப்பு' எனத் தொடங்கும் பாடல் (பா.எ. 120)

3. ஐங்குறுநூறு

1. பாலைத்திணை - தலைவி இரங்கு பத்து
(331 முதல் 340 வரை) - 10 பாடல்கள்

அலகு II

4. கலித்தொகை

1. குறிஞ்சிக்கலி
'சுடர்தொடஇ' எனத் தொடங்கும் பாடல் (பா.எ. 15)
2. நெய்தற்கலி
'மாமலர்' எனத் தொடங்கும் பாடல் (பா.எ. 16)

5. சிறுபாணாற்றுப்படை

1. சிறுபாணாற்றுப்படை முழுவதும்

- 5.2 Lead tetraacetate - selenium dioxide - DMSO either with Ac_2O or oxalyl chloride - Dess-Martin reagent.
- 5.3 Reduction: Catalytic hydrogenation using Wilkinson Catalyst - Reduction with LAH, $NaBH_4$, tritertiarybutoxy aluminum hydride, $NaCNBH_3$, hydrazines.

REFERENCES

1. Finar I.L., Organic Chemistry, Vol 1&2, (6th edition) England, Addison Wesley Longman Ltd. (1996).
2. Morrison R.T. and Boyd R.N., Bhattacharjee S.K. Organic Chemistry (7th edition), Pearson India, (2011)
3. Bahl, B.S. and Bahl, A., Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (2010)
5. Pine S.H., Organic Chemistry, (5th edition) New Delhi, McGraw - Hill International Book Company (1987)
6. Seyhan N. Ege, Organic Chemistry, (5th edition) New York, Houghton Mifflin Co., (2005)

CORE COURSE - VII**PHYSICAL CHEMISTRY - I****SEMESTER V****Hours/Week: 6
Credits: 5****OBJECTIVES**

1. To know the various concepts of photochemistry and group theory.
2. To learn the second law of thermodynamics, carnot cycle, carnot theorem, entropy, free energy and Maxwell's relations.
3. To learn the third law of thermodynamics, Van't Hoff isotherm, Clausius – Clapeyron equation and Nernst heat theorem.
4. To understand the laws and properties of solutions.
5. To learn the fundamental concepts of phase rule and its applications to one, two and three component systems.

UNIT I PHOTOCHEMISTRY AND GROUP THEORY

- 1.1. Consequences of light absorption- Jablonski diagram- radiative and non-radiative transitions. Lambert's Beer law, quantum efficiency.
- 1.2. Photochemical reactions - Comparison between thermal and photochemical reactions. Photosensitization and quenching. Fluorescence, phosphorescence and chemiluminescence. Laser and uses of lasers.
- 1.3. Group theory – symmetry elements and symmetry operation- group postulates and types of groups - abelian and non abelian – symmetry operation of H₂O molecule.
- 1.4. Illustration of group postulates using symmetry operations of H₂O molecule - construction of multiplication table for the operation of H₂O molecule – point group – definition - elements (symmetry operations) of the following molecules- H₂O, BF₃ and NH₃.

UNIT II THERMODYNAMICS II

- 2.1. Second law of thermodynamics – need for the law- different statements of the law Carnot's cycle and efficiency of heat engine- Carnot's theorem- thermodynamic scale of temperature.

REFERENCES

1. Paul Stamets JS and Chilton JS. Mushroom Cultivator: A practical guide to growing mushrooms athome, Agarikon Press. 2004.
2. Shu-Ting Chang, Philip G Miles, Chang ST. Mushrooms: Cultivation, nutritional value, medicinal effect and environmental impact, 2nd edition, CRC press. 2004.
3. Swaminathan M. Food and Nutrition, Bappco. The Bangalore Printing and Publishing Co. Ltd., Bangalore. 1990.
4. Suman BC and Sharma VP. Mushroom Cultivation, Processing and Uses. Agribios (India) Publishers, Jodhpur. 2005.

NON-MAJOR ELECTIVE - I MUSHROOM TECHNOLOGY

Objectives

- *To develop an Entrepreneurial skills.*
- *To study the medicinal values of mushrooms.*

Unit I

Introduction-History-Scope and importance of mushroom cultivation. Present status of mushroom industry in India – Mushroom research and development – National and international agencies.

Unit II

Pure Culture – Media – Preparation and maintenance of mother culture in test tube slants – Petriplates- saline bottle – poly propylene bags. Spawn production – types- methods- storage and transportation.

Unit III

Cultivation Technology – Infrastructure – culture rack – thatched house – substrates – vessels- inoculation methods. Mushroom bed preparation. Preservation technology – long term storage – short term storage.

Unit IV

Types, importance and post-harvest handling of edible mushroom – Agaricus, Pleurotus, Volvariella, Lentinula, Calacybe spp. Mushroom contamination.

Unit V

Nutritional and medicinal values of mushroom – protein – carbohydrates – vitamins – minerals – fibre content. Preparation of low calorie foods – soupscurry. Marketing values in India – export value.

- 2.2. Concept of entropy - definition and physical significance of entropy - entropy as a function of P, V and T – entropy changes during phase changes - entropy of mixing – entropy criterion for spontaneous and equilibrium processes in isolated system.
- 2.3. Gibb's free energy (G) and Helmholtz free energy(A) – variation of A and G with P, V and T - Gibb's – Helmholtz equation and its applications.
- 2.4. Thermodynamic equation of state, Maxwell's relations - ΔA and ΔG as criteria for spontaneity and equilibrium.

UNIT III THERMODYNAMICS III

- 3.1. Equilibrium constant and free energy change- thermodynamic derivation of law of mass action- equilibrium constants in terms of pressure and concentration – NH_3 , PCl_5 and CaCO_3 .
- 3.2. Thermodynamic interpretation of Lechatelier's principle (Concentration, temperature, pressure and addition of inert gases).
- 3.3. Systems variable composition - partial molar quantities - chemical potential – variation of chemical potential with T, P and X (mole fraction) – Gibb's Duhem equation. Van't Hoff's reaction isotherm- van't Hoff's isochore. Clapeyron equation and Clausius – Clapeyron equation - applications.
- 3.4. Third law of thermodynamics- Nernst heat theorem. Statement of III law and concept of residual entropy – evaluation of absolute entropy from heat capacity data.

UNIT IV SOLUTIONS

- 4.1. Raoult's law, Henry's law, Ideal and non-ideal solutions, completely miscible liquid systems-benzene and toluene. Deviation from Raoult's law and Henry' law. Duhem-Margules equation. Theory of fractional distillation. Azeotropes - HCl – water and ethanol- water system.

- 4.2. Partially miscible liquids – phenol - water, triethylamine - water and nicotine - water systems. Lower and upper CSTs – effect of impurities on CST. Completely immiscible liquids- principle and applications of steam distillation. Nernst distribution law – derivation.
- 4.3. Dilute solutions - colligative properties, relative lowering of vapour pressure, osmosis, law of osmotic pressure, derivation of elevation of boiling point and depression in freezing point.
- 4.4. Determination of molecular masses using colligative properties. Abnormal molecular masses, molecular dissociation - degree of dissociation - molecular association.

UNIT V PHASE CHANGES

- 5.1. Definitions of terms in the phase rule- derivation and application to one component system – water and sulphur - super cooling, sublimation.
- 5.2. Two-component systems-solid liquid equilibria, simple eutectic (lead-silver, BiCd), desilverisation of lead.
- 5.3. Compound formation with congruent melting point (Mg-Zn) and incongruent melting point (Na-K).
- 5.4. Solid Solutions-(Ag-Au)-fractional crystallization, freezing mixtures - FeCl₃-H₂O systems, CuSO₄-H₂O system.

REFERENCES

1. Gurdeep Chatwal R, Photochemistry, Good publishing House.
2. Raman, K. (1990), Group theory and its application to Chemistry, New Delhi: Tata McGraw-Hill.
3. Samuel Glasstone (1974), Thermodynamics for Chemists (3rd printing), East - West Edn.
4. Rajaram J. and Kuriacose, J.C. (1986) Thermodynamics for students of Chemistry, New Delhi: Lal Nagin Chand.

ALLIED PHYSICS PRACTICALS FOR B.SC (MATHS/CHEMISTRY) 2014-15 BATCH AND ONWARDS LIST OF EXPERIMENTS (ANY 10 EXPERIMENTS ONLY)

1. Acceleration due to gravity-Compound pendulum method
2. Moment of inertia – Torsional pendulum method
3. Young's modulus - Uniform bending - Optic lever method
4. Young's modulus - Non-uniform bending - Pin and microscope
5. Rigidity modulus – Static torsion method.
6. Frequency of A.C - Sonometer
7. Thermal conductivity - Lee's disc method.
8. Refractive index of a solid prism - Spectrometer
9. Refractive index of a liquid prism – Spectrometer
10. (i-d) curve - solid prism - Spectrometer
11. Wavelengths of spectral lines – Grating - Normal incidence - Spectrometer
12. Wavelength of spectral lines – Grating - Minimum deviation - Spectrometer
13. Radius of curvature of lens - Newton's rings method.
14. Viscosity of highly viscous liquid - Stoke's method.
15. Surface tension - Drop weight method
16. Characteristics of Pn Junction diode
17. Characteristics of Zener diode
18. Verification of truth tables of logic gates.

UNIT – V: Basic Electronics

Semi conductors - intrinsic and extrinsic types -p-n junction-forward bias, reverse bias characteristics - full wave rectifier, zener diode, tunnel diode, photo diode, LED – transistor - CE and CB characteristics-transistor amplifier.

BOOKS FOR STUDY

1. A.S.Vasudeva, Modern Engineering Physics, S.Chand and Company Ltd., 1988.
2. V.K. Mehta, Principles of Electronics, S.Chand and Company Ltd., 2009.

5. Puri B.R., Sharma L.R. and Pathania M.S. (2013), Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin Chand and Co.
6. Glasstone S. and Lewis D., Elements of Physical Chemistry, London, Mac Millan & Co Ltd.
7. Atkins P.W. (1994), Physical chemistry, (5th edition), Oxford University press.
8. Sangaranarayanan, M.V., Mahadevan, V., Text Book of Physical Chemistry, 2nd Edition, Hyderabad, Universities Press, (India) 2011.

CORE PRACTICAL - III
PHYSICAL CHEMISTRY (P)

SEMESTER V

Hours/Week: 3

Credits: 3

OBJECTIVES

1. To learn the fundamentals of conductometric and potentiometric titrations.
2. To understand the method of determination of molecular weight, CST, TT and rate constant.

LIST OF EXPERIMENTS

1. Critical Solution Temperature
2. Effect of impurity on Critical Solution Temperature
3. Transition Temperature
4. Rast Method
5. Phase Diagram (Simple eutectic system)
6. Kinetics of Ester Hydrolysis
7. Partition Co-efficient of iodine between water and carbon tetrachloride.
8. Conductometric Acid-Base Titration
9. Potentiometric Redox Titration
10. Determination of cell constant

MARK DISTRIBUTION

Internal : 40 Ext. Evaluation :60

Record :5

Procedure Writing with formula : 10

Practicals :45

ALLIED PHYSICS PAPER FOR B.Sc
(MATHS / CHEMISTRY)
ALLIED: PHYSICS I

UNIT – I: Mechanics

Simple harmonic motion, phase-equations of wave motion-compound pendulum- center of suspension-interchangeability center of oscillation and suspension- Moment of Inertia – Radius of gyration – Angular Momentum – torque – Theorems of M.I - M.I. of uniform rod, disc, circular ring, solid sphere –Kinetic energy of rotating energy- Acceleration of a body rolling down on an inclined plane.

UNIT – II: Gravitation and Elasticity

Law of gravitation–constant G - Kepler’s laws-relation between G and g – earth’s mass and density -variation of the acceleration due to gravity - orbital velocity - escape velocity – types of moduli - Poisson’s ratio relation between ν , n & K – bending of beams - bending moment – cantilever cantilever loaded at one end-supported at two ends and loaded in the middle.

UNIT – III: Sound

Transverse waves – velocity along a stretched string-laws of transverse vibration of strings-verification of laws-Melde’s experiment-ultrasonics-generation - piezo-electric effect - detection of ultrasonics-applications-determination of velocity of sound in a liquid

UNIT – IV: Optics

Defects in images - chromatic aberration-spherical aberration- Determination of refractive index using spectrometer -Newton’s rings-determination of wavelength and refractive index of liquid-plane transmission grating-resolving power of diffraction grating-determination of wavelength- Nicol prism –double refraction

CORE PRACTICAL - II
SEMIMICRO ANALYSIS (P)

SEMESTER III

Hours/Week: 3

Credits: 3

OBJECTIVES

To learn the techniques of semimicro qualitative analysis of inorganic salt mixtures.

SEMIMICRO INORGANIC QUALITATIVE ANALYSIS

Analysis of a mixture containing two cations and two anions of which one will be an interfering acid radical. Semimicro methods using the conventional scheme with hydrogen sulphide may be adopted. Cations to be Studied: lead, copper, bismuth, cadmium, iron, aluminium, zinc, manganese, cobalt, nickel, barium, calcium, strontium, magnesium and ammonium. Anions to be studied: Carbonate, Sulphide, Sulphate, nitrate, chloride, bromide, fluoride, borate, oxalate and phosphate.

REFERENCE:

1. Venkateswaran V. Veerasamy R. Kulandaivelu A.R., Basic principles of Practical Chemistry, 2nd edition, New Delhi, Sultan Chand & sons (1997)

Note:

Internal Marks: 40 External marks : 60

Marks Distribution for external : Practical - 55 marks

: Record - 5 marks

: Total - 60 marks

4 radicals correct with suitable tests : 55 marks

3 radicals correct with suitable tests ; 40 marks

2 radicals correct with suitable tests : 30 marks

1 radical correct with suitable tests : 15 marks

Spotting : 5 marks

MAJOR BASED ELECTIVE - I (A)

ANALYTICAL CHEMISTRY

SEMESTER V

Hours/Week: 5

Credits: 5

OBJECTIVES

1. To know the storage and handling of various chemicals and first aid procedures.
2. To learn data analysis, various separation techniques.
3. To learn gravimetric analysis and various thermo analytical methods.
4. To learn visible spectrophotometry and colorimetry.
5. To know the various electroanalytical techniques.

UNIT I LABORATORY HYGIENE AND SAFETY

- 1.1. Storage and handling of chemicals-corrosion, flammable, explosive, toxic, carcinogenic and poisonous chemicals.
- 1.2. Simple first aid procedures for accidents involving acids, alkalies, bromine, burns and cut by glass.
- 1.3. Precautions to avoid poisoning - treatment for specific poisons, threshold vapour concentrations-safe limits-laboratory safety measures.
- 1.4. Waste disposal-fume disposal-precautions for avoiding accidents.

UNIT II DATA ANALYSIS

- 2.1. The Mean - significant numbers, the median-precision, accuracy confidence limits, standard deviation.
- 2.2. Errors-method for improving accuracy-rejection of data-presentation of tabulated data-Scatter diagram –method of least squares- S.I. units.
- 2.3. Separation techniques: Precipitation - solvent extraction-chromatography - types, column chromatography-thin layer chromatography.
- 2.4. Paper chromatography – paper electrophoresis – Ion exchange chromatography –Gas liquid chromatography.

UNIT III GRAVIMETRIC ANALYSIS AND THERMO ANALYTICAL METHODS

- 3.1. Gravimetric analysis - principles-methods of gravimetric analysis - requirement of gravimetric analysis – precipitation - theories of precipitation.
- 3.2. Types of precipitation – co-precipitation, post precipitation – and precipitation from homogeneous solution-digestion, filtration and washing, drying and ignition. Inorganic and organic precipitating agents.
- 3.2. Thermo analytical techniques – types-TGA principle-Instrumentation -TGA analysis of $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$.
- 3.3. Differential thermal analysis-principle-DTA of $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$.-factors affecting TGA & DTA.

UNIT IV VISIBLE SPECTROPHOTOMETRY AND COLORIMETRY

- 4.1. Theory of spectrophotometry and colorimetry, Beer-Lambert's law (statement only), Molar absorptivity and absorbance.
- 4.2. Visual comparators-multiple standard methods, duplication and dilution method, balance method, photoelectric colorimeter, spectrophotometer.
- 4.2. Criteria for satisfactory colorimetric estimation-advantages of colorimetric estimation, determination of composition of complexes, colorimetric estimation of iron.

UNIT V ELECTROANALYTICAL TECHNIQUES

- 5.1. Electro gravimetry –theory - electro gravimetric analysis of Fe and Cu.
- 5.2. Electrolytic separation of metals: principle – separation of copper and nickel, Electro deposition- principle –overvoltage.
- 5.3. Coulometry - Principle of coulometric analysis – coulometry at controlled potential - apparatus and technique - separation of nickel and cobalt. Amperometry titrations - principle – Instruments – types - applications.

REFERENCES

1. B.R. Puri, L.R. Sharma, K.K. Kalia, Principles of Inorganic Chemistry, 23rd edition, New Delhi, Shoban Lal Nagin Chand & Co., (1993).
2. R.D. Madan, “Modern Inorganic Chemistry”, 2nd edition, S. Chand & Company Ltd., 2000.
3. J.D. Lee, “Concise Inorganic Chemistry”, 20th revised edition, Sultan Chand & Sons, 2000.
4. Gurdeep Raj, “Advanced Inorganic Chemistry”, 20th revised edition, Sultan Chand & Sons, 2000.
5. Morrison R.T. and Boyd R.N., Bhattacharjee S.K. Organic Chemistry (7th edition), Pearson India, (2011).
6. Bahl B.S. and Bahl A., Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (2010).
7. Glasstone S. and Lewis D., Elements of Physical Chemistry, London, Mac Millan & Co Ltd.
8. Puri B.R., Sharma L.R. and Pathania M.S. (2013) Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin Chand and Co.

- 3.2 Nomenclature, correlation of configuration – Cahn-Ingold-Prelog rules for simple molecules - R, S and D, L notations to express configurations - chirality - optical isomerism - optical activity – polarimeter – specific rotation – stereochemistry of allenes and spiranes
- 3.3 Atropisomerism - erythro and threo conventions – stereoselectivity, stereospecificity in organic reactions with examples. Resolution of racemic mixture – Walden Inversion – conformational analysis of cyclohexane - asymmetric induction.

UNIT IV GASEOUS STATE

- 4.1. Gases – Boyle’s law, Charles’s law and Avagadro’s law - ideal gas equation.
- 4.2. Real Gases – deviation from ideal behaviour – van der Waals equation of states derivation - significance of critical constants - law of corresponding states compressibility factor.
- 4.3. Inversion temperature and liquefaction of gases - Linde and Claude – demagnetization methods.
- 4.4. Maxwell’s distribution of molecular velocities (Derivation not needed). Types of molecular velocities - mean, most probable and root mean square velocities-Inter relationships. Collision diameter, mean free path and collision number.

UNIT V SOLID STATES AND LIQUID CRYSTALS

- 5.1. Classification of solids - Isotropic and anisotropic crystals - elements of symmetry basic seven crystal systems - laws of crystallography - representation of planes Miller indices, space lattice and unit cell.
- 5.2. X-ray diffraction - derivation of Bragg’s equation - determination of structures of NaCl by Debye Scherrer (powder method) and rotating crystal methods.
- 5.3. Types of crystals, close packing of identical solid spheres, interstitial sites, limiting radius ratios (derivation not needed), radius ratio rule and shapes of ionic crystals, structures of NaCl, CsCl and ZnS.
- 5.4. Semiconductors - intrinsic and extrinsic semi conductors - n and p-type semiconductors. Liquid crystals- types and applications.

REFERENCES

1. Gopalan R, Subramanian PS and Rengarajan K (1993), “Elements of Analytical Chemistry”, second revised edition, Sultan Chand.
2. Gurdeep R Chatwal, Sham K. Anand (2005) “Instrumental methods of Chemical Analysis”, Himalaya publishing house.
3. Vogel A.I. Text Book of Quantitative Inorganic Analysis”, The English Language Book Society, Fourth edition.
4. Douglas A. Skoog, Donald M. West and F.J. Holler, Fundamentals of Analytical chemistry, 7th edition, Harcourt College Publishers.
5. Mendham J., Denny R.C., Barnes J.D., Thomas M., Vogel’s Test book of Quantitative Chemical analysis 6th edition, Pearson education.
6. Sharma, B.K., Instrumental methods of chemical analysis, Goel Publishing House, Merrut (1997)

MAJOR BASED ELECTIVE - I (B)**MATERIAL & NANO CHEMISTRY****SEMESTER V****Hours/Week: 5
Credits: 5****OBJECTIVES**

1. To study the types of ionic crystals and defects in solids.
2. To learn the different kinds magnetic properties.
3. To learn the basic concepts of nanomaterial's and their applications.

UNIT I IONIC CONDUCTIVITY AND SOLID ELECTROLYTES

Types of ionic crystals – alkali halides – silver chloride-alkali earth fluorides – simple stoichiometric oxides. Types of ionic conductors - halide ion conductors – oxide ion conductors - solid electrolytes – applications of solid electrolytes. Electrochemical cell - principles – batteries, sensors and fuel cells - Inorganic solids - colour, magnetic and optical properties.

UNIT II MAGNETIC MATERIALS

Ferrites: Preparation and their applications in microwave – floppy disk – magnetic bible memory and applications. Insulating Materials: Classification on the basis of temperature – Polymer insulating materials and ceramic insulating materials. Ferro electric materials: examples – applications of ferroelectrics.

UNIT III MODERN ENGINEERING MATERIALS

Metallic glasses – introduction – composition, properties and applications. Shape memory alloys: introduction – examples – application of SMA – advantages and disadvantages. Biomaterials: Introduction – metals and alloys in biomaterials – ceramic biomaterials, composite biomaterials-polymer biomaterials.

UNIT IV NANOPHASE MATERIALS

Introduction - techniques for synthesis of nanophase materials–sol-gel synthesis electro deposition - inert gas condensation-mechanical alloying and applications of nanophase materials-composite materials: Introduction –types.

CORE COURSE - III**GENERAL CHEMISTRY – III****SEMESTER III****Hours/Week: 6
Credits: 6****OBJECTIVES**

1. To learn the chemistry of p-block elements.
2. To study about the preparations and properties of interhalogen compounds.
3. To understand the arrangement of atoms in space, isomers and their nomenclature.
4. To learn about the gas laws, properties of real gases and types of molecular velocities.
5. To learn the types, structure and properties of solids and liquid crystals.

UNIT I CHEMISTRY OF p-BLOCK ELEMENTS

- 1.1 General characteristics of p-block elements. Comparative study of elements of III A & their compounds. Compounds of boron –boric acid, borax, borazole.
- 1.2 Extraction of Al and Pb - alums, alloys of Al. Chemistry of oxides of carbon – CO, CO₂. Allotropic forms of carbon.
- 1.3 Compounds of nitrogen and phosphorous – NH₂.NH₂, H₂NOH, hydrazoic acid, N₂-Cycle, fixation of N₂, PH₃ and P₂O₅.

UNIT II INTERHALOGEN COMPOUNDS

- 2.1 Peracids of sulphur, Thionic acids, sodium thiosulphate – preparation, properties, structure and uses.
- 2.2 Classification of oxides – acidic, amphoteric, neutral oxides, peroxides and superoxides.
- 2.3 Interhalogen compounds, Pseudohalogens, Oxyacids of halogens, Polyhalides and basic nature of iodine.

UNIT III STEREOCHEMISTRY

- 3.1 Principles of symmetry – symmetry elements (C_n, C_i and S_n) - asymmetry and dissymmetry – isomerism – constitutional isomers – stereoisomers - enantiomers - diastereomers - geometrical isomerism - meso and dl compounds - conventions used in stereochemistry: Newman, Sawhorse and Fischer notations and their interconversions.

Semester III : Drama for Effective Communication

William Shakespeare : *The Merchant of Venice*

Textbook:

Romagil. *The Merchant of Venice*. Delhi: Oxford UP, 1992.

UNIT V NANO TECHNOLOGY

Introduction – importance – various stages of nanotechnology – nanotube technology – nanoparticles – fullerenes - nano dendrimers – nano pore channels, fibres and scaffolds – CVD diamond technology –FCVA technology and its applications – nano imaging techniques.

REFERENCES

1. Aathony R. West, Solidstate Chemistry and its Applications, John Wiley & Sons (1989).
2. Raghavan V.R., Materials Science and Engineering, Printice Hall (India) Ltd., (2001).
3. Kenneth J. Klabunde, Nanoscale Materials in Chemistry, A. John Wiley and Sons Inc. Publication.

SKILL BASED ELECTIVE - II (SEMESTER V)
COREL DRAW

Unit I

CorelDraw Basics.

Unit II

Drawing and Selecting.

Unit III

Working with Text.

Unit IV

Working with Images.

Unit V

Page Layout and Background.

Text Book

DTP Course Kit, Vikas Gupta, Dreamtech Press, 2009.

முன்றாம் பருவம் - தான் - III
காப்பியமும் நாடகமும்

பாட நோக்கம்

1. தமிழ்க் காப்பியங்களை அறிமுகப்படுத்துதல்.
2. காப்பியங்கள் கூறும் வாழ்வியல் அறங்கள் உணர்த்துதல்.
3. நாடக இலக்கியங்களின் இலக்கியச் சுவையைப் பயிற்றுவித்தல்
4. நாடக இலக்கியத்தின் தனித்துவத்தைக் கற்பித்தல்.
5. காலந்தோறும் நாடக இலக்கியம் தந்த சமூகப் பங்களிப்பை உணர்த்துதல்.

மாணவர் பெறும் திறன்

1. காப்பிய இலக்கியத்தின் சிறப்புகளை அறிவர்.
2. காப்பியக் கதைகள் வழி அறச்சிந்தனை பெறுவர்.
3. பல்வேறு காப்பிய வடிவங்களைப் பற்றிய அறிவு பெறுவர்.
4. நாடகப் படைப்பாக்கத்திற்கான தூண்டுதலைப் பெறுவர்.
5. தமிழ்ச் சமூக வளர்ச்சியோடு நாடகக்கலை தொடர்ந்து வரும் தன்மையை உணர்வர்.

அலகு - I

1. சிலப்பதிகாரம் - அடைக்கலக் காதை
2. மணிமேகலை - சிறைக்கோட்டம் அறக்கோட்டமாக்கிய காதை
3. சீவகசிந்தாமணி - விமலையார் இலம்பகம்

அலகு - II

4. கம்பராமாயணம் - குகப் படலம்
5. வில்லிபாரதம் - உலாகன் தூதுச் சருக்கம்

அலகு - III

6. பெரிய புராணம் - திருநாளைப்போவார் நாயனார் புராணம்
7. சீராப்புராணம் - ஈத்தங்குலை வரவழைத்த படலம்
8. தேம்பவாணி - நீர் வரம் அடைந்த படலம்

அலகு - IV

நாடகம் :

சாபம்?... விமோசனம்.

மு. இராமசுவாமி, செண்பகம் இராமசுவாமி
பாவை பிரிண்டர்ஸ் பி லிட்,
ஜானிஜான்கான் சாலை, சென்னை. 14
அலைபேசி : 94425 88495, 4437 78719

அலகு - V

இலக்கிய வரலாறு:

பக்தி இலக்கியங்கள்
சிறுநிலக்கியங்கள்
இரட்டைக் காப்பியங்கள்
காப்பியங்கள்
நாடக இலக்கியம்

15. Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p
16. Rao MN & Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt Ltd 345 p.
17. Sharma B.K. 2001 Environmental chemistry Goel Publ House, Meerut.
18. Survey of the Environment, The Hindu (M).
19. Townsend C. Harper, J and Michael Begon, Essentials of Ecology, Blackwell science (TB)
20. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R).
21. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science Publications (TB).
22. Wagner K.D. 1998 Environmental Management. W.B. Saunders Co. Philadelphia USA 499 p (M) Magazine (R) Reference (TB) Textbook
23. <http://nbaindia.org/uploaded/Biodiversityindia/Legal/33%20Biological%20Diversity%20Rules,%202004.pdf>.

SKILL BASED ELECTIVE - III (SEMESTER V)

DREAM WEAVER

Unit I

Introduction to Dreamweaver CS4, Working with Dreamweaver Websites.

Unit II

Working with Web Pages, Working with HTML Tables, Framesets and Frames.

Unit III

Introduction to Cascading Style Sheets.

Unit IV

Working with Templates, Working with Flash Contents and HTML Forms.

Unit V

Working with JavaScript, Finalizing the Site.

Text Book

Dreamweaver CS4 in Simple Steps, Kogent Learning Solutions Inc., Dreamtech Press, 2010.

SOFT SKILLS DEVELOPMENT

Learning Objectives

Today's world is all about relationship, communication and presenting oneself, one's ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

Unit I

Know Thyself / Understanding Self

Introduction to Soft skills – Self discovery – Developing positive attitude – Improving perceptions – Forming values.

Unit II

Interpersonal Skills / Understanding Others

Developing interpersonal relationship – Team building – group dynamics – Networking – Improved work relationship.

Unit III

Communication skills / Communication with others

Art of listening – Art of reading – Art of speaking – Art of writing – Art of writing e-mails – e-mail etiquette.

Unit IV

Corporate Skills / Working with Others

Developing body language – Practising etiquette and mannerism – Time management – Stress management.

Unit V

Selling Self / Job Hunting

Writing resume / cv – interview skills – Group discussion – Mock interview – Mock GD – Goal setting – Career planning.

- Human Rights - Value Education
- HIV/ AIDS - Women and Child Welfare
- Role of Information Technology in Environment and human health
- Case studies.

Unit: 8 Field Work

Visit to a local area to document environmental assets-river / forest/ grassland / hill / mountain

References:

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd Bikaner.
2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt ltd, Ahamedabad – 380013, India, E-mail: mapin@icenet.net(R)
3. Brunner R.C. 1989, Hazardous Waste Incineration, McGraw Hill Inc 480 p.
4. Clark R.S. Marine Pollution, Clanderson Press Oxford (TB)
5. Cunningham, W.P.Cooper, T.H.Gorhani E & Hepworth, M.T. 2001.
6. De A.K. Environmental Chemistry, Wiley Eastern Ltd
7. Down to Earth, Centre for Science and Environment (R)
8. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford University, Press 473p.
9. Hawkins, R.E. Encyclopedia of India Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press 1140 p.
11. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws Himalaya Pub. House, Delhi 284 p.
12. Mckinney, M.L. & Schoch R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition 639 p.
13. Mhaskar A.K. Matter Hazardous, Techno-Science Publications (TB)
14. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)

- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides.
- Ill-Effects of Fireworks: Firework and Celebrations, Health Hazards, Types of Fire, Firework and Safety
(8 lectures)

Unit: 6 Social Issues and the Environment

- From Unsustainable to Sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people; its problems and concerns.

Case studies

- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation.
- Consumerism and waste products
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act. Water (Prevention and Control of Pollution) Act. Wildlife Protection Act.
- Forest Conservation Act.
- Issues involved in enforcement of environmental legislation
Public awareness.

(7 lectures)

Unit: 7 Human Population and the Environment

- Population growth, variation among nations.
- Population explosion – Family Welfare Programmes
- Environment and human health

Text Books

Meena. K and V. Ayothi (2013) A Book on Development of Soft Skills (Soft Skills: A Road Map to Success), P.R. Publishers & Distributors, No. B-20 & 21, V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli-620 002.

(Phone No: 0431-2702824; Mobile No: 94433 70597, 98430 74472)

Alex K. (2012) Soft Skills – Know Yourself & Know the World, S. Chand & Company Ltd., Ram Nagar, New Delhi-110 055.

Mobile No: 94425 14814 (Dr. K. Alex)

Reference Books

- (i) Developing the leader within you John C Maxwell.
- (ii) Good to Great by Jim Collins.
- (iii) The seven habits of highly effective people Stephen Covey.
- (iv) Emotional Intelligence Daniel Goleman.
- (v) You can win Shive Khera.
- (vi) Principle centred leadership Stephen Covey.

CORE COURSE - VIII
ORGANIC CHEMISTRY - II

SEMESTER VI

Hours/Week:6
Credits:6

OBJECTIVES

1. To learn the chemistry of carbohydrates, proteins, vitamins, alkaloids and terpenoids.
2. To understand the rearrangements and spectroscopy techniques for the elucidation of structures.

UNIT I CHEMISTRY OF CARBOHYDRATES

- 1.1 Carbohydrate - classification, properties of mono saccharides (glucose and fructose), structure and configuration of mono saccharides, interconversion.
- 1.2 Ascending and descending series, muta rotation, epimerization- cyclic structure -determination of size of sugar rings.
- 1.3 Disaccharides - sucrose, maltose - structure elucidation - polysaccharide - starch and cellulose (elementary treatment).

UNIT II CHEMISTRY OF PROTEINS AND VITAMINS

- 2.1 Amino acids – Zwitter ion – isoelectric point - general methods of preparation and reactions of amino acids. Peptides - Peptide linkages – proteins - classification of proteins.
- 2.2 Structure of proteins - primary structure - end group analysis - Edman method -secondary structure - tertiary structure - denaturation - colour reactions of proteins.
- 2.3 Nucleic acids - elementary treatment of DNA and RNA - Vitamins - classification, structure and biological importance of vitamins A, B₁, B₂, B₆, B₁₂ and C.

- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem:-
 - a. Forest ecosystem
 - b. Grassland ecosystem
 - c. Desert ecosystem
 - d. Aquatic ecosystems, (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit: 4 Biodiversity and its conservation

- Introduction – Definition : Genetic, species and ecosystem diversity Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Biological Diversity Act 2002 BD Rule 2004

(8 lectures)

Unit: 5 Environmental Pollution**Definition**

Causes, effects and control measures of:

- a. Air Pollution
- b. Water Pollution
- c. Soil Pollution
- d. Marine Pollution
- e. Noise pollution
- f. Thermal Pollution
- g. Nuclear hazards

ENVIRONMENTAL STUDIES

(Applicable to the candidates admitted from the Academic year 2016-17 onwards)

- Unit: 1** The Multidisciplinary nature of environmental studies
Definition, scope and importance. (2 lectures)
Need for public awareness
- Unit: 2** Natural Resources:
Renewable and non-renewable resources:
Natural resources and associated problems.
- Forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
 - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.
 - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
 - Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
 - Land resources: Land as a resources, land degradation, man induced Landslides, soil erosion and desertification.
 - Role of an individual in conservation of natural resources.
 - Equitable use of resources for sustainable lifestyles.
- (8 lectures)
- Unit: 3** **Ecosystems**
- Concept of an ecosystem.
 - Structure and function of an ecosystem. Producers, consumers and Energy flow in the ecosystem Ecological succession.

UNIT III CHEMISTRY OF ALKALOIDS AND TERPENOIDS

- 3.1 Chemistry of natural products - alkaloids – classification, isolation - methods for synthesis of coniine, piperine, nicotine and quinine.
- 3.2 Terpenoids - classification - isoprene, special isoprene rule, methods for synthesis of citral, limonene, menthol, camphor.

UNIT IV MOLECULAR REARRANGEMENTS

- 4.1 Molecular rearrangements - types of rearrangement (nucleophilic and electrophilic) – mechanism with evidence for the following re-arrangements: pinacol – pinacolone.
- 4.2 Benzil - benzilic acid, benzidine, Claisen, Fries, Hofmann. Curtius, Lossen, Beckmann and dienone – phenol rearrangements.

UNIT V ORGANIC SPECTROSCOPY

- 5.1 UV–VIS spectroscopy - types of electronic transitions – Instrumentation - solvent effects on λ max - Woodward - Fieser rules for calculation of λ max: dienes only – bathochromic shift and hypsochromic shift.
- 5.2 IR spectroscopy - number and types of fundamental vibrations – selection rules modes of vibrations and their energies. Instrumentation - position of IR absorption frequencies for functional groups like aldehyde, ketone, alcohol, acid, amine and amide.
- 5.3 NMR spectroscopy - principle - chemical shift- factors affecting the chemical shift - inductive effect and hydrogen bonding - TMS, delta scales, splitting of signals - spin-spin coupling, NMR spectrum of EtOH, n-propyl bromide and isopropyl bromide.

REFERENCES

1. Finar I.L., Organic Chemistry, Vol 1&2, (6th edition) England, addison Wesley Longman Ltd. (1996).
2. Morrison R.T. and Boyd R.N., Bhattacharjee S. K. Organic Chemistry (7th edition), Pearson (India), (2011).

3. Bahl B.S. and Bahl A., Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (2010).
4. Pine S.H., Organic Chemistry, (5th edition) New Delhi, McGraw – Hill International Book Company (1987).
5. Seyhan N. Ege, Organic Chemistry, (5th edition) New York, Houghton Mifflin Co., (2005).
6. William Kemp, Organic Spectroscopy, 3rd edition, ELBS.
7. Introduction to Spectroscopy by Pavia, D. L. Lampman, G. M, Kriz, G. S, Vyvyan, J. A. 5th edition, Cengage Learning, (2015).
8. Spectroscopy identification of Organic compounds, Silverstein, R.M, Webster, F.M., 7th edition, CRC Press, (2015).

UNIT V Digital Electronics

Decimal – Binary – Octal and Hexa Decimal number systems and their Mutual Conversions – 1's and 2's complement of a Binary number and Binary arithmetic (Addition, Subtraction, Multiplication and Division) – Binary Subtraction by 1's and 2's complement method – Basic logic gates – AND, OR, NOT, NAND, NOR and EXOR gates – NAND and NOR as universal building gates – Boolean Algebra – Laws of Boolean Algebra – De Morgan's Theorems – Their verifications using truth tables.

Books for Study:

1. R. Murugesan, Electricity and Magnetism. S. Chand & Co, New Delhi, Third Revised edition, 2001.
2. R. Murugesan, Kiruthiga Sivaprasath, Modern Physics., S. Chand & Co., New Delhi, First edition, 1984.
3. R.S. Sedha, A text book of Digital Electronics, S. Chand & Co, New Delhi, First edition, 2004.

Books for Reference:

1. Narayanamurthi, Electricity and Magnetism, The National Publishing Co, First edition, 1988.
2. J.B. Rajam, Atomic Physics, S. Chand & Company Limited, New Delhi, First edition, 1990.
3. B.N. Srivastava, Basic Nuclear Physic, Pragati Prakashan, Meerut, 2005.
4. Albert Paul Malvino, Digital Principles and Applications, McGraw-Hill International Editions, New York, 2002.

ALLIED PHYSICS COURSE - II

Objective: *This course is to high light the Modern Physics and digital Electronics*

UNIT I Electrostatics

Coulomb's inverse square law – Gauss theorem and its applications (Intensity at a point due to a charged sphere & cylinder) – Principle of a capacitor – Capacity of a spherical and cylindrical capacitors – Energy stored in a capacitor – Loss of energy due to sharing of charges - Capacitors in series and parallel – Types of capacitors.

UNIT II Magnetism

Intensity of magnetization – Susceptibility – Types of magnetic materials – Properties of para, dia and ferromagnetic materials – Cycle of magnetization – Hysteresis – B-H curve – Applications of B-H curve – Magnetic energy per unit volume – Ferromagnets, ferrimagnets and their applications.

UNIT III Atomic Physics

Atom Models: Sommerfield's and Vector atom Models – Pauli's exclusion Principle – Various quantum numbers and quantization of orbits. X-rays: Continuous and Characteristic X-rays – Mosley's Law and importance – Bragg's law – Miller indices – Determination of Crystal Structure by Laue's Powder photograph method.

UNIT IV Nuclear Physics

Introduction – Nucleus – Classification of Nuclei – Nuclear Size – Charge – Mass and Spin – Liquid drop model. Nuclear Radiations and their properties, particle accelerators – Betatron and Proton Synchrotron - Four types of reactions – Elementary particles and their classifications.

CORE COURSE - IX

PHYSICAL CHEMISTRY - II

SEMESTER VI

Hours/Week: 6
Credits: 6

OBJECTIVES

1. To learn the various concepts of electrochemistry.
2. To know the types and theories of catalysis.
3. To learn the adsorption isotherms.
4. To know the spectroscopic techniques such as IR, UV-visible, Raman and NMR.

UNIT I ELECTRICAL CONDUCTANCE

- 1.1. Conductance in metal and in electrolytic solution - specific conductance and equivalent conductance. Arrhenius theory of electrolytic dissociation and its limitation. Weak and strong electrolyte according to Arrhenius theory. Ostwald's dilution law- Derivation, applications and limitation.
- 1.2. Effect of dilution on equivalent conductance and specific conductance. Kohlrausch's law and its applications. The elementary treatment of the DebyeHuckel - Onsager equation for strong electrolytes-evidence for ionic atmosphere.
- 1.3. Transport number and Hittorf's rule. Determination of transport number by Hittorf's method and moving boundary method.
- 1.4. Application of conductance measurements - determination of degree of dissociation of weak electrolytes - determination of solubility product of a sparingly soluble salt. common ion effect, conductometric titrations.

UNIT II ELECTROCHEMICAL CELLS

- 2.1. Galvanic cells - reversible and irreversible cells. Conventional representation of electrochemical cells. Electromotive force of a cell and its measurement – computation of E.M.F. – calculation of thermodynamic quantities of cell reactions (ΔG , ΔH , ΔS and K).

- 2.2. Types of reversible electrodes - gas/metal ion - metal/metal ion, metal/insoluble salt/anion and redox electrodes, electrode reactions.
- 2.3. Nernst equation – derivation of cell E.M.F and single electrode potential – standard hydrogen electrode - reference electrodes - standard electrode potentials sign convention- electrochemical series and its significance.
- 2.4. Potentiometric titrations -Acid-Base titrations – Oxidation - reduction (Redox) titrations- Precipitation titrations. Corrosion- general and electrochemical theory – passivity-prevention of corrosion.

UNIT III CATALYSIS AND SURFACE PHENOMENA

- 3.1. Catalyst-Definition and Characteristics - Types of catalysis - Homogeneous and heterogeneous, induced, auto, positive and negative catalysis, catalytic poisons and catalytic promoters.
- 3.2. Enzyme catalysis – Michaelis-menten equation and Michaelis-menten law.
- 3.3. Adsorption-types-chemical and physical, characteristics of adsorption. Theories of catalysis - intermediate compound formation theory and adsorption theory.
- 3.4. Different types of isotherms - Freundlich and Langmuir adsorption isotherms.

UNIT IV SPECTROSCOPY I

- 4.1. Electromagnetic spectrum- the region of various types of spectra. Microwave spectroscopy - rotational spectra of diatomic molecules treated as rigid rotator, condition for a molecule to be active in microwave region.
- 4.2. Rotational constants (B) and selection rules for rotational transition. Frequency of spectral lines, calculation of inter-nuclear distance in diatomic molecules.

UNIT V ATOMIC STRUCTURE AND BASIC QUANTUM MECHANICS

- 5.1 Rutherford's and Bohr's model an atom – Bohr's theory and origin of hydrogen spectrum. Sommerfield's extension of Bohr's theory.
- 5.2. Electromagnetic radiation- definitions for λ , ν and velocity.
- 5.3. Dualism of light - Particle nature of radiation - black body radiation and Planck's quantum theory, photoelectric effect and Compton effect of matter.
- 5.4. De Broglie hypothesis and Davisson and Germer experiment. Heisenberg's uncertainty principle. Schrodinger wave equation (Derivation not needed). Physical significance of Ψ and Ψ^2 .

REFERENCES

1. R.D. Madan, "Modern Inorganic Chemistry", 2nd edition, S. Chand & Company Ltd., 2000.
2. P.L. Soni, "Text book of Inorganic Chemistry", 20th revised edition, Sultan Chand & Sons, 2000.
3. B.R. Puri, L.R. Sharma, K.K. Kalia, Principles of Inorganic Chemistry, 23rd edition, New Delhi, Shoban Lal Nagin Chand & Co., (1993).
4. J.D. Lee, "Concise Inorganic Chemistry", 20th revised edition, Sultan Chand & Sons, 2000.
5. R. Gopalan, P.S. Subramanian & K. Rengarajan, "Elements of Analytical Chemistry", 2nd edition, Sultan Chand & Sons, 1991.
6. Morrison R.T. and Boyd R.N., Bhattacharjee S.K. Organic Chemistry (7th edition), Pearson India, (2011).
7. Bahl B.S. and Bahl A., Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (2010).
8. Jerry March, "Advanced Organic Chemistry, Reaction, Mechanism and Structure", 7th Edition, Wiley Inter Science (2013).
9. Puri B.R., Sharma L.R. and Pathania M.S. (2013) Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin Chand and Co.
10. Bahl B.S., Arun Bahl and Tuli G.D. (2012). Essentials of Physical Chemistry, New Delhi: Sultan Chand and Sons.

- 2.2 Diagonal relationship of Li & Mg, Be & Al, chemistry of NaOH, KI & Mg(NH₄)PO₄.
- 2.3 Metallurgy : Occurrence of metals – concentration of ores – froth floatation, magnetic separation, calcination, roasting, smelting, flux, aluminothermic process, purification of metals – electrolysis, zone refining, van Arkel de-Boer process.
- 2.4 Zero group elements – position in the periodic table, occurrence, isolation, applications, compounds of Xe – XeF₆ & XeOF₄.

UNIT III CHEMISTRY OF BENZENE AND BENZENOID COMPOUNDS

- 3.1 Aromaticity – Huckle's rule - structure of benzene – Benzene-preparation, chemical properties and uses. Aromatic electrophilic substitution reactions and mechanism – Orientation and reactivity in substituted benzenes.
- 3.2 Polynuclear aromatic hydrocarbons – Nomenclature, Naphthalene from coal tar and petroleum – Laboratory preparation, Structure of Naphthalene, Aromatic character, Physical properties, Chemical properties, Uses. Mechanism of Aromatic electrophilic substitution – Theory of orientation and reactivity.
- 3.3 Anthracene, Phenanthrene from coal tar and petroleum, Laboratory preparation, Molecular Orbital structures, Aromatic Characters, Physical Properties, Chemical properties and uses. Preparation of biphenyls, Physical and Chemical properties and uses.

UNIT IV ALKYL AND ARYL HALOGENS

- 4.1 Nomenclature of haloalkanes – structure - general preparations of haloalkanes - physical and chemical properties and uses.
- 4.2 Nucleophilic aliphatic substitution reaction mechanisms (SN₁ and SN₂) – Stereochemical aspects.
- 4.3 Halobenzenes: Theory of orientation and reactivity - general preparation – properties - uses. Electrophilic and nucleophilic aromatic substitution reaction mechanisms.

- 4.3. Infrared spectroscopy- vibrations of diatomic molecules- harmonic oscillators, zero point energy, dissociation energy and force constant, condition for molecule to be active in the IR region, selection rules for vibrational transition, fundamental bands, overtones and hot bands.
- 4.4. UV-Visible spectroscopy – conditions - Franck - Condon principle – predissociation applications.

UNIT 5 SPECTROSCOPY II

- 5.1. Raman spectroscopy – Rayleigh scattering and Raman scattering. Stokes and anti-stokes lines in Raman spectra, Raman frequency, quantum theory of Raman effect, conditions for a molecule to be Raman active.
- 5.2. Comparison of Raman and IR spectra – structural determination from Raman and IR spectroscopy, rule of mutual exclusion.
- 5.3. NMR spectroscopy- nuclear spin and conditions for a molecule to give rise to NMR spectrum – theory of NMR spectra, number of NMR signals, equivalent and nonequivalent protons.

REFERENCES

1. Puri B.R., Sharma L.R. and Pathania M.S. (2013), Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin chand and Co.
2. Bahl B.S., Arun Bahl and Tuli G.D. (2012). Essentials of Physical Chemistry, New Delhi: Sultan Chand and Sons.
3. Moore W. J. (1972), Physical chemistry, 5th Edition, Orient Longman Ltd.
4. Glasstone S. and Lewis D., Elements of Physical Chemistry, London, Mac Millan & Co Ltd.
5. Colin Bannwell N and Elaine Mc Cash M, Fundamentals of molecular spectroscopy, 4th edition, Mc Graw hill publishing company limited.
6. Russell S. Drago, (1978), Physical methods in Inorganic chemistry, East-west student edition.

CORE PRACTICAL - IV**GRAVIMETRIC & ORGANIC ANALYSIS (P)****SEMESTER VI****Hours/Week: 6
Credits: 5****OBJECTIVES**

1. To learn the techniques of gravimetric analysis.
2. To learn the methods of different organic compounds preparation and analysis.

GRAVIMETRIC ANALYSIS:

1. Estimation of Lead as lead chromate.
2. Estimation of Barium as barium chromate.
3. Estimation of Nickel as Nickel - DMG complex.
4. Estimation Calcium as calcium oxalate monohydrate
5. Estimation of Barium as barium sulphate.

ONLY FOR DEMONSTRATION:

1. Estimation of Copper as copper (I) thiocyanate
2. Estimation of Magnesium as magnesium oxinate
3. Estimation of Iron as Iron (III) oxide.

ORGANIC QUALITATIVE ANALYSIS AND ORGANIC PREPARATION**Organic Analysis**

Analysis of Simple Organic compounds (a) characterization of functional groups (b) confirmation by preparation of solid derivatives / characteristic colour reactions.

Note: Mono – functional compounds are given for analysis. In case of bifunctional compounds, students are required to report any one of the functional groups.

**CORE COURSE - II
GENERAL CHEMISTRY – II****SEMESTER II****Hours/Week: 6
Credits: 6****OBJECTIVES**

1. To understand the principles of bonding and theories of chemical bonding.
2. To understand the chemistry of S-block elements and metallurgy of zero group elements.
3. To understand the aromatic character of benzene type molecules and to learn the reaction mechanisms involved in haloalkanes and halobenzenes.
4. To understand about the properties of atoms, characteristics, effect of radiations and the significance of wave functions.

UNIT I CHEMICAL BONDING

- 1.1 Ionic bond – formation, variable electrovalency – Lattice energy, Born – Haber Cycle. Covalent bond - formation, variable covalency, maximum covalency, covalent character in ionic bond – Fajans Rule. Polarisation – partial ionic character of a covalent bond.
- 1.2 VB theory, MO theory – Basic principles of bonding and antibonding orbitals, applications of MOT to H₂, He₂, N₂ & O₂ – molecular orbital sequence, comparison of VB & MO Theories.
- 1.3 Hybridisation – Formation of BeCl₂ & BCl₃. VSEPR theory of simple inorganic molecules – BeCl₂, SiCl₄, PCl₅, SF₆, IF₇, XeF₆, BF₃ & H₂O.
- 1.4 Hydrogen bonding – Intermolecular & Intramolecular H₂ – bonding and consequences.

UNIT II CHEMISTRY OF s-BLOCK & ZERO GROUP ELEMENTS AND METALLURGY

- 2.1 General characteristics of s-block elements – comparative study of elements – alkali metals and their hydroxides, oxides and halides, alkaline earth metals and their oxides, carbonates and sulphates.

Semester II : Poetry for Effective Communication

Unit – I

- William Shakespeare : “All the World’s a Stage”
 Robert Frost : “Road Not Taken”

Unit – II

- P.B. Shelley : “Ode to the West Wind”
 John Keats : “La Belle Dame sans Merci”

Unit – III

- Alfred Tennyson : “Ulysses”
 Robert Browning : “My Last Duchess”

Unit – IV

- W.B. Yeats : “A Prayer for My Daughter”
 T.S. Eliot : “Journey of the Magi”

Unit – V

- W.H. Auden : “The Unknown Citizen”
 Nissim Ezekiel : “Night of the Scorpion”

Textbook:

Ambiga, Sen Gupta, ed. *Selected College Poems*. Chennai: Orient BlackSwan, 2009.

ORGANIC PREPARATION: (ANY FOUR)

Preparation of Organic Compounds involving the following chemical conversions.

1. Oxidation
2. Reduction
3. Hydrolysis
4. Nitration
5. Bromination
6. Diazotization
7. Osazone formation

DETERMINATION OF PHYSICAL CONSTANTS

Determination of boiling/melting points by semimicro method.

MARK DISTRIBUTION:

Internal : 40 Ext. Evaluation : 60

Record : 5+5 = 10

Gravimetry : 25

org. preparation & org Analysis : 25

Org. preparation : 6

Phy Contant : 4

Org. analysis : 15

Armatic/ Alphatic – 2

Sat/Unsat – 2

Spl. Element – 3

Functiononal group – 5

Derivatives - 3

REFERENCE

1. Venkateswaran V, Veeraswamy R., Kulandaively A.R., Basic principles of practical chemistry, 2nd edition, New Delhi, Sultan Chand & Sons, (1997)

MAJOR BASED ELECTIVE - II
NUCLEAR, INDUSTRIAL CHEMISTRY &
METALLIC STATE

SEMESTER VI

Hours/Week: 6
Credits: 6**OBJECTIVES**

1. To know the fundamentals of nuclear chemistry.
2. To understand the applications of nuclear chemistry.
3. To study the metallic bond, theories and applications.
4. To understand the applications of inorganic polymers.

UNIT I NUCLEAR CHEMISTRY I

- 1.1 Introduction, nuclear structure – composition of the nucleus, subatomic particles, nuclear forces, nuclear stability – mass defect and binding energy, whole number rule and packing fraction, n-p ratio, odd even rules, nuclear models – liquid drop and shell models, isobars, isotones and isomers.
- 1.2 Isotopes – detection, physical and chemical methods of separation, isotopic constitution of elements.
- 1.3 Radioactivity – introduction – radioactive emanations – characteristics of α , β and γ -rays, disintegration theory, modes of decay-group displacement law, rate of integration and half-life period, disintegration series, Geiger-Nuttal rule.

UNIT II NUCLEAR CHEMISTRY II

- 2.1 Detection and measurement of radioactivity – Wilson cloud chamber, Geiger – Muller counter.
- 2.2 Particle accelerators – linear accelerator and cyclotron.
- 2.3 Artificial radioactivity – nuclear transformation – classification of nuclear reactions, fission – atom bomb, fusion – hydrogen bomb, Stellar energy – nuclear reactor – atomic power projects in India.

1. காளமேகப் புலவர் - 3 பாடல்கள்
1. கத்துகடல் 2. பூநக்கி 3. பண்பு
2. ஓளவையார்- 1 பாடல் : மதியாதார்முற்றம்
1. பலபட்டடைச் சொக்கநாதப்புலவர்-1 பாடல்:படிக்காசுப் புலவர்பாடல் சிறப்பு

அலகு- IV**புதினம்**

1. ஆத்தங்கரைஓரம் - வெ.இறையன்பு, இ.ஆ.ப. நியூ செஞ்சரிபுக் ஹவுஸ் (பி)லிமிடெட் 41B, சிட்கோதொழிற் பேட்டை அம்பத்தூர், சென்னை- 600 098 விலை ரூ.80/-

அலகு- V**தமிழ்ச் செம்மொழிவரலாறு**

மொழிவிளக்கம் - மொழிக் குடும்பங்கள் - உலகச் செம்மொழிகள் - இந்தியச் செம்மொழிகள் - செம்மொழித் தகுதிகள் - வரையறைகள் - வாழும் தமிழ்ச் செம்மொழி - தமிழின் தொன்மை - தமிழின் சிறப்புகள் - தமிழ்ச் செம்மொழி நூல்கள் - பரிதிமாற் கலைஞர் அவர்கள் முதல் பல்வேறு அறிஞர்கள் அமைப்புகள் - நிறுவனங்கள் - இயக்கங்கள் ஆகியவற்றின் தொடர்முயற்சிகள் - அறப்போராட்டங்கள்- தமிழ்ச் செம்மொழி அறிந்தேற்பு.

மொழிபெயர்ப்பியல்**பார்வை நூல்கள்:**

1. உலகச்செவ்வியல் மொழிகளின் வரிசையில் தமிழ்-வா.செ.குழந்தைசாமி
2. செம்மொழிகள் வரிசையில் தமிழ் - ஜி.ஜான் சாமுவேல்
3. செம்மொழி - உள்ளும் புறமும், மணவை முஸ்தபா “அறிவியல் தமிழ் அறக்கட்டளை”சென்னை.
4. சாலினி இளந்திரையன், தமிழ் செம்மொழி ஆவணம், மணிவாசகர் பதிப்பகம், சென்னை.
5. தமிழ்ச் செம்மொழி வரலாறு, முனைவர் மு. சாதிக்பாட்சா, ராஜா பப்ளிகேஷன்ஸ், திருச்சி.23

இணையமுகவரிகள்:

1. www.tamilheritage.org
2. www.thehistoryofsrivaishnavam.weebly.com
3. www.sivasiva.dk
4. www.shaivam.org
5. www.periyapuraana.minhinduism.blogspot.com
6. www.thevaram.org
7. www.ta.wikipedia.org/wiki/செம்மொழி

இரண்டாம் பருவம் - தாள் - II

இடைக்கால இலக்கியமும் புதினமும்

பாடநோக்கம்

- 1 சமய இலக்கியத் தோற்றத்திற்கான வரலாற்றுப் பின்புலத்தை அறிவித்தல்
- 2 தமிழ் சைவ, வைணவ இலக்கியங்களை அறிமுகப்படுத்தல்
- 3 தமிழ் மொழியின் செம்மொழிப் பண்புகளை அறியச் செய்தல்
- 4 தமிழ்ச் சிற்றிலக்கியங்களின் இலக்கியச் சிறப்பைக் கற்பித்தல்

மாணவர் பெறும் திறன்

1. தமிழ்ப் பக்தி இலக்கியங்கள் பற்றி அறிவர்
2. நாயன்மார், ஆழ்வார்களின் பக்தியில் விளைந்த கவிச்சுவை உணர்வர்
3. சிற்றிலக்கியங்களின் இலக்கியச் சுவையையும் கட்டமைப்பையும் அறிவர்
4. தமிழ்மொழி, செம்மொழி என்பதையும் அதன் பண்புகளையும் அறிவர்.

அலகு- I

பன்னிருதிருமுறைகள்

1. திருநாவுக்கரசர் தேவாரம் - திருப்பூந்துருத்தி (திருஅங்கமாலை)
2. சுந்தரர்தேவாரம் - திருவையாற்றுப் பதிகம்
3. மாணிக்கவாசகர்திருவாசகம் - சிவபுராணம்
4. திருமூலர்திருமந்திரம் - இளமைநிலையாமை

அலகு- II

நாலாயிரதிவ்வியப் பிரபந்தம்

1. பெரியாழ்வார்திருமொழி - நற்றாய் புலம்பல்
2. தொண்டரடிப்பொடியாழ்வார் - திருமாலை
3. திருப்பாணாழ்வார் - அமலன் ஆதிபிரான்
4. மதுரகவியாழ்வார் - கண்ணிநுண்சிறுத்தாம்பு

அலகு- III

அ) முத்துக்குமாரசுவாமிபிள்ளைத்தமிழ் : 2 பாடல்கள்

1. செங்கீரைப் பருவம் - பாடல் 8 - விரல்குவைஉண்டு
2. அம்புலிப் பருவம் - பாடல் 6 - ஒழியாதபுவனத்து

ஆ) நந்திக்கலம்பகம் : 5 பாடல்கள்

1. வாடைநோக
2. உரைவரம்பு
3. மயில்கண்டால்
4. சூழிவன்
5. கோலக்கொடி

இ) தமிழ்விடுதாது : 17முதல் 46வரை - 30 கண்ணிகள்

ஈ) குற்றாலக் குறவஞ்சி : குறத்திமலைவளம் கூறல்-3 பாடல்கள்

1. வானரங்கள்
2. முழங்கு
3. ஆடும் இரவு

உ) கலிங்கத்துப் பரணி-களம் பாடியது - 4 பாடல்கள்

1. ஆடல்
2. நெருங்கு
3. வாய்மடித்து
4. தரைமகளும்

ஊ) தனிப்பாடல்கள் : 5 பாடல்கள்

- 2.4 Applications of radioisotopes as tracers in reaction mechanism, medicine, agriculture, industry and carbon dating. Hazards of radiations.

UNIT III METALLIC STATE

- 3.1 Metallic bond : Packing of atoms in metals (BCC, CCP, HCP) electron gas, Pauling and band theories, structure of alloys, substitutional and interstitial solid solutions, Hume-Rothery ratios, crystal defects – stoichiometric and non- stoichiometric defects.
- 3.2 Semi conductors - intrinsic and extrinsic – n-type and p-type. Composition, properties, structure and uses in electronic industry.

UNIT IV INORGANIC POLYMERS AND THERMO ANALYTICAL METHODS

- 4.1 Inorganic polymers – coordination polymers, metal alkyls, phosphonitrilic polymers.
- 4.2 Silicates – classification into discrete anions – one, two and three dimensional structures with typical examples.
- 4.3 Composition, properties and uses of beryl, asbestos, talc, mica, feldspar and zeolite.

UNIT V INDUSTRIAL CHEMISTRY

- 5.1 Gaseous fuels: Natural gas, gobar gas, water gas, semi water gas, carburetted water gas, producer gas and liquified petroleum gas (LPG) – composition, manufacture and applications.
- 5.2 Fertilizers: Manufacture of nitrogen, phosphorus, potassium and mixed fertilizers, micro nutrients and their role in plant life.
- 5.3 Safety matches: Introduction, raw materials and manufacturing method.
- 5.4 Paints and varnishes: Definition, types and composition.
- 5.5 Glass: Composition, manufacture, types and uses.
- 5.6 Cement: Manufacture – wet and dry processes, composition and setting of cement.

BOOKS FOR REFERENCE:

1. R.D. Madan, "Modern Inorganic Chemistry", 2nd edition, S. Chand & Company Ltd., 2000.
2. Gilreath, "Fundamental concepts of Inorganic Chemistry", 18th Printing, McGraw Hill International Book Company, 1985.
3. S. Glasstone, "Source book on Atomic Energy", East-West Press, 1967.
4. R.Gopalan, P.S. Subramanian and K. Rengarajan, "Elements of Analytical Chemistry", Sultan Chand & Sons, 2nd edition, 1991.
5. P.L.Soni, "Text Book of Inorganic Chemistry", 20th revised edition, Sultan Chand & Sons, 2000.

BOOKS FOR REFERENCES:

1. Thirukkural with English Translation of Rev. Dr. G.U. Pope, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613 004
2. திருக்குறள் - ஜி.யு.போப் - ஆங்கில மொழியாக்கத்துடன் உமா நூல். வெளியீட்டகம், தஞ்சாவூர்.
3. Leah Levin, Human Rights, NBT, 1998
4. V.R. Krishna Iyer, Dialectics and Dynamics of Human Rights in India, Tagore Law Lectures.
5. Yogic Therapy - Swami Kuvalayananda and Dr.S.L.Vinekar, Government of India, Ministry of Health, New Delhi.
6. SOUND HEALTH THROUGH YOGA - Dr.K.Chandrasekaran, Prem Kalyan Publications, Sedapatti, 1999.
7. Right to Information Act, 2005-Website:
www.tnpsc.gov.in/RTI%20ACT%202005.pdf
8. The Consumer Protection Act, 1986 – Website:
http://ncdrc.nic.in/bare_acts/consumer%20Protection%20Act-1986.html

PART IV - VALUE EDUCATION

Unit I : Philosophy of Life and Social Values

Human Life on Earth (Kural 629) Purpose of Life (Kural 46) Meaning and Philosophy of Life (Kural 131, 226) Family (Kural 45), Peace in Family (Kural 1025) Society (Kural 446), The Law of Life (Kural 952), Brotherhood (Kural 807) Five responsibilities / duties of Man (a) to himself (b) to his family (c) to his environment (d) to his society, (e) to the Universe in his lives (Kural 43, 981).

Unit II : Human Rights and Organizations

Definitions, Nature of Human Rights. Universal Declaration of Human Rights, International covenant on Civil and Political Rights - International covenant of Economic, Social and Cultural Rights. Amnesty International Red Cross.

Contemporary Challenges: Child Labour – Women's Right - Bonded Labour – Problems of refugees - Capital punishment. National and State Human Rights Commissions.

Unit III : RTI Act, 2005 & Consumer Protection Act, 1986

Definition of RTI Act, 2005 and obligations of Public Authorities – The Central Information Commission – The State Information Commission – Powers and Functions of the Information Commissions – Appeal and Penalties.

Definition of The Consumer Protection Act, 1986 – State and Central Consumer Protection Councils – Consumer Disputes Redressal Agencies.

Unit IV : Yoga and Health

Definition, Meaning, Scope of Yoga - Aims and objectives of Yoga - Yoga Education with modern context - Different traditions and schools of Yoga - Yoga practices: Asanas, Pranayama and Meditation.

Unit V : Role of State Public Service Commission

Constitutional provisions and formation - Powers and Functions - Methods of recruitment - Rules and notification, syllabi for different exams - written and oral - placement.

MAJOR BASED ELECTIVE - III (A)

POLYMER CHEMISTRY

SEMESTER VI

Hours/Week: 5

Credits: 5

OBJECTIVES

1. To know the chemistry of polymers.
2. To study the importance of polymers.
3. To study the concepts of polymerization and techniques.

POLYMER CHEMISTRY

UNIT 1 INTRODUCTION TO POLYMERS AND RUBBERS

Basics of polymers – monomers and polymers - definition. Classification of polymers on the basis applications - thermosetting and thermoplastics - distinction among plastics. Functionality - Copolymers. Degree of polymerization. Types of polymerization reactions – chain polymerization - free radical and ionic polymerization – coordination and step polymerization reactions - polyaddition and polycondensation – miscellaneous reactions: ringopening and group transfer polymerization. Basics of rubbers: types - vulcanization of rubber- ebonite- uses of rubbers.

UNIT II PROPERTIES AND REACTIONS OF POLYMERS

Properties: Glass transition temperature (T_g) - definition – factors affecting T_g. Relationship between T_g and molecular weight. Importance of T_g. Molecular weight of polymers: number average (M_n), weight average (M_w), sedimentation and viscosity average molecular weights. Reactions: Hydrolysis – hydrogenation – addition – substitutions – cross linking and cyclisations reaction. Polymer degradation - thermal, photo and oxidation degradation of polymers (basics only).

UNIT III POLYMERIZATION TECHNIQUES AND MOULDING TECHNIQUE

Polymerization techniques: bulk, solution, emulsion, melt condensation and interfacial polycondensation polymerization. Moulding technique: Injection, compression, extrusion, rotational and calendaring.

UNIT IV CHEMISTRY OF COMMERCIAL POLYMERS

Preparation, properties and uses of the polymers: Polyethylene, polypropylene, polystyrene, PVC, teflon and polymethylmethacrylate, polycarbonate, polyurethanes, polyamides (Kevlar), phenol-formaldehyde, urea-formaldehyde resin, epoxy resins, rubber-styrene and neoprene rubbers.

UNIT V ADVANCES IN POLYMERS

Biopolymers – biomaterials. Polymers in medical field - High temperature and fire – resistant polymers. Silicones - conducting polymers- carbon fibers. (basic idea only) and polymer composites.

TEXT BOOK:

Billmeyer F.W., Text book of polymer science, Jr. John Wiley and Sons, 1984.

BOOKS FOR REFERENCE

1. Gowariker V.R., Viswanathan N.V. and Jayader Sreedhar, Polymer Science, Wiley Eastern Ltd., New Delhi, 1978.
2. Sharma, B.K., Polymer Chemistry, Goel Publishing House, Meerut, 1989.
3. Arora M.G., Singh M. and Yadav M.S., Polymer Chemistry, 2nd Revised edition, Anmol Publications Private Ltd., New Delhi, 1989.

ALLIED PAPER - III
PRINCIPLES OF INFORMATION TECHNOLOGY

Objective:

To Provide the Basic Concepts in Information Technology

Unit I

Introduction to Computer – Classification of Digital Computer System – Computer Architecture – Memory Units – Auxiliary Storage Devices – Input and Output Devices.

Unit II

Introduction to Computer Software – Operating System – Programming Languages – General Software Features and trends.

Unit III

Database Management Systems – Data Processing – Introduction to Database Management System – database design.

Unit IV

Introduction to Telecommunication – Networking – Communication System – Distributed System – Internet – Intranet.

Unit V

Multimedia tools – Virtual Reality – E-Commerce – Data warehousing – Data Mining – Applications; Geographical Information System – Computer in Business, Industry, Home, Education and Training.

Text Book:

1. Fundamentals of Information Technology, Alexis Leon and Mathews Leon, Vikas Publishing House Pvt. Ltd, 2009.

References:

1. Henry C.Lucas, Jr., Information Technology for Management – McGraw Hill (Part – III).
2. Williams, Sawyer, Hutchinson, Using Information Technology – McGraw Hill.

ALLIED COMPUTER SCIENCE FOR B.Sc. PROGRAMMES

(For the candidates admitted from the
academic year 2016-2017 onwards)

ALLIED PAPER - II**C PROGRAMMING LAB**

1. Solution of a Quadratic Equation (all cases)
2. Sum of Series (sine, cosine, ex)
3. Conversion of Number System (Decimal to Binary, Decimal to Octal)
4. Largest, Smallest among 'n' numbers (Also use it to find the number of occurrences of a given number)
5. Ascending and Descending order of numbers using Arrays.
6. Sorting of names in Alphabetical order
7. Matrix Operations (Addition, Subtraction, Multiplication – use Functions).
8. Finding factorials, generating Fibonacci Numbers using recursive functions.
9. String manipulations without using string functions

(String length, String Comparison, String Concatenation, Palindrome Checking, Counting words and lines in String – use function Pointers).

MAJOR BASED ELECTIVE - III (B)**PHARMACEUTICAL CHEMISTRY****SEMESTER VI****Hours/Week: 5****Credits: 5****OBJECTIVES**

1. To study the principles and functioning of drugs.
2. To know the importance and functioning of antibiotics.
3. To study the impact of poisons.

UNIT I DRUGS TERMINOLOGY

Terminology: Drugs, pharmacy, pharmacology, pharmacognosy, therapeutics, toxicology, chemotherapy, pharmacopoeia - first aid for bleeding for blood, maintain breathing, Cuts, Abrasions and Bruises, Fractures, Burns and Fainting. First aid box for accident, plaster of paris. Symptoms treatment for Anemia, Diapeties, T.B, Asthma, Jaundice, Piles, Leprosy, Typhoid, Malaria, Cholera, Filariasis. Medicinally important compound Aluminum, phosphorus, Arsenic, Mercury, Iron, Milk of maganesia, Aluminum Hydroxide gel.

UNIT II ANTIBIOTICS

Antibiotics: Introduction, classification – based on biological action, chemical structure - Biosynthesis and degradation of penicillin. An account of semi synthetic penicillin, different types of penicilium, SAR chloroamphenicol, synthesis, SAR and Assay – chloroamphenicol, Streptomycin – structure assay – structure Activity relationship.

UNIT III ANALGESIC AND ANTIPYRETICS

Analgesic and Antipyretics: Analgesic - Narcotic analgesics, synthetic analgesics pethidine and methadone, Narcotic antasonist, Nalarphine, Nonnarcotic - antipyretic analgsesics. Pyrazole, salicylic acid, P-amino phenol derivative aspirin and Ibu profen, Ketoprofen, Naproxen.

UNIT IV ANAESTHETICS, ANTISEPTICS AND DISINFECTANTS

Anaesthetics: Definition, classification of anaesthetics, Ethers, Halohydrocarbons, chloroform Halo ethane, Ferqusen principle - Intravenous anaesthetics. Structure of thiopental sodium – Local anaesthetics – cocaine-source and structure – preparation and uses of procaine. Amethocanie and Benzocaine. Antiseptics and Disinfectants – phenol co-efficient. Phenolic component tranquilizers –definition and example. Pschodelic drugs. LSD and Marijuna, AIDS HIV, propagation prevention and treatment. Definition–cancer – and antineoplastics drugs– antimetapolite – Natural substance, alkylation agent. Definition Hyperglycemic drug type and causes for diabetics.

UNIT V POISONS

Poisons: Poison Investigation Definition kinds of poison – Aceidental suicidal andomicidal death – action of poison – general condition that control action of poison – general condition that control action of poison Hints of Investigation. Industrial gases and volatile poison, synthetic gases – carbon disulphide – petroleum distillate, aromatic compounds, chlorinated hydrocarbons.

REFERENCES

1. Lakshmi S, pharmaceutical chemistry 2011.
2. Jaya Shree Ghosh, A text book of Pharmaceutical Chemistry, 3rd ed., S. Chand & Company Ltd., New Delhi (2008).

Unit V

Data Files – Opening, Closing and Processing files – files with structures and unions - register variables – Bitwise operations – Macros Preprocessors.

Text Books:

1. Computer Today – S.K. Basandra – Galgotia Publications Unit II–V.
2. Programming in C – E.Balagurusamy – Tata McGraw Hill Publication.

Reference Books:

1. Programming with C - Byron S Gottfried – Schaum's Outline Series, Tata McGraw Hill Publications.
2. The Spirit of C – Mullish Cooper – Schaum's Outline Series – Tata McGraw Hill Publications.
3. Let Us C – Yeswant Kanetkar – BPB Publications.

ALLIED PAPER - I PROGRAMMING IN C

Objective

To impart basic knowledge of Programming Skills in C language.

Unit I

Introduction to Computers and their Applications. Computer System Characteristics – Hardware and Software – Types and Generations of Computers – Introduction to I/O and Storage Devices – Number Systems – Flowcharts – Algorithms.

Unit II

Evaluation and Applications of C Structure of a C programme - Data Types – Declarations – Operators – Expressions – Type Conversions – Built-in Functions – Data Input and Output Control Statements : IF, ELSE – IF, GOTO, SWITCH, WHILE – DO, DO – WHILE, FOR BREAK and CONTINUE.

Unit III

Functions – Defining and Accessing Functions – passing parameters to functions – Arguments – recursive functions – Storage Classes – Arrays : Arrays and functions – Arrays and Strings – String functions – String Manipulations.

Unit IV

Pointers – Pointer Declarations - operations on Pointers – pointers to functions – pointers and strings – pointers and arrays – array of pointers structures – structure and pointers – Unions.

GENDER STUDIES

Objectives

- *To make boys and girls aware of each others strengths and weakness.*
- *To develop sensitivity towards both genders in order to lead an ethically enriched life.*
- *To promote attitudinal change towards a gender balanced ambience and women empowerment.*

Unit – I

Concepts of Gender: Sex – Gender – Biological Determinism – Patriarchy – Feminism – Gender Discrimination – Gender Division of labour – Gender Stereotyping – Gender Sensitivity – Gender Equity – Equality – Gender Mainstreaming – Empowerment.

Unit – II

Women’s Studies vs Gender Studies: UGC’s Guidelines – VII to XI Plans – Gender Studies: Beijing Conference and CEDAW – Exclusiveness and Inclusiveness.

Unit – III

Areas of Gender Discrimination: Family – Sex Ratio – Literacy – Health – Governance – Religion Work vs. Employment – Market – Media – Politics – Law – Domestic Violence – Sexual harassment – State Policies and Planning.

Unit – IV

Women Development and Gender Empowerment: Initiatives – International Women’s Decade – International Women’s year – National Policy for Empowerment of Women – Women Empowerment year 2001 – mainstreaming Global Policies.

Unit – V

Women’s Movements and Safeguarding Mechanism: In India National / State Commission for Women (NCW) – All Women Police Station – Family Court – Domestic Violence Act – Prevention of Sexual Harassment at Work Place Supreme Court Guidelines – Maternity Benefit Act – PNDT Act – Hindu Succession Act 2005 – Eve Teasing Prevention Act – Self Help Groups – 73rd and 74th Amendment for PRIS.

பாலின சமத்துவம்

அலகு – I

பாலினம் தொடர்பான கோட்பாடுகள்: பாலியல் - பாலினம் - உடற்கூறியாதியாக நிர்ணயித்தல் - ஆணாதிக்கம் - பெண்ணியம் - பாலின பாகுபாடு - பாலின வேலைப்பாகுபாடு - பாலின ஒருபடித்தானவைகள் - பாலின உணர்வுட்டல் - பாலின சமவாய்ப்பு - பாலின சமத்துவம் - பாலின மையநீரோட்டமாக்கல் - அதிகாரப்படுத்துதல்.

அலகு – II

மகளிரியல் Vs பாலின சமத்துவக்கல்வி - பல்கலைக்கழக மானியக்குழுவின் வழிக்காட்டுதல்கள் - ஏழாவது ஐந்தாண்டுத்திட்டம் முதல் பதினேராவது ஐந்தாண்டுத்திட்டம் - பாலின சமத்துவக்கல்வி: பெய்ஜிங் மாநாடு மற்றும் பெண்களுக்கு எதிரான அனைத்து வன்முறைகளையும் ஒழிப்பதற்கான சர்வதேச உடன்படிக்கை - இணைத்தல் / உட்படுத்துதல் - ஒதுக்கல்.

அலகு – III

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

அலகு – IV

பெண்கள் மேம்பாடு மற்றும் பாலின சமத்துவ மேம்பாடு: முயற்சிகள், சர்வதேச பெண்களுக்கான தசாப்தம் - சர்வதேச பெண்கள் ஆண்டு - பெண்களின் மேம்பாட்டிற்கான தேசிய கொள்கை - பெண்கள் அதிகார ஆண்டு 2001 - சர்வதேச கொள்கைகளை மைய நீரோட்டமாக்கல்.

அலகு – V

பெண்கள் இயக்கங்கள் மற்றும் பாதுகாப்பு நிறுவன ஏற்பாடுகள்: தேசிய மற்றும் மாநில மகளிர் ஆணையம் - அனைத்து மகளிர் காவல் நிலையங்கள் - குடும்ப நீதிமன்றங்கள் - குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கக் சட்டம் 2005 - பணியிடங்களில் பெண்கள் மீதான பாலியல் துன்புறுத்தல்களை தடுப்பதற்கான உச்சநீதிமன்ற வழிகாட்டுதல்கள் - தாய்சேய் சேமநலச்சட்டம் - பெண்சிசுவை கருவிலேயே

CORE PRACTICAL - I

VOLUMETRIC ANALYSIS (P)

SEMESTER I

Hours/Week: 3

Credits: 3

OBJECTIVES

1. To learn the techniques of titrimetric analyses.
2. To know the estimation of several cations and anions.
3. To know the estimation of total hardness of water.

Titrimetric Quantitative Analysis

1. Estimation of HCl Vs NaOH using a standard oxalic acid solution
2. Estimation of Na₂CO₃ Vs HCl using a standard Na₂CO₃ solution
3. Estimation of oxalic acid Vs KMnO₄ using a standard oxalic acid solution
4. Estimation of Iron(II) sulphate by KMnO₄ using a standard Mohr's salt solution.
5. Estimation of Ca (II) Vs KMnO₄ using a standard oxalic acid solution.
6. Estimation of KMnO₄ Vs thio using a standard K₂Cr₂O₇ solution.
7. Estimation of Fe(III) by using K₂Cr₂O₇ using a standard Mohr's salt solution using internal and external indicators.
8. Estimation of copper (II) sulphate by K₂Cr₂O₇ solution
9. Estimation of Mg (II) by EDTA solution
10. Estimation of Ca (II) by EDTA solution
11. Estimation of As₂O₃ using I₂ solution and standard Arsenious oxide solution.
12. Estimation of chloride (in neutral and acid media)

II. Applied Experiments

1. Estimation of Total Hardness of water
2. Estimation of Bleaching Powder
3. Estimation of saponification value of an oil
4. Estimation of copper in brass

Scheme of Valuation

Max. marks

Record	-	5 (marks)
Procedure Writing	-	10 marks

Results

< 1 %	- 45 marks
1-2 %	-35 marks
2-3 %	-25 marks
3-4 %	-15 marks
> 4 %	- 10 marks

- 4.3 Dienes: Structures and properties – conjugated dienes – stability and resonance – electrophilic addition – 1,2 addition and 1,4 addition. Alkynes: Nomenclature – General methods of preparation – Physical properties – Chemical properties – Uses.

UNIT V COLLOIDS AND MACROMOLECULES

- 5.1. Definition and types of Colloids - preparation, Purification (dialysis, electro dialysis and ultrafiltration) and stability of colloids, gold number.
- 5.2. Properties of colloids- kinetic, optical and electrical properties.
- 5.3. Emulsions – Types of emulsions, preparation, properties and applications, Donnan membrane equilibrium.
- 5.4 Osmosis – reverse osmosis and desalination. Macromolecules- Molecular weight of macromolecules- determination of molecular weight by osmotic pressure and light scattering methods.

REFERENCES

1. R.D. Madan, “Modern Inorganic Chemistry”, 2nd edition, S. Chand & Company Ltd., 2000.
2. P.L. Soni, “Text book of Inorganic Chemistry”, 20th revised edition, Sultan Chand & Sons, 2000.
3. B.R. Puri, L.R. Sharma, K.K. Kalia, Principles of Inorganic Chemistry, 23rd edition, New Delhi, Shoban Lal Nagin Chand & Co., (1993).
4. J.D. Lee, “Concise Inorganic Chemistry”, 20th revised edition, Sultan Chand & Sons, 2000.
5. R. Gopalan, P.S. Subramanian & K. Rengarajan, “Elements of Analytical Chemistry”, 2nd edition, Sultan Chand & Sons, 1000.
6. Morrison, R.T. and Boyd, R.N., Bhattacharjee, S.K. Organic Chemistry (7th edition), Pearson, India, (2011).
7. Bahl, B.S. and Bahl, A., Advanced Organic Chemistry, (12th edition), New Delhi, Sultan Chand & Co., (2010).
8. Jerry March, “Advanced Organic Chemistry, Reaction, Mechanism and Structure”, 7th Edition, Wiley Inter Science (2013).
9. Puri B.R., Sharma L.R. and Pathania M.S. Principles of Physical Chemistry, (35th edition), New Delhi: Shoban Lal Nagin chand and Co. (2013)
10. Glasstone S. and Lewis D., Elements of Physical Chemistry, London, Mac Millan & Co Ltd.

கண்டறியும் தொழில்நுட்பம் (முறைப்படுத்துதல் மற்றும் தவறாக பயன்படுத்துதலை தடை செய்திடும்) சட்டம் - ஈவ்ஹிங் (பெண்களை தொல்லை செய்தல்) தடுப்புச் சட்டம் - சுய உதவிக்குழுக்கள் - பஞ்சாயத்து அமைப்புகளுக்கான 73வது மற்றும் 74வது சட்டத்திருத்தம்.

References

1. Bhasin Kamala, Understanding Gender: Gender Basics, New Delhi: Women Unlimited, 2004.
2. Bhasin Kamala, Exploring Masculinity: Gender Basics, New Delhi: Women Unlimited, 2004.
3. Bhasin Kamala, What is Patriarchy?: Gender Basics, New Delhi: Women Unlimited, 1993.
4. Pernau Margrit, Ahmad Imtiaz, Reifeld Hermut (ed.,) Family and Gender: Changing Values in Germany and India, New Delhi: Sage Publications, 2003.
5. Agarwal Bina, Humphries Jane and Robeyns Ingrid (ed.,) Capabilities, Freedom and Equality: Amartya Sen’s work from a Gender Perspective, New Delhi: Oxford University Press, 2006.
6. Rajadurai, S.V., Geetha, V., Themes in Caste Gender and Religion, Tiruchirappalli, Bharathidasan University, 2007.
7. Misra Geetanjali, Chandiramani Radhika (ed.,) Sexuality, Gender and Rights: Exploring Theory and Practice in South and Southeast Asia, New Delhi: Sage Publication, 2005.
8. Rao Anupama (ed.,) Gender & Caste: Issues in Contemporary Indian Feminism, New Delhi: Kali for Women, 2003.
9. Saha Chandana, Gender Equity and Gender Equality: Study of Girl Child in Rajasthan, Jaipur: Rawat Publication, 2003.
10. Krishna Sumi (ed.,) Livelihood and Gender: Equity and Community Resource management, New Delhi: Sage Publications, 2004.
11. Pludi, A. Michele (ed.,) Praeger Guide to the Psychology of Gender, London: Praeger Publisher, 2004.

12. Wharton, S. Amy, The Sociology of Gender: An Introduction to Theory and Research, USA: Blackwell Publishing, 2005.
13. Mohanty Manoranjan (ed.) Class, Caste, Gender: Readings in Indian Government and Politics – 5, New Delhi: Sage Publications, 2004.
14. Arya Sadhna Women, Gender Equality and the State, New Delhi: Deep & Deep Publications, 2000.
15. பாலியலை புரிந்து கொள்வோம், மதுரை: ஏக்தா, ...
16. Mishra, O.P., Law Relating to Women & Child, Allahabad: Central Law Agency, 2001.
17. Chari Leelavathi, Know Your Rights, Madras: Tamilnadu Social Welfare Board, 1987.
18. Bhattacharya Malini, Sexual Violence and Law, Kolkata; West Bengala Commission for Women, 2002.
19. Sexual Harassment at the Workplace – A Guide, New Delhi, Sakshi, 1999.
20. அஜிதா, குடும்ப வன்முறையிலிருந்து பெண்களை பாதுகாக்கும் சட்டம், 2005, மதுரை: ஏக்தா, 2005.
21. கு. சாமிதுரை & இராதாகிருட்டிணன், பெண்கள் நலன் காக்கும் சட்டங்கள், மதுரை: Account Test Center: 2007.
22. பொன். கிருஷ்ணசாமி, ஜே. பால் பாஸ்கர் & ஆ. ஜான் வின்சென்ட், பெண்களும் உச்சநீதிமன்றமும், மதுரை: சோக்கோ வாசகர் வட்டம், 2004.
23. வனஜா & சியாமா சுந்தரி, பெண்களுக்கான சட்டங்கள், செகந்திராபாத்: உலகத்தோழமை மையம்.
24. க. உமாசங்கர், பி. பாலசந்தர், க. சசிகலா, செ. பழனிச்சாமி, சூரியன் (பெண்கள் தொடர்பான சட்டங்கள் குறித்த தொடக்கநிலை கையேடு: செகந்திராபாத்: உலகத்தோழமை மையம், 2006.
25. குடும்ப வன்முறையிலிருந்து பெண்களை பாதுகாக்கும் சட்டம் 2005–கையேடு, திருச்சி.
26. Women's Integrated National Development Trust.
27. ரவீந்திரநாத் ஜி.ஆர்., 'ராகிங் ஒழிப்போம்!' 'ஈவ்ஊசிங் ஒழிப்போம்!', சென்னை I.D.P.D. வெளியீடு.

- 2.3 Volumetric analysis – preparation of standard solutions – normality, molarity and molality by titrimetric reactions – acid-base, redox, precipitation and complex metric titrations – indicators – effect of change in Ph – selection of suitable indicators.

UNIT III ALKANES, REACTIVE INTERMEDIATES AND METHODS FOR REACTION MECHANISMS

- 3.1 Introduction: Inductive, mesomeric, electromeric effects and hyperconjugation – structure of organic molecules based on sp³, sp² and sp hybridization. Alkanes – sources of alkanes – general preparation – general properties – conformational analysis of ethane and n-butane.
- 3.2 Carbocations, Carbanions, Carbenes and Nitrenes: Generation and stability of reactive intermediates – Correlation of reactivity with structure of reactive intermediates. Free radicals: Generation, stability, identification methods – Free radical halogenation reactions and their mechanism.
- 3.3 Homolytic and Heterolytic cleavages of bonds, Characteristics of nucleophilic, electrophilic and free radical reactions. Thermodynamic and kinetic aspects, Hammond's postulates, isotope effects. Energy profile diagrams – Intermediate versus transition state, Product analysis and its importance, crossover experiments, kinetic methods, Isotopic effects.

UNIT IV CHEMISTRY OF CYCLOALKANES, ALKENES, DIENES AND ALKYNES

- 4.1 Preparation of cycloalkanes – Chemical properties – Relative stability of cyclopropane to cyclooctane – Baeyer's Strain theory – Limitations – Mono and disubstituted cyclohexanes.
- 4.2 Alkenes: Nomenclature – Petroleum source of alkenes and aromatics – General methods of preparation of alkenes – Chemical properties – Markovnikov's rule and peroxide effect-Uses – Elimination reactions and its mechanisms (E1,E2).

CORE COURSE - I
GENERAL CHEMISTRY - I

SEMESTER-I

Hours/Week: 6
Credits: 6

OBJECTIVES

1. To learn the periodic properties of elements and its classifications.
2. To understand the theoretical aspects of qualitative and quantitative analyses.
3. To understand the basics of alkanes, reactive intermediates and reaction mechanisms.
4. To learn about the chemistry of cycloalkanes, alkenes and alkynes.
5. To learn about the types, preparation and properties of sols, colloids and emulsions and the determination of molecular weight of macromolecules.

UNIT I PERIODIC TABLE AND PERIODIC PROPERTIES

- 1.1 Quantum Numbers, Filling up of atomic orbitals: Pauli's exclusion principle, Aufbau Principle, Hund's rule of maximum multiplicity – electronic configuration. Stability associated with half-filled and completely filled orbitals.
- 1.2 Periodic properties of elements – variation of atomic volume, atomic and ionic radii, ionization potential, electron affinity, electronegativity along periods and groups. Pauling scale of electronegativity.
- 1.3 Classification of elements into s, p, d and f block elements.

UNIT II ANALYTICAL METHODS

- 2.1 Qualitative Inorganic Analysis – Dry Test, flame test, cobalt nitrate test–wet confirmatory test for acid radicals, interfering acid radicals – elimination of interfering acid radicals.
- 2.2 Solubility product, common ion effect, complexation, oxidation - reduction reactions involved in identification of anions and cations – separation of cations into groups – Semi micro analysis of simple salts.

NON MAJOR ELECTIVES (ARTS)
(For the candidates admitted from the academic year 2016-2017)

S. No.	Department Offering the Non-Major Elective Courses	Title of the Non-Major Elective Courses
1.	Applied Tamil	I. தமிழ் நடைக்கூறுகள் II. சிந்தனையியல்
2.	B.Litt.	
3.	Pulavar Degree	
4.	Tamil	
5.	B.B.A. (Bachelor of Business Administration)	I. Management Principles (or) Stock Exchange Practices II. Banking Practices (or) International Business
6.	B.Com.	I. Personal Investment (or) Elements of Insurance II. Introduction to Accountancy (or) Salesmanship
7.	B.Com. (Applied)	
8.	B.Com. (Computer Applications)	
9.	B.Com. (Bank Management)	I. Banking Practices (or) Indian Banking System II. Rural Banking (or) Elements of Insurance
10.	Economics	I. Advertisement Management II. Economics of Transportation
11.	English	I. Presentation Skills II. Functional Skills
12.	History	I. Freedom Movement in India II. Working of Indian Constitution

S. No.	Department Offering the Non-Major Elective Courses	Title of the Non-Major Elective Courses
13.	Journalism & Mass Communication	I. Basic Photography II. Freelance Journalism
14.	Public Administration	I. Public Administration for Civil Services II. Indian Government and Administration
15.	Sanskrit	I. Introduction to Early Sanskrit Literature (or) History of Fables & Popular tales and Didactic Literature Pub. R.S. Vadhyer Pub. Palakad. II. Scientific Literature (or) Indian Aesthetics
16.	Social Work	I. Human Rights II. Contemporary Social Issues and Problems
17.	Sociology	I. Dynamics of Society II. Women Empowerment
18.	Tourism and Travel management	I. Basics of Tourism II. Cultural Tourism

Part II - ENGLISH

(Applicable to the candidates admitted from the Academic year 2016 -2017 onwards)

Semester I : Prose for Effective Communication

Objectives:

- To make learners read, understand and appreciate texts from various genres of literature
- To familiarize learners with various rhetoric devices
- To help learners read and comprehend literary texts to communicate effectively
- To train learners to improve their comprehension and composition skills

Unit – I

C.E.M. Joad : “Civilization and History”

Issac Asimov : “The Fun They Had”

Unit – II

George Gamow : “Big Numbers and Infinities”

G.C. Thornley : “Oil”

Unit – III

Desmond Morris : “An Observation and an Explanation”

M.W.Thring : “A Robot about the House”

Unit – IV

Rabindranath Tagore : “A Wrong Man in Worker’s Paradise”

Horace Shipp : “Making Surgery Safe”

Unit – V

Swami Vivekananda’s Chicago : i) “Response to Welcome”

Addresses ii) “Why We Disagree”

Textbook:

W.W.S. Bhaskar and N.S. Prabhu. *English through Reading* Vol.I Laxmi Publications. (for Unit I to Unit IV)

அலகு- IV
சிறுகதை

கைவண்ணம்...(தேர்ந்தெடுக்கப்பட்ட சிறுகதைகள்)
தொகுப்பாசிரியர் முனைவர் தங்க. செந்தில்குமார்
அய்யாநிலையம்
கதவுளம், 1603, ஆரோக்கியநகர்
ஐந்தாம் தெரு, E.B.காலனி,
நாஞ்சிக்கோட்டைச் சாலை,
தஞ்சாவூர் - 613 006
விலை ரூ.70/-

உரைநடை

சிந்தனைச்சுடர்
பேராசிரியர் பி.விருத்தாசலம்
தென்காவேரிப் பதிப்பகம்
9, கனகசபைநகர்
மருத்துவக் கல்லூரிச்சாலை
தஞ்சாவூர் - 613 007
விலை ரூ.50/-

அலகு- V

இலக்கியவரலாறு

1. மரபுக் கவிதை
2. புதுக்கவிதை
3. உரைநடை
4. சிறுகதை

மனப்பாடப் பகுதி

பாரதியார் கவிதைகள் 1. துடிக்கின்ற நெஞ்சம்
2. புதிய ஆத்திசூடி பரம்பொருள் வாழ்த்து
3. தமிழ் 4. கேட்பன
5. வேண்டும்.

பாரதிதாசன் கவிதைகள் 1. தமிழ் வளர்ச்சி 2. இன்பத்தமிழ்
3. தென்றல் 4. செந்தாமரை
5. வள்ளுவர் வழங்கிய முத்துக்கள்.

இணைய முகவரிகள்

1. www.tamilvu.org
2. www.sirukathaigal.com
3. www.noolulagam.com
4. www.katuraitamilblogspot.com

NON MAJOR ELECTIVES (SCIENCE)
(For the candidates admitted from the
academic year 2016-2017)

S. No.	Department Offering the Non-Major Elective Courses	Title of the Non-Major Elective Courses
1.	Apparel and Fashion Technology	I. Hand Embroidery (P) II. Jewellery Making (P)
2.	BCA	I. Working Principles of Internet II. Fundamentals of Information Technology
3.	Biochemistry	I. Health and diseases II. Hospital Management
4.	Biotechnology	I. Biotechnology for Human Welfare II. Food Processing
5.	Botany	I. Biofertilizers & Biopesticides II. Horticulture
6.	Chemistry	I. Chemistry in Everyday Life II. Health Chemistry
7.	Computer Science	I. Working Principles of Internet II. Fundamentals of Information Technology
8.	Electronics	I. Principles of Electronics II. Everyday Electronics
9.	Fashion Technology & Costume Designing	I. Fashion Accessories Designing II. Visual Merchandising
10.	Geography	I. Geography of Tourism II. Disaster Management
11.	Geology	I. Fundamentals of Geology II. Introduction to Minerals, Rocks and Fossils

S. No.	Department Offering the Non-Major Elective Courses	Title of the Non-Major Elective Courses
12.	Home Science	I. Bakery and Food Preservation II. Apparel Designing
13.	Hospital Administration	I. Personal Hygiene II. Role of Hospital Services
14.	Hotel Management & Catering Science	I. Basic Tamil / Special Tamil II. Basic Tamil / Special Tamil
15.	Information Technology	I. Fundamentals of Information Technology II. Information Security: Principles and Practices
16.	Mathematics	I. Quantitative Aptitude I II. Quantitative Aptitude II
17.	Microbiology	I. Mushroom Technology II. Biofertilizer Technology
18.	Nutrition & Dietetics	I. Nutrition for Women II. Nutrition for Health and Fitness
19.	Physics	I. Energy Physics II. Laser Physics
20.	Software Development	I. Working Principles of Internet II. Fundamentals of Information Technology
21.	Textile Science	I. Management and Entrepreneurship II. Marketing and Merchandising
22.	Visual Communication	I. Basics of Communication II. Communication Personality Development
23.	Zoology	I. Public Health and Hygiene II. Ornamental Fish Farming

கண்ணதாசன்

1. அனுபவம்
2. நட்பு

வாணிதாசன்

1. வாழ்க இளம்பரிதி
2. உயிர்வாட்டும் காலம்

அலகு- III

நாட்டுப்புறப் பாடல்கள்

1. தாலாட்டுப் பாடல்
2. தொழிற் பாடல்
3. ஒப்பாரிப் பாடல்

புதுக்கவிதைகள்

1. அப்துல் ரகுமான் - வெற்றி
2. அரங்கமல்லிகா - அக்குளுக்கு அல்ல இடைத்துண்டு
3. அறிவுமதி - நட்புக்காலம்
4. ஆண்டாள் பிரியதர்ஷினி - நிலாச்சோறு
5. ஈரோடு தமிழன்பன் - மறைக்க இடம் தேடும் மனம்
6. சிற்பி - ஓடு சங்கிலி ஓடு
7. தாமரை - தீர்ப்பு
8. மீரா - தலைகுனிவு
9. மேத்தா.மு - வெளிச்சம் வெளியே இல்லை
10. வைரமுத்து - ருசி

ஐக்கூ கவிதைகள்

1. இராசன்.எ.மு.
2. புதுவைதமிழ் நெஞ்சன்
3. செந்தமிழினியன்
4. அரிமதி இளம்பரிதி
5. உயிர்வேலி ஆலா
6. அன்பாதவன்
7. கார்முகில்
8. அமுதபாரதி
9. அரிமதிதென்னகன்
10. புதுவை இளவேனில்

முதற்பருவம் - தாள் I
இக்கால இலக்கியம்

பாடநோக்கம்

1. இக்காலத் தமிழ்க்கவிதை, சிறுகதை முதலானவற்றை அறிமுகப்படுத்துதல்
2. புதுக்கவிதை, ஹைகூ கவிதை முதலான புதிய இலக்கிய வடிவங்களை அறிமுகப்படுத்துதல்
3. தமிழ் இலக்கியத்தின் மீதான ஈர்ப்பை மிகுவித்தல்

மாணவர்பெறும் திறன்

1. தமிழ் இலக்கியத்தின் மீதான ஆர்வம் மிகுகிறது.
2. புதிய இலக்கிய வடிவங்களை அறிவர்.
3. சிறுகதை, கவிதை எழுத முயல்வர்.

அலகு- I

- பாரதியார்
1. செந்தமிழ்நாடு
 2. புதுமைப்பெண்

- பாரதிதாசன்
1. அழகு
 2. தமிழனுக்கு வீழ்ச்சியில்லை

கவிமணி தேசிகவிநாயகம் பிள்ளை

1. சுகாதாரக்கும்மி
2. தொழிலாளியின் முறையீடு

சுரதா

1. கலப்பை
2. போலி உடும்பு

அலகு- II

நாமக்கல் கவிஞர்

1. தமிழ் வாழ்க
2. தருணம் இதுவே

கவிகாழு ஷெரீப்

1. தமிழே!
2. நிலவே சொல்
3. அறிய முயல்

SKILL BASED ELECTIVE PAPERS
(2016-17 ONWARDS)

Sl. No.	Skill Based Elective Paper	Paper	Semester	Title of the Paper
1.	Clinical Microbiology	I	IV	Clinical Bacteriology
		II	V	Clinical Mycology and Virology
		III	V	Clinical Parasitology
2.	Computer Application	I	IV	Hardware Troubleshooting
		II	V	Ruby on Rails
		III	V	Web Services
3.	Customer Relationship Management	I	IV	Overview of Customer Relationship
		II	V	CRM in Services Marketing & its
		III	V	E – CRM (Virtual Marketing)
4.	Desktop Publishing	I	IV	Page Maker
		II	V	Corel Draw
		III	V	Dream weaver
5.	Herbal Medicine	I	IV	Ethno Medicine
		II	V	Pharmacognosy
		III	V	Herbs and Drug Action
6.	Journalism and Public Relations	I	IV	Journalism and Mass Media
		II	V	Reporting and Editing
		III	V	Public Relations
7.	Office Management	I	IV	Introduction to Office
		II	V	Office Management Tools
		III	V	Communication & Interpersonal

Sl. No.	Skill Based Elective Paper	Paper	Semester	Title of the Paper
8.	Sales and Marketing Management	I	IV	Introduction to Marketing Management
		II	V	Sales Management
		III	V	Retail Management
9.	Tourism and Travel Management	I	IV	Tourism and Travel Agency
		II	V	Cultural Tourism in India
		III	V	Tourism Product – 3
10.	Yoga and Stress Management	I	IV	Fundamentals of Yogic Practices
		II	V	Stress Management Through Yoga
		III	V	Asanas and Pranayamas – Practical
11.	அச்சு ஊடகங்கள்	I	IV	தமிழ் இதழியல் வரலாறு
		II	V	நாளிதழ் உருவாக்கமும் வடிவமைப்பும்
		III	V	இலக்கிய இதழ்கள்
12.	Biotechnology	I	IV	Aqua Culture!
		II	V	Biofertilizer
		III	V	Mushroom Cultivation and Value Addition
13.	Chemistry	I	IV	Food and Nutrition
		II	V	Agricultural Chemistry
		III	V	Dyeing Techniques and Water Treatment
14.	Electronics	I	IV	Home Appliance Maintenance and Servicing
		II	V	Computer Hardware and Networking
		III	V	Mobile Servicing

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI - 620 024

UG Programme - Part-1 Tamil Syllabus Under CBCS

(Applicable to the candidates admitted from the academic year 2016-2017 onwards)

பருவம்	பகுதி	பாடம்	பயிற்றுக் காலம் மணிகள்	தரப்புள்ளி	தேர்வுக் காலம் மணிகள்	மதிப்பெண்கள்		கூட்டு மதிப்பெண்
						அகம்	புறம்	
1	1	இக்கால இலக்கியம்	6	3	3	25	75	100
2	1	இடைக்கால இலக்கியமும் புதினமும்	6	3	3	25	75	100
3	1	காப்பியமும் நாடகமும்	6	3	3	25	75	100
4	1	பண்டைய இலக்கியம்	6	3	3	25	75	100

Language Part-I	-	4
English Part-II	-	4
Core Paper	-	9
Core Practical	-	4
Allied Paper	-	4
Allied Practical	-	2
Non-Major Elective	-	2
Skill Based Elective	-	3
Major Based Elective	-	3
Environmental Studies	-	1
Value Education	-	1
Soft Skill Development	-	1
Gender Studies	-	1
Extension Activities	-	1 (Credit only)

* for those who studied Tamil upto 10th +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

** Extension Activities shall be outside instruction hours

Non Major Elective I & II – for those who studied Tamil under Part I

- Basic Tamil I & II for other language students
- Special Tamil I & II for those who studied Tamil upto 10th or +2 but opt for other languages in degree programme

Note:

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60
3. Separate passing minimum is prescribed for Internal and External marks.		

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]

The passing minimum for University Examinations shall be 40% out of 75 marks [i.e., 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e., 16 marks]

The passing minimum for University Examinations shall be 40% out of 60 marks [i.e., 24 marks]

Sl. No.	Skill Based Elective Paper	Paper	Semester	Title of the Paper
15.	Hotel Management and Catering Science	I	IV	Hospitality Marketing
		II	V	Information Technology in Hotel Industry
		III	V	Information Technology in Hotel Industry (P)
16.	Microbiology	I	IV	Microbial Nanotechnology
		II	V	Diagnostic Microbiology
		III	V	Antimicrobial agents
17.	Zoology	I	IV	Apiculture
				Aquaculture
		II	V	Sericulture
				Poultry Farming
III	V	Vermiculture		
		Dairy farming		

B.Sc. CHEMISTRY SYLLABUS & SUBCODES

SEM	PART	COURSE	TITLE	SUB CODE	
I	I	Language Course-I Tamil-I	இக்கால இலக்கியம்	16LCT1	
		Language Course-II English-I	Prose for Effective Communication	16ELCE1	
	III	Core Course-I	General Chemistry-I	16SCCCH1	
		Core Practical-I	Volumetric Analysis	16SCCCH2	
		First Allied Course-I	Computer Science-I	16SACCS1	
		First Allied Course-II	*Computer Science Lab-II	16SACCS2P	
	IV	Value Education	Value Education		
	II	I	Language Course-I Tamil-II	இடைக்கால இலக்கியமும் புதினமும்	16LCT2
			Language Course-II English-II	Poetry for Effective Communication	16ELCE2
		III	Core Course-II	General Chemistry-II	16SCCCH2
Core Practical (P)			Volumetric Analysis (P)	16SCCCH1P	
		First Allied Course-III	Computer Science-II	16SACCS2	
		First Allied Course-II	*Computer Science Lab-II	16SACCS2P	
IV		Environmental Studies	Environmental Studies		

Semester	Part	Course	Title	Inst. Hours / Week	Credit	Exam Hours	Marks		Total		
							Int	Ext			
IV	I	Language Course-III (LC) – Tamil*/Other Languages**#		6	3	3	25	75	100		
		English Language Course-III (ELC)		6	3	3	25	75	100		
	III	Core Course-IV (CC)	General Chemistry-IV		5	5	3	25	75	100	
		Core Practical-II (CP)	Semimicro Analysis (P)		3	3	3	40	60	100	
		Second Allied Course-II (AC)/(AP)	Physics (P)		3	3	3	25	75	100	
		Second Allied Course-III	Physics-II		3	2	3	25	75	100	
	IV	IV	Non Major Elective II – for those who studied Tamil under Part I Basic Tamil for other language students Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Health Chemistry		2	2	3	25	75	100
			Skill Based Elective-I	Skill Based Elective-I		2	2	3	25	75	100
			Total			30	23				800
	V	III	Core Course-V (CC)	Inorganic Chemistry-I		5	5	3	25	75	100
Core Course-VI (CC)			Organic Chemistry-I		5	5	3	25	75	100	
		Core Course-VII (CC)	Physical Chemistry-I		6	5	3	25	75	100	
		Core Practical-III (CP)	Physical Chemistry (P)		3	3	3	40	60	100	
IV		IV	Major Based Elective-I	Analytical Chemistry / Material & Nano Chemistry		5	5	3	25	75	100
			Skill Based Elective-II	Skill Based Elective-II		2	2	3	25	75	100
			Skill Based Elective-III	Skill Based Elective-III		2	2	3	25	75	100
		Soft Skills Development	Soft Skills Development		2	2	3	25	75	100	
Total			30	29				800			
VI	III	Core Course-VIII (CC)	Organic Chemistry-II		6	6	3	25	75	100	
		Core Course-IX (CC)	Physical Chemistry-II		6	6	3	25	75	100	
		Core Practical-IV (CP)	Gravimetric & Organic Analysis (P)		6	5	3	40	60	100	
		Major Based Elective II	Nuclear, Industrial Chemistry & Metallic State		6	6	3	25	75	100	
		Major Based Elective III	Polymer Chemistry / Pharmaceutical Chemistry		5	5	3	25	75	100	
	V	V	Extension Activities	Extension Activities		-	1	-	-	-	-
			Gender Studies	Gender Studies		1	1	3	25	75	100
	Total			30	30				600		
Grand Total			180	140				3900			



BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI-620 024
B.Sc. Chemistry Course Structure under CBCS
(For the candidates admitted from the academic year 2016-2017 onwards)

Semester	Part	Course	Title	Inst. Hours / Week	Credit	Exam Hours	Marks		Total
							Int	Ext	
I	I	Language Course-I (LC) – Tamil*/Other Languages**#		6	3	3	25	75	100
	II	English Language Course-I (ELC)		6	3	3	25	75	100
	III	Core Course-I (CC)	General Chemistry I	6	6	3	25	75	100
		Core Practical-I (CP)	Volumetric Analysis (P)	3	-	-	-	-	-
		First Allied Course-I (AC)	Computer Science-I	4	4	3	25	75	100
		First Allied Course-II (AP)	Computer Science (P)	3	-	-	-	-	-
	IV	Value Education	Value Education	2	2	3	25	75	100
	Total			30	18			500	
II	I	Language Course-II (LC) – Tamil*/Other Languages**#		6	3	3	25	75	100
	II	English Language Course-II (ELC)		6	3	3	25	75	100
	III	Core Course-II (CC)	General Chemistry-II	6	6	3	25	75	100
		Core Practical-I (CP)	Volumetric Analysis (P)	3	3	3	40	60	100
		First Allied Course-II (AP)	Computer Science (P)	3	3	3	40	60	100
		First Allied Course-III (AC)	Computer Science-II	4	2	2	25	75	100
	IV	Environmental Studies	Environmental Studies	2	2	3	25	75	100
	Total			30	22			700	
III	I	Language Course-III (LC) – Tamil*/Other Languages**#		6	3	3	25	75	100
	II	English Language Course-III (ELC)		6	3	3	25	75	100
	III	Core Course-III (CC)	General Chemistry-III	6	6	3	25	75	100
		Core Practical-II (CP)	Semimicro Analysis	3	-	-	-	-	-
		Second Allied Course-I (AC)	Physics-I	4	4	3	25	75	100
		Second Allied Course-II (AC)/(AP)	Physics (P)	3	3	3	25	75	100
	IV	Non Major Elective-I for those who studied Tamil under Part-I Basic Tamil for other language students Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Chemistry in Every Day Life	2	2	3	25	75	100
		Total			30	18			500

SEM	PART	COURSE	TITLE	SUB CODE
III	I	Language Course-III Tamil-III	காப்பியமும், நாடகமும்	16LCT3
	II	Language Course-III English-III	Drama for Effective Communication	16ELCE3
	III	Core Course-III	General Chemistry-III	16SCCCH3
		Core Practical-II	*Semimicro Analysis	16SCCCHP2
		Second Allied Course-I	Physics-I	16SACPH1
		Second Allied Course-II	Physics (P)	16SACPH1P
	IV	NME-1	Chemistry in Everyday Life	16NMECH4
IV	I	Language Course-IV Tamil-IV	பண்டைய இலக்கியம்	16LCT4
	II	Language Course-IV English-IV	Short Stories & Effective Communication	16ELCE4
	III	Core Course-IV	General Chemistry-IV	16SCCCH4
		Core Practical-IV	*Semimicro Analysis	16SCCCHP2
		Second Allied Course-IV	Physics-IV	16SACPH2
		Second Allied Course-III	Physics (P)	16SACPH1P
	IV	NME-2	Health Chemistry	16NMECH2