
ASMV UNIVERSITY RAICHUR

B.Sc. (CHEMISTRY)

SYLLABUS FOR CHEMISTRY

Course: CHEMISTRY

Discipline Specific Course (DSC) For Semester V

Elective Course (EC) For Semester V

As Per SEP (NEP Revised) -2024

B.Sc. Semester-V
DSC-9: Chemistry (Theory)
Course title- Chemistry -9
Course Code: C5CHE2T1

Type of Course	Theory/ Practical	Credits	Instruction hour per week(hr)	Total hoursof Syllabus /Sem	Duration ofExam(hr)	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSE-9A	Theory	04	04	64	03	20	80	100

Course Out comes(CO)

After completion of course chemistry(theory) students will able to

- CO1:** Explain crystal field splitting in octahedral, tetrahedral and square planer complexes, calculation of CFSE and John Teller distortion. Determination of magnetic susceptibility by Gouy's method. Stability of metal complexes.
- CO2:** Understand Metal carbonyls : Types, nomenclature, preparation, and properties, electron count in metal carbonyls of Cr, Mn, Fe, Co and Ni. Structure of mononuclear and binuclear carbonyls .
- CO3:** Understand preparation, properties, structure and uses of Phosphazines, phosphonitrilic chloride .
- CO4:** Study aromaticity of 5-membered and six member rings containing one hetero atom, synthesis of pyrrole, furan, pyridine, Mechanism of Electrophilic substitution reactions of furan, pyrrole and pyridine. Indole, quinoline and isoquinoline.
- CO5:** Study Classification and general properties of Glucose and Fructose (Open chain and cyclic structure), Determination of configuration of monosaccharides.
- CO6:** Define spectroscopy and different regions of electromagnetic spectrum. Basics of UV/visible spectroscopy. different kind of transitions that can take place within molecule.
- CO7:** Explain the origin of IR spectrum. Explain the principles of different types of IR instruments. Outline different applications of UV, IR. & Raman spectroscopy
- CO8:** Understand the principles governing colligative properties, interpret experimental data and determine molecular masses.
- CO9:** Explain the macroscopic and microscopic kinetics, theories of reaction rates ,chain reaction ,photochemical and thermal reaction and flash photolysis.
- CO10:** Know the manufacture, properties and applications of glass and cement.
- CO11:** Learn the types, manufacture of soaps, detergents and their cleansing actions. study of corrosion, types causes and its control

DSE-9A:Chemistry(Theory)9A(C5CHE2T1)	64hrs
UNIT-I: COORDINATION CHEMISTRY-II ORGANOMETALLIC COMPOUNDS & INORGANIC POLYMERS	16hrs
Coordination chemistry-II Crystal field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, calculation of CFSE in octahedral and tetrahedral complexes, crystal field effects in weak and strong field ligands. Factors affecting the magnitude of crystal field splitting. Tetragonal distortion of octahedral geometry, Jahn-Teller distortion. Explanation of colour and magnetic moments of complexes. Determination of magnetic susceptibility by Gouy's method. Stability of metal complexes (thermodynamic and kinetic), stepwise and overall stability constant and their relationship. Factors affecting the stability of metal complexes. (8 Hours) Organometallic compounds Definition and classification with examples, concept of hapticity of organic ligands with examples. Metal carbonyls: Types, nomenclature, preparation, and properties. 18-electron rule, electron count in metal carbonyls of Cr, Mn, Fe, Co and Ni. Structure of mononuclear ($\text{Cr}(\text{CO})_6$, $\text{Fe}(\text{CO})_5$ & $\text{Ni}(\text{CO})_4$) and binuclear carbonyls ($\text{Mn}_2(\text{CO})_{10}$, $\text{Co}_2(\text{CO})_8$ & $\text{Fe}_2(\text{CO})_9$ using VBT. (5 Hours) Inorganic Polymers General properties and types of inorganic polymers. Comparison with organic polymers. Silicones: preparation, properties and uses. Types of silicones: structure, properties and uses. Phosphazenes: Preparation and structure of phosphonitrilic chloride (trimer). (3 Hours)	
UNIT-II: HETEROCYCLIC COMPOUNDS, CARBOHYDRATES, UV AND IR SPECTROSCOPY	16hrs
Heterocyclic Compounds: Classification, Nomenclature by Hantzsch and Widmann method, aromaticity of 5- and 6-membered rings containing one hetero atom, synthesis of pyrrole, furan (Paal-Knorr synthesis), pyridine (Hantzsch synthesis). Electrophilic substitution reactions in furan, pyrrole and pyridine (Nitration, sulphonation, halogenation, Friedel-Craft's reaction). Nucleophilic substitution reactions in pyridine: Chichibabin reaction with organolithium compounds (butyl and Phenyl lithium). Indole (Fischer's synthesis), quinoline (Skraup's synthesis). (5 Hours) Carbohydrates: Classification and general properties. Glucose and Fructose (Open chain and cyclic structure), Determination of configuration of monosaccharides. Absolute configuration of Glucose and Fructose. Mutarotation. Ascending and descending in monosaccharides, Interconversion of aldose to ketose and vice-versa, Osazone formation. Structure of disaccharides (Sucrose, Cellobiose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation (5 Hours)	

Ultraviolet Spectroscopy: Types of electronic transitions, $\lambda_{\max}$, chromophores and auxochromes, bathochromic and hypsochromic shifts, intensity of absorption, Woodward–Fieser rules for calculating $\lambda_{\max}$ of α, β-unsaturated aldehydes, ketones, carboxylic acids, esters. (3Hours) Infrared Spectroscopy: Introduction to infrared spectroscopy, intensity of absorption band, position of absorptions, C-H, >C=O, O-H and N-H absorption bands with explanation for variation in stretching frequencies. Identification of Hydrogen bonding in alcohols, phenols and carboxylic acid using IR spectroscopy. (3 Hours)	
UNIT-III: COLLIGATIVE PROPERTIES AND CHEMICAL DYNAMICS	16hrs

Unit-IV- INDUSTRIAL CHEMISTRY	16Hours
Cement & Ceramics: Cement: Introduction, definition, raw materials, grades of cement. Manufacture of Portland cement (by dry and wet process) Mechanism of setting of cement. Types of cement and their uses. RCC Ceramics- Introduction, classification- clay definition and feldspar, properties and uses. 03 Hours Paints and pigments:- Paints -Introduction requirement of paint constituents of paint, formulation of paint, failure of paint film (Reason) Emulsion paint, manufacture of white lead using Dutch process and uses Pigments-Definition, Red and white pigment. 03Hours Oils, Fats, Soaps and Detergents: Composition of oils and fats, Determination of saponification value and Iodine value of oils and fats, Manufacture of soaps (hydrolysis process), Synthetic detergents (syndets), manufacture of sodium lauryl sulphate and sodium dodecyl benzene sulphonate, cleansing action of soaps. 05 Hours Corrosion: Introduction, Definition, Types of corrosion : Dry corrosion & Wet corrosion, Factors influencing corrosion-Microbiological Corrosion, Atmospheric Corrosion, Mechanism of electrochemical corrosion. Galvanic Corrosion, Concentration Cell Corrosion, Differential aeration Corrosion. Corrosion control –Proper designing-Using pure metal-Using metal alloys. 05 Hours	

Recommended Books/References

1. Concise Inorganic Chemistry-J.D.Lee, 5th Edn, New Age International (1996)
2. Modern Inorganic Chemistry Sathya Prakash's by R.D. Madan, S. Chand and Co. Ltd, New Delhi.
3. Inorganic Chemistry-Principles of Structure and Reactivity, 4th Edn- J.E. Huheey, E.A. Keiter, R.L. Keiter and O.K. Medhi. Pearson Education (2009).
4. Advanced Inorganic Chemistry-Agarwal & Keemtilal, 11th edition, Pragathi publication, 2012
5. Organic Chemistry Morrison, R.T. & Boyd, R.N., Pearson, 2010.
6. Advanced Organic Chemistry Bahl, A. & Bahl, B.S., S. Chand, 2010.
7. Organic Chemistry-M.K. Jain, Nagin & Co., 1987.
8. Organic Chemistry-Mehta and Mehta, 2005.
9. Physical Chemistry P.W. Atkins, 2002.
10. Fundamentals of molecular spectroscopy by C.N. Banwell-2008
11. Spectroscopy by H. Kaur, Pragathi edition-9th edition 2014.
12. Molecular structure and spectroscopy by G. Aruldas, 2nd edition-2014
13. Physical Chemistry W.J. Moore: 1972.
14. Text Book of Physical Chemistry-P.L. Soni, S. Chand & Co., 1993.
15. Principles of Physical Chemistry- B.R. Puri, L.R. Sharma and M.S. Patania, S.L.N. Chand & Co. 1987.
16. Analytical Chemistry-S. Usharani, Macmillan India Limited, 2000
17. Industrial Chemistry, B.K. Sharma, 9th Edn. Krishna Prakashan Media (P) Ltd. Meerut (1997-98)

DSC-10:Chemistry (Theory)10 (C5CHE2T2)**64hrs****B.Sc.Semester-V****DSE-10:Chemistry(Theory)****Course title- Chemistry-10**

Type of Course	Theory/ Practical	Credits	Instruction hour per week(hrs)	Total Hour of Syllabus /Sem	Duration of Exam (hrs)	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSE-9B	Theory	04	04	64	03	20	80	100

Course Code:C5CHE2T2**Course Outcomes(CO)**

After completion of course chemistry(theory)students will be able to understand

- CO1:** Elementary particles quarks, nuclear stability, nuclear potential, binding energy.
Nuclear models: Shell model- salient features nuclear configuration, liquid drop model.
- CO2:** Synthesis, properties, bonding and structures of B₂H₆, Wades rule - structural features and styx codification of B₄H₁₀, B₅H₉, B₅H₁₁, B₆H₁₀, B₁₀H₁₄
Silanes, cyclosilanes, siloxanes, cyclic siloxanes, Silicon nitrides, synthesis and applications of silicones, zeolites and ultramarines.
- CO3:** Classification, source, extraction and general properties of Alkaloids and concept of Dyesorganic photochemistry - energetics of excitation and applications of photochemical reactions in organic synthesis
- CO4:** Oxidation and Reduction Reactions in Organic Synthesis:
- CO5:** Rotational, vibrational and electronic spectroscopy- Rotation of molecules, diatomic: rigid rotator, selection rule Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules Rotational Raman spectroscopy
- CO6:** Fuel chemistry and Green chemistry- Distinguishing primary (natural) vs. secondary (artificial/synthesized) fuels .Calorific Value Coal: Chemical composition, origin, and classification
- CO7:** Liquid Fuels: Petroleum and Petrochemical Chemistry Gaseous and Future Alternative Fuels
- CO8:** Green chemistry and its need. Goals of green chemistry, Principles of Green Chemistry and Designing a Chemical synthesis Green solvents and reagents

Unit-I NUCLEAR CHEMISTRY, RADIOACTIVITY AND ADVANCED MAIN GROUP CHEMISTRY	16 Hrs
Nuclear Chemistry: The atomic Nucleus- elementary particles quarks, classification of nuclides based on Z and N values, Nuclear stability, Nuclear potential, binding energy. Nuclear models: Shell model- salient features, forms of the nuclear potential, filling of orbital, nuclear configuration, liquid drop model. Radioactivity: Radioactive decay kinetics, parent-daughter decay growth relationship- secular and transient equilibria. Theories of α, β^-, β^+ and γ decay internal conversion (08 Hours) Advanced Main group Chemistry 1. Boron: Synthesis, properties, bonding and structures of B₂H₆, Wades rule - structural features and steric codification of B₄H₁₀, B₅H₉, B₅H₁₁, B₆H₁₀, B₁₀H₁₄, carboranes and their anions, metalloboranes, metallocarboranes, Borazine, Boron nitride. (04 Hours) 2. Silicon: Silanes, cyclosilanes, siloxanes, cyclic siloxanes, Silicon nitrides, Silyl amines, Silicates- classification, diversity of silicate minerals, synthesis and applications of silicones, zeolites and ultramarines. (04 Hours)	
UNIT-II: ALKALOIDS, DYES ORGANIC PHOTOCHEMISTRY AND OXIDATION AND REDUCTION REACTIONS IN ORGANIC SYNTHESIS	16Hrs
Alkaloids: Classification, source, extraction and general properties, Hofmann's exhaustive methylation, constitution and synthesis of hygrine, coniine and nicotine. (3 Hours) Dyes: Color and constitution, synthesis and applications of congo red, malachite green, phenolphthalein and alizarin, dyes used in food and their safety concern, organic pigments with examples. (3 Hours) Organic Photochemistry: Introduction to organic photochemistry - energetics of excitation - photochemistry of alkene, diene, aromatic, carbonyl and conjugated systems - Application of photochemical reactions in organic synthesis. (04 Hours) Oxidation and Reduction Reactions in Organic Synthesis: Oxidation of organic compounds with reagents based on peroxides, peracids, ozone, osmium, chromium, ruthenium, silver, dimethyl sulfoxide, iodine, and selenium dioxide. Reduction of organic compounds with reagents based on alkali and alkaline earth metals, boron, aluminum, hydrogen, hydrazine, formic acid and dissolving metals. (06 Hours)	
UNIT-III: ROTATIONAL, VIBRATIONAL AND ELECTRONIC SPECTROSCOPY	16Hrs

Interaction of electromagnetic radiation with matter,electromagneticspectrum (a)Rotational Spectroscopy: Rotation of molecules, diatomic: rigid rotator, selection rule : derivation for expression of energy and bond length (HCl), problems on bond length, polyatomic molecules: linear, symmetric top, asymmetric top molecules(qualitative approach). (4hours) (b)Vibrational Spectroscopy: Vibrating diatomic molecules - energy of diatomic molecules, force constant, vibrational spectra: harmonically vibrating diatomic molecules (HCl) and anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules (6 Hours) (c)Raman Spectroscopy: Classical theory and Quantum Theory Rotational Raman spectroscopy (Linear and symmetric top molecules for S and R branch), Vibration - rotational Raman spectra (Rotational finestructures) (03 Hours) (d)Electronic Spectroscopy: Diatomic molecules: Born- Oppenheimer approximation, vibrational course structure of electronic transition and intensity, Franck – Condon principle. (03 Hours)	
UNIT-IVFUEL CHEMISTRY AND GREEN CHEMISTRY-I	16 Hrs
FUEL CHEMISTRY: Introduction: Definition, Chemical composition Calorific Value and characteristics of an ideal fuel Classification of Fuels and Distinguishing primary (natural) vs. secondary (artificial/synthesized) fuels . 1. Solid Fuels Coal Chemistry Coal: Chemical composition, origin, and classification (peat, lignite, bituminous, anthracite).Carbonisation: High and low-temperature carbonisation to produce metallurgical coke. 2.Liquid Fuels: Petroleum and Petrochemicals Crude Oil Origin, chemical Composition: Fractional Distillation: Separation of crude oil fractions based on boiling point ranges. Refining Processes: Thermal/catalytic cracking. 3. Gaseous and FutureAlternative Fuels Industrial Gases: Composition, synthesis, and industrial utility of Producer Gas, Water Gas, and Coal Gas. Compressed Gases: Chemical composition and uses of Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Liquefied Natural Gas (LNG). 4. Bio-Fuels-Future Alternative Fuels, Biomass conversion, biogas plants, and the chemistry of bio-diesel 10 Hours	

GREEN CHEMISTRY-I**Introduction**

Definition of green chemistry and its need. Goals of green chemistry.

Principles of Green Chemistry and Designing a Chemical synthesis

Twelve principles of green chemistry. Designing a green synthesis using these principles; prevention of waste/ by-products; maximum incorporation of the materials used in the process into the final products. Atom economy, calculation of atom economy of the Rearrangement and addition reactions.

06 Hours

Recommended Books/References

1. Concise Inorganic Chemistry-J.D.Lee, 5th Edn, New Age International (1996)
2. Modern Inorganic Chemistry Sathya Prakash's by R.D. Madan, S. Chand and Co. Ltd, New Delhi.
3. Inorganic Chemistry-Principles of Structure and Reactivity, 4th Edn- J.E. Huheey, E.A. Keiter, R.L. Keiter and O.K. Medhi. Pearson Education (2009).
4. Advanced Inorganic Chemistry-Agarwal & Keemtilal, 11th edition, Pragathi publication, 2012.
5. A Guide book to Mechanism in Organic Chemistry Sykes, P., Orient Longman, New Delhi (1988).
6. Organic Chemistry Morrison, R.T. & Boyd, R.N., Pearson, 2010.
7. Advanced Organic Chemistry Bahl, A. & Bahl, B.S., S. Chand, 2010.
8. Organic Chemistry-M.K. Jain, Nagin & Co., 1987.
9. Organic Chemistry-Mehta and Mehta, 2005.
10. Physical Chemistry P.W. Atkins, 2002.
11. Fuel Chemistry: Dr. Manoj Sharma
12. Elements of Fuel combustion technology: O.P. Gupta
13. Petro chemistry: M. Bajus
14. Matlack, A.S. Introduction to Green Chemistry, Marcel Dekker (2001).
15. Cann, M.C. & Connely, M.E. Real-World cases in Green Chemistry, American Chemical Society, Washington (2000).
16. Ryan, M.A. & Tinnesand, M. Introduction to Green Chemistry, American Chemical Society, Washington (2002).
18. Ahluwalia, V. K & Kidwai, M. R. New Trends in Green Chemistry, Anamalaya Publishers

FormativeAssessmentforTheory		
Sl. No	Assessmenttype	Marks
01	InternalAssessmenttest1	05
02	InternalAssessmenttest2	05
03	Assignment	10
	Total	20

GENERAL PATTERN OF THEORY QUESTION PAPER FOR DSE

(80 marksforsemesterendExaminationwith3hrsduration)

Part-A Question number 1-10 carries 2 marks each.:20marks

Part-B Questionnumber11-18carries 05 Marks each. Answer any 06 questions:30marks

Part-C Question number19- 22 carries10 Marks each. Answer any 03 questions : 30marks

(Minimum1question from each unit and10 marks question may have subquestions for 7+3or6+4or5+5if necessary)

Total: 80 Marks

Note:-Proportionate weightage shall be given to each unit based on number of hour sprescribed

B.Sc.Semester-V
DSC-11: Chemistry(Practical)
Course title: Chemistry- 11
CourseCode: C5CHE2P1

Type of Course	Theory/Practical	Credits	Instruction hour per week(hr)	Total hour of Syllabus /Sem	Duration of Exam (hr)	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSE10A	Practical	02	04	64	03	10	40	50

Course Outcomes(CO)

After completion of course, chemistry(Practical) students will be able to

CO1: Identify nature of solid – solid organic mixtures and analyse any one of the separated compound through preliminary tests, element test, physical constant, functional group test and preparation of suitable derivative and its physical constant.

CO2: Understand the – conductivity cell, cell constant & conductivity measurement. Electrodes & its potential, reference electrodes and measurement of electromotive force. pH cell and measurement of pH of a solution. Beer- Lambert law, optical density & molar extinction coefficient. Developing skills to handling the instruments for the measurement of conductance, emf, pH and optical density.

Expt.No.	Title: ORGANIC CHEMISTRY EXPERIMENTS	56hrs
1 to 6	Qualitative analysis of solid–solid organic binary mixtures Experiments 1 to 6 Identification of nature and separation of binary mixture. Analysis of any one compound through preliminary tests, element test, physical constant, functional group test and preparation of suitable derivative and its physical constant. Acids: Salicylic, Cinnamic and Phthalic acid Phenol: β -naphthol, α -Naphthol Base: m-nitroaniline and p-nitroaniline. Neutral: Naphthalene, Acetanilide, Benzamide, m-dinitrobenzene & bromoacetanilide	

PHYSICAL CHEMISTRY EXPERIMENTS		
1	Conductometric titration of strong acid HCl against weak base NH_4OH	
2.	Conductometric titration of BaCl_2 against MgSO_4	
3	Determination of solubility and solubility product of sparingly soluble salt $\text{BaSO}_4/\text{PbSO}_4$ conductometrically	
4	Potentiometric titration of HCl against NaOH	
5	Potentiometric titration of Ferrous Ammonium Sulphate(FAS) against Standard potassium dichromate solution	
6	Colorimetric method of estimation of Copper in Copper Sulphate and verification of Beer-Lambert's LA Law	

Examination

In a batch of twenty students in the practical examination, ten students may be given organic experiments and other ten students may be given physical chemistry experiments. Selection of experiments may be done by the students based on the lots

Organic Chemistry

In a batch of ten students, not more than two students should get the same mixture in the practical examination. Viva questions maybe asked on any of the experiments prescribed in the practical syllabus. During practical examination chart is not allowed.

Physical chemistry

In a batch of ten students, not more than two students should get the same experiment in the practical examination. Selection of experiments may be done by the students based on the picking up of chits. Viva questions may be asked on any of the experiments prescribed in the practical syllabus.

Distribution of marks:

Nature & Separation-6, Preliminary test and Elemental analysis test:-6marks, Physical Constant-3, Functional Group test -5, Confirmative test-5, Preparation of the derivative-3, systematic presentation-2, Journal-5, Viva-voce-5.

Distribution of Marks:

Accuracy-18, Technique and Presentation-3 Calculation and graph-9(5+4), Journal-5, Viva-Voce-5, Total=40.

Reduction of Marks for accuracy:

Error upto 5%-18, 6-10%-15, 11-15%-12, 16-20%-09, above 20%-01

Recommended Books/References

1. Advanced Practical Chemistry, agadamba Singh, R.K.P.Singh, Jaya Singh, L.D.S.Yadav, I.R. Siddiqui, Pragati prakashan, 7th edition, 2017.
2. College Practical Chemistry: V.K.Ahluwalia, Sunitha Dhingra and Adarsh Gulati. University Press-2011.
3. Comprehensive Practical Organic Chemistry: V.K.Ahluwalia, and Renu Aggarwal, University Press-2000.
4. Fundamental of electrochemistry by Vladimir S. Bagotsky. 2005
5. An introduction to electrochemistry by Samuel Glasstone 2011
6. Photochemistry by Gurdeep Raj, 5th edition-2008

**B.Sc. V Semester
Elective Course-I**

**Course Title: Chemistry EC-I
Course code: C5 CHE5T1**

Type of Course	Theory/ Practical	Credits	Instruction hours per week	Total hours of syllabus/sem	Duration of Exam	Formative Assessment	Summative Assessment	Total Marks
EC-I	Theory	02	02	30	03	10	40	50

Course Outcome (CO)

After completion of course, students will be able to:

CO1: Understand the definition, types and examples of carbohydrates structure and elucidation

CO2: Appreciate the importance of Amino acids proteins and peptides

CO3: Understand the definition, types and examples and the Biological importance of lipids enzymes alkaloids and vitamins

CO4: Appreciate the importance of Synthetic dyes

CO5: Understand the definition, types and examples and the Biological importance of drugs and pharmaceuticals

**B.Sc.V Semester
Elective Course**

Bio molecules

30 hours

Unit – I

Carbohydrates

6 Hrs

Classification of carbohydrates, reducing and non-reducing sugars, General Properties of Glucose and Fructose, their open chain structure. Epimers, mutarotation and anomers. Determination of configuration of Glucose (Fischer proof). Cycle structure of glucose .Haworth projection. Cyclic structure of fructose, structure of fructose, structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.

Amino Acids, Peptides and Proteins

6 Hrs

Classification of Amino Acids, Zwitterion structure and Isoelectric point .Overview of Primary, Secondary, Tertiary and Quaternary, structure of proteins. Determination of primary structure peptides, determination of N-terminal amino acid (by DNFB and Edman method) and C-terminal amino acid (biothiohydantion and with carboxypeptidase on enzyme).

Unit –II

Lipids and Alkaloids

08Hrs

Introduction to lipids, classification, oils and fats: Common fatty acids present in oils and fats, Omega fatty acids, Trans fats, Hydrogenation , Saponification value, Iodine number,. Biological importance of triglycerides, phospholipids, glycolipids and steroids (Cholesterol).

Introduction, Classification with examples, general methods of structural elucidation, synthesis and elucidation of structure of nicotine, structural formula and uses of Quinine and atropine.

Drugs, Pharmaceuticals and Synthetic Dyes

10hrs

Drugs and Pharmaceuticals

Types of drugs, Definition with examples (Analgesic, Narcotics, Diuretics, sedatives, cardiovascular, Antimalarial, Anthelmintic, Anticonvulsant, Antiseptic, Anticestives) Synthesis and Aspirin, Paracetamol, sulphanilamide sulphazone and chloramines — T4

Synthetic Dyes: Introduction to dyes: Definition, characteristics, and applications of dyes. Difference between dyes and pigments. Classification based on structure Source (natural and synthetic), Chromophore theory of colour and constitution, synthesis of Congo red, Bismarck brown, malachite green and alizarin. Environmental impact of dye manufacturing and dye effluents, eco-friendly approaches to dye production.

Recommended Books/References

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. & Gaus, P.L. Basic Inorganic Chemistry, 3rd Ed., Wiley.
3. Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. Inorganic Chemistry: Principles of Structure and Reactivity, Pearson Education India, 2006.
4. Rodgers, G.E. Inorganic & Solid State Chemistry, Cengage Learning India Ltd., 2008.
5. Organic Chemistry-P. Y. Bruice, 7th Edition, Pearson Education Pvt. Ltd., New Delhi (2013).
6. Heterocyclic Chemistry-R.K. Bansal, 3rd Edition, New-Age International, New Delhi, 2004.
7. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
8. Morrison, R. T. & Boyd, R. N. Organic Chemistry, Pearson, 2010.
9. Bahl, A. & Bahl, B. S. Advanced Organic Chemistry, S. Chand, 2010.
10. Organic Chemistry Volume-I, II-I. L. Finar, 6th Edition, ELBS London (2004).
11. P. W. Atkins: Physical Chemistry, 2002.
12. Text Book of Physical Chemistry-P. L. Soni, S. Chand & Co., 1993.
13. Principles of Physical Chemistry-B. R. Puri, L. R. Sharma and M. S. Patania, S. L. N. Chand & Co. 1987.
14. A text book of Physical Chemistry-A. S. Negi & S. C. Anand, 3rd edition 2022

Formative Assessment for Theory		
Sl.No	Assessment type	Marks
01	Internal Assessment test 1	05
02	Internal Assessment test 2	05
03	Assignment	10
	Total	20/2=10
Formative Assessment as per the guidelines		

GENERAL PATTERN OF THEORY QUESTION PAPER FOR DSE (40 marks for semester end Examination with 3 hrs duration)

Part-A

1. Question number 1-5 carries 2 marks each. : 10 marks

Part-B

2. Question number 6-8 carries 05 Marks each. : 15 marks

Part-C

3. Question number 9-11 carries 05 Marks each. : 15 marks

Total: 40 Marks

Note :Proportionate weightage shall be given to each unit based on number of hours prescribed.