Anjuman Islam Janjira Degree College of Science, Murud Janjira
Academic Calender 2023-24

F.Y.B.Sc Chemistry I Sem I

Date	Topic
03-07-2023	Thermodynamic terms; System, surrounding, boundaries, types of system, Intensive and Extensive properties,
05-07-2023	State functions and path functions, Thermodynamic processes. First law of thermodynamics:
06-07-2023	Concept of heat (q), work (w), internal energy (U), enthalpy, heat capacity,
10-07-2023	relation between heat capacities, sign conventions, calculations of heat, work, internal energy and enthalpy (H).
12-07-2023	Thermochemistry: Heat of reactions, standard states, enthalpy of formation of molecules,enthalpy of combustion and its applications,
13/7/2023	calculations of bond energy, bond dissociation energy
17/7/2023	Resonance energy from thermochemical data, Kirchhoff's equation Numericals
	1.2 Chemical Calculations
19/7/2023	Methods of expressing concentration of solutions: Normality, Molarity,
20/7/2023	Formality, Mole fractions, Weight ratio,
24/7/2023	Volume ratio, Weight to volume ratio, ppm,
26/7/2023	ppb, millimoles, milliequivalents, Preparation of solutions.
27/7/2023	Numerical problems expected wherever necessary
	Paper -I Unit-II
	2.1 Atomic structure: (8L)
02-08-2023	a) Historical perspectives of the atomic structure; J. J. Thomson Model, Rutherford's Atomic Model,
03-08-2023	Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Structure of hydrogen atom
07-08-2023	b) Hydrogenic atoms:
	1. Simple principles of quantum mechanics;
	2. Atomic orbitals
09-08-2023	i) Hydrogenic energy levels
	ii) Shells, subshells and orbitals
10-08-2023	iii) Electron spin
	iv) Radial shapes of orbitals
14/8/2023	v) Radial distribution function
	vi) Angular shapes of orbitals.
17/8/2023	3. Many Electron Atoms
	i) Penetration and shielding
	ii) Effective nuclear charge 4. Aufbau principle
	2.2: Periodic Table and periodicity : (7L)
21/8/2023	Long form of Periodic Table;
	Classification for elements as main group, transition and inner transition
23/8/2023	Periodicity in the following properties : Atomic and ionic size; electron gain enthalpy;
24/8/2023	ionization enthalpy, effective nuclear charge (Slater's rule); electronegativity, Pauling and Mulliken methods.
28/8/2023	(Numerical problems expected, wherever applicable.)

	Paper -I Unit-III
	3.1 Basics of Organic Chemistry
30/8/2023	Classification and Nomenclature of Organic Compounds: (5L)
04-09-2023	Nomenclature of mono and bi-functional aliphatic compounds on the basis of priority order of the following classes of compounds: Alkanes, alkenes, alkynes,
06-09-2023	haloalkanes, alcohols, ethers, aldehydes, ketones,
07-09-2023	carboxylic acids, carboxylic acid derivatives (acid halides, esters, anhydrides, amides),
11-09-2023	nitro compounds, nitriles and amines and their cyclic analogues.
	3.2 Bonding and Structure of organic compounds: (4L)
13/9/2023	Hybridization: sp3, sp2, sp hybridization of carbon and nitrogen;
14/9/2023	sp3 and sp2hybridizations of oxygen in Organic compounds (alcohol, ether, aldehyde, ketone, carboxylic acid, ester, cyanide, amine and amide)
18/9/2023	Overlap of atomic orbitals: Overlaps of atomic orbitals to form sigma and pi bonds, shapes of organic molecules.
25/9/2023	Shapes of molecules; Influence of hybridization on bond properties (as applicable to ethane, ethene, ethyne).
	3.3 Fundamentals of organic reaction mechanism: (6L)
27/9/2023	Electronic Effects: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation
04-10-2023	and their applications. Dipole moment; Organic acids and bases; their relative strengths.
05-10-2023	Basic terms & concepts: : Homolytic and Heterolytic fission with suitable examples. Electrophiles and Nucleophiles;
09-10-2023	Nucleophilicity and basicity, Electrophilicity and acidity.
12-10-2023	Types (primary, secondary, tertiary, allyl, benzyl), shape and their relative stability of the following reactive intermediates: i. Carbocations ii. Carbanions and iii. Free radicals
16/10/2023	Introduction to types of organic reactions: Addition, Elimination and Substitution reaction. (With one example of each)
18/10/2023	revision
19/10/2023	revision

F.Y.B.Sc Chemistry II Sem I

Date	Unit-I
28/06/23	1.1 Chemical Kinetics: (8L) Rate of reaction, rate constant,
07-01-2023	measurement of reaction rates order and molecularity of reaction,
07-04-2023	Integrated rate equation of first order
07-06-2023	Integrated rate equation of Second order reactions (with equal initial concentration of reactants)
07-08-2023	Determination of order of reaction by a) Integration method b) Graphical method c) Ostwald's isolation method reaction,
07-11-2023	Determination of order of reaction by d) Half time method, Effect of temperature on the rate of
13/07/23	Concept of activation energy and its calculation from Arrhenius equation (derivation not expected).
15/07/23	(Numerical problems expected wherever necessary).

18/07/23	1.2 Liquid State: (7L) Surface tension:
20/07/23	Introduction, methods of determination of surface tension by drop number method Viscosity:
22/07/23	Introduction, coefficient of viscosity,
25/07/23	by Ostwald viscometer Refractive index:
27/07/23	Introduction, molar refraction and polarizability, determination of refractive index by Abbe's refractometer.
08-01-2023	Liquid crystals: Introduction, Classification and structure of thermotropic phases (Nematic, Smectic and Cholesteric phases), applications of liquid crystals.
08-03-2023	(Numerical problems expected wherever necessary).
	Unit-II
08-05-2023	Comparative chemistry of Main Group Elements: (15L)
08-08-2023	Metallic and non-metallic nature,
08-10-2023	oxidation states,
08-12-2023	electronegativity,
17/08/23	anomalous behavior of second period elements,
19/08/23	second period element
22/08/23	second period catenation,
24/08/23	second period diagonal relationship.
	Comparative chemistry of oxides and hydroxides of group I
26/08/23	Comparative chemistry of oxides and hydroxides of group II elements.
29/08/23	Some important compounds- NaHCO3, Na2CO3, CaO, CaCO3;
31/08/23	Some important compounds- NaHCO3, Na2CO3, CaO, CaCO3;
09-02-2023	oxides of carbon, oxides of Sulphur and Nitrogen with respect to environmental aspects like greenhouse effect,
09-05-2023	oxides of carbon, oxides of Sulphur and Nitrogen with respect to environmental aspects like greenhouse effect,
09-07-2023	photochemical smog and acid rain.
	Unit-III
09-09-2023	**3 Stereochemistry I: (15L)** Fischer Projection (of erythro, threo isomersof tartaric acid and 2,3 d ichlorobutane) and their interconversions ; eometrical isomerism in alkene
09-12-2023	Newman Projection formulae (of erythro, threo isomers of tartaric acid and 2,3 dichlorobutane) and their interconversions ; Geometrical isomerism in alkene
14/09/23	Sawhorse Projection formulae (of erythro, threo isomers of tartaric acid and 2,3 dichlorobutane) and their interconversions ; Geometrical isomerism in alkene and cycloalkanes:
16/09/23	cis–trans notations with C.I.P rules.
21/09/23	syn-anti isomerism E/Z notations with C.I.P rules.
23/09/23	Optical Isomerism: Optical Activity,
26/09/23	Specific Rotation,
30/09/23	Chirality/Asymmetry,
10-03-2023	Enantiomers, Molecules with two similar and dissimilar chiral-centres,
10-05-2023	Distereoisomers,
10-07-2023	Meso structures
10-10-2023	Racemic mixture and resolution (methods of resolution not expected).
10-12-2023	Relative and absolute configuration:
14/10/23	D/L and R/S designations.Conformation analysis of alkanes (ethane, propane and n-butane);
17/10/23	Relative stability with energy diagrams

S.Y.B.Sc. Chemistry-I Sem-III

Date	Topic
14/06/2023	Recaptulation of previousyear syllabus
15/06/2023	Sem-III syllabus discussion
	Unit I:Physical Chemistry
	1.1 Chemical Thermodynamics-II(8L)
19/06/2023	1.1.1 Free Energy Functions: Helmholtz Free Energy, Gibb's Free Energy,
21/06/2023	Variation of Gibb's free energy with Pressure and Temperature.
22/06/2023	1.1.2 Gibbs-Helmholtz equation, van't Hoff reaction isotherm
28/06/2023	1.1.3 Thermodynamics of Open System: Partial Molal Properties,
03-07-2023	Chemical Potential and its variation with Pressure and Temperature,
05-07-2023	Gibb's Duhem equation.
06-07-2023	1.1.4 Concept of Fugacity and Activity
	1.2 Electrochemistry: (7L)
12-07-2023	1.2.1 Conductivity, equivalent and molar conductivity and their variation with dilution forweak and strong electrolytes.
13/07/2023	1.2.2 Kohlrausch law of independent migration of ions
17/07/2023	1.2.3 Applications of conductance measurements: determination of degree of ionization and ionization constant of weak electrolyte,
19/07/2023	Solubility and solubility product of sparingly soluble salts, ionic product of water. (Numericals expected).
20/07/2023	1.2.4 Transference number and its experimental determination using Moving boundary method.
24/07/2023	(Numericals expected). Factors affecting transference number.
	Unit-II Inorganic chemistry
	Chemical Bonding
	2.1 Non-Directional Bonding
26/07/2023	2.1.1 Ionic Bond: Conditions for the Formation of Ionic Bond. Types of Ionic Crystals
27/07/2023	2.1.3 Radius Ratio Rules
31/07/2023	2.1.4 Lattice Energy, Borne-Lande Equation 2.1.5 Kapustinski Equation
02-08-2023	2.1.6 Born-Haber Cycle and its Application
	2.2. Directional Bonding: Orbital Approach.
03-08-2023	2.2.1 Covalent Bonding The Valence Bond Theory- Introduction and basic tenets.
	2.2.2 Interaction between two hydrogen atoms and the Potential energy diagram of the resultant system
07-08-2023	2.2.3 Corrections applied to the system of two hydrogen atoms- Formation of H2
09-08-2023	2.2.4 Homonuclear diatomic molecules from He2 to Ne2
10-08-2023	2.2.5 Resonance and the concept of Formal Charge; Rules for Resonance or Canonical structures.
14-08-2023	2.2.6 Bonding in Polyatomic Species: The role of Hybridization. And types of hybrid orbitals-sp, sp2, sp3, sp3d, sp2d2and sp2d sp3d2.
	2.2.7 Equivalent and Non-Equivalent hybrid orbitals
17-08-2023	2.2.8 Contribution of a given atomic orbital to the hybrid orbitals (with reference to sp3 hybridisation as in CH4, NH3 and H2O and series like NH3, PH3, AsH3, BiH3)
	2.3 Molecular Orbital Theory (5L)
21-08-2023	2.3.1. Comparing Atomic Orbitals and Molecular Orbitals.
23/08/2023	2.3.2. Linear combination of atomic orbitals. to give molecular orbitals LCAO_x005f MO approach for diatomic homonuclear molecules).
24/08/2023	2.3.4. Wave mechanical treatment for molecular orbitals (H2+ and H2)
28/08/2023	2.3.4 Molecular orbital Theory and Bond Order and magnetic property: with reference to O2,O2+ O2-,O22- (Problems and numerical problems expected wherever possible)
30/08/2023	Numericals

	Unit III: Organic Chemistry
	3.1.1. Reactions and reactivity of halogenated hydrocarbons: [4L]
31/08/2023	**3.1.1.Alkyl halides: Nucleophilic substitution reactions: SN1, SN2 and SNi mechanisms with stereochemical aspects**
04-09-2023	Factors affecting nucleophilic substitution reactionsnatureof substrate, solvent, nucleophilic reagent and leaving group.
06-09-2023	3.1.2.Aryl halides: Reactivity of aryl halides towards nucleophilic substitution reactions.
07-09-2023	Nucleophilic aromatic substitution (SNAr) addition-elimination mechanism andbenzyne mechanism
11-09-2023	**3.1.2.Organomagnesium and organolithium compounds: [3L]** Nomenclature, nature, type and reactivity of carbon-metal bond.
13/09/2023	Preparation using alkyl / aryl halide.
14/09/2023	Structure, stability and reactions with compounds containing acidichydrogen, carbonyl compounds, CO2, cyanides and epoxides.
	3.2 Alcohols, phenols and epoxides: [8L]
18/09/2023	3.2.1.Alcohols: Nomenclature, Preparation: Hydration of alkenes, hydrolysis of alkylhalides,
25/09/2023	Reduction of aldehydes and ketones, using Grignard reagent. Properties:Hydrogen bonding,
27/09/2023	Types and effect of hydrogen bonding on different properties.Acidity of alcohols, Reactions of alcohols
04-10-2023	3.2.2.Phenols: Preparation, physical properties and acidic character. Comparative acidicstrengths of alcohols and phenols,
05-10-2023	Resonance stabilization of phenoxide ion. Reactionsof phenols.
	3.2.3.Epoxides: Nomenclature, methods of preparation and reactions of epoxides:
09-10-2023	Reactivity,ring opening reactions by nucleophiles (a) In acidic conditions: hydrolysis, reactionwith halogen halide, alcohol, hydrogen cyanide. (b) In neutral or basic conditions: ammonia, amines, Grignard reagents, alkoxides.

S.Y.B.Sc Chemistry II Sem III

Date	Topic
06-12-2023	1.1 Chemical Kinetics-II (7L) 1.1.1 Types of Complex Chemical reactions:
13/06/23	Reversible or opposing, consecutive and parallel reactions (No derivations, only examples expected),
17/06/23	Thermal chain reactions: H. and Br. reaction. (only steps involved, no kinetic expression expected).
19/06/23	1.1.2 Effect of temperature on the rate of reaction,
20/06/23	Arrhenius equation, Concept of energy of activation (Ea). (Numericals expected).
24/06/23	1.1.3 Theories of reaction rates: Collision theory and activated complex theory of bimolecular reactions.
26/06/23	Comparison between the two theories (Qualitative treatment only
	1.2 Solutions: (8 L) 1.2.1 Thermodynamics of ideal solutions: Ideal solutions and Raoult's law,
27/06/23	deviations from Raoult's law–non-ideal solutions. Vapour pressure-composition and
07-01-2023	temperature -composition curves of ideal and non-ideal solutions.
07-03-2023	Distillation of solutions.Lever rule.Azeotropes.
07-04-2023	1.2.2 Partial miscibility of liquids: Critical solution temperature;
07-08-2023	effect of impurity on partial miscibility of liquids with respect to Phenol-Water , Triethanolamine – Water and Nicotine – Water systems
07-10-2023	1.2.3 Immiscibility of liquids- Principle of steam distillation.
07-11-2023	1.2.4 Nernst distribution law and its applications, solvent extractio

	Unit-II
15/07/23	Selected topics on p block elements (15L) 2.1 Chemistry of Boron compounds
17/07/23	2.1.1 Electron deficient compounds – BH3, BF3, BCl3 with respect to Lewis acidity and applications.
18/07/23	2.1.2 Preparation of simple boranes like diborane and tetraborane.
22/07/23	2.1.3 Structure and bonding in diborane and tetraborane (2e-3c bonds)
24/07/23	2.1.4 Synthesis of Borax.
25/07/23	2.2 Chemistry of Silicon and Germanium
08-01-2023	2.2.1 Silicon compounds: Occurrence , Structure and inertness of SiO2
08-05-2023	2.2.2 Preparation of structure of SiCl4
08-07-2023	2.2.3 Occurrence and extraction of Germanium
08-08-2023	2.2.4 Preparation of extra pure Silicon and Germanium
08-12-2023	2.3 Chemistry of Nitrogen family
14/08/23	2.3.1 Trends in chemical reactivity - Formation of hydrides,
19/08/23	halides, oxides with special reference to oxides of nitrogen.
21/08/23	2.3.2 Oxides of nitrogen with respect to preparation and structure of NO, NO2, N2O and N2O4.
22/08/23	2.3.3 Synthesis of ammonia by Bosch – Haber process.
	Unit-III
26/08/23	**Unit III: Organic Chemistry Carbonyl Compounds: [15L]** 3.1 Nomenclature of aliphatic, alicyclic and aromatic carbonyl compounds.
28/08/23	Structure, reactivity of aldehydes and ketones and methods of preparation
29/08/23	Oxidation of primary and secondary alcohols using PCC, hydration of alkynes, action of Grignard reagent on esters
09-02-2023	Rosenmund reduction, Gattermann – Koch formylation and Friedel Craft acylation of arenes
09-04-2023	3.2 General mechanism of nucleophilic addition, and acid catalyzed nucleophilic addition reactions
09-05-2023	3.3 Reactions of aldehydes and ketones with NaHSO3, HCN, RMgX, alcohol, amine, phenyl hydra
09-09-2023	zine, 2,4-Dinitrophenyl hydrazine, LiAlH4 and NaBH4
09-11-2023	3.4 Mechanisms of following reactions: Benzoin condensation,
09-12-2023	Knoevenagel condensation
16/09/23	Claisen-Schmidt and Cannizzaro reaction
18/09/23	3.5 Keto-enol tautomerism: Mechanism of acid
23/09/23	3.6 Active methylene compounds:
25/09/23	Acetylacetone, ethyl acetoacetate diethyl malonate, stabilised enols
26/09/23	base catalysed enolization
30/09/23	Reactions of Acetylacetone and ethyl acetoacetate (alkylation, conversion to ketone, mono- and dicarboxylic acid)

S.Y.B.Sc S.Y.B.Sc Chemistry III Sem III

Date	Topic
11-09-2022	Separation Techniques in Analytical Chemistry 1.1. An Introduction to Analytical Separations and its importance in analysis. 1.2. Estimation of an analyte without effecting separation. 1.3. Types of separation methods 1.3.1. Based on Solubilities (Precipitation, Filtration Crystallisation) 1.3.2. Based on Gravity- Centrifugation 1.3.3. Based on volatility-Distillation ;
11-10-2022	1.3.4 Based on Electrical effects-Electrophoresis 1.3.5. Based on retention capacity of a Stationary Phase -Chromatography; 1.3.6. Based on distribution in two immiscible phases-Solvent Extraction; 1.3.7. Based on capacity to exchange with a resin-Ion Exchange;
15/11/2022	Electrophoresis: Principles, Basic Instrumentation
16/11/2022	Working and Application in separation of biomolecules like enzymes and DNA.
17/11/2022	Solvent extraction Introduction, Nernst distribution Law, Distribution Ratio, Partition Coefficient
22/11/2022	Conditions of extraction: Equilibration time, Solvent volumes
23/11/2022	Conditions of extraction: Temperature, pH.
24/11/2022	Single step and multi step extraction, Percentage extraction for single step
29/11/2022	Multistep extraction and Separation factor.
30/11/2022	Batch and continuous extraction
12-01-2022	Chromatography: Introduction to Chromatography
12-06-2022	Classification of chromatographic methods based on stationary phase mobile phase
12-07-2022	Paper Chromatography: Principle, techniques and applications of Paper Chromatography in separation of cations.
12-08-2022	Thin layer Chromatography Principle, technique
13/12/2022	Applications in determining the purity of a given solute; Following progress of a given reaction
14/12/2022	Potentiometry: 2.1.1. Principle.
15/12/2022	2.1.2. Role of Reference and indicator electrodes
20/12/2022	Applications in Neutralisation reactions
21/12/2022	Reference to the titration of a Strong acid against a Strong Base
22/12/2022	Graphical methods for detection of end points
01-03-2023	pHmetry: 2.2.1. Principle
01-04-2023	2.2.2. Types of pH meters.
01-05-2023	2.2.3. Principle, Construction Working and Care of Combined Glass electrode
01-10-2023	2.2.4. Applications in Titrimetry (Strtong acid-Strong Base) biological and environmental analysis.
01-11-2023	Conductometry: 2.3.1. Principle
01-12-2023	2.3.2. Conductivity cell its construction and car
17/1/2023	2.3.3. Applications in Neutralisation Titrimetry with respect to i. Strong Acid-Strong Base
18/1/2023	ii. Strong Acid-Weak Base iii. Strong Base-weak Acid
19/1/2023	iv. Weak Acid- Weak Base.
24/1/2023	2.3.4. Advantages & limitations of conductometric titrations.
25/1/2023	3.1.Nature of Indeterminate Errors: 3.1.1. The true and acceptable value of a result of analysis

31/1/2023	3.1.2. Measures of central tendency: mean, median. mode, average
02-01-2023	3.1.3. Measures of dispersion: Absolute deviation, relative deviation, relative average deviation, standard deviation,(s,sigma) variance, coefficient of variation
02-02-2023	3.2.Distribution of random errors: 3.2.1. Gaussian distribution curve.
02-07-2023	3.2.2. Equation and salient features of Gaussian distribution curve
02-08-2023	3.3.Concept of Confidence limits and confidence interval and its computation using (i) Population standard deviation
02-09-2023	(ii) Student's t test
14/2/2023	(iii) Range
15/2/2023	3.4.Criteria for rejection of doubtful result (i) 2.5 d rule
16/2/2023	(ii) 4.0 d rule (iii) Q test
21/2/2023	3.5.Test of Significance (i) Null hypothesis
22/2/2023	(ii) F-test (variance ratio test)
23/2/2023	3.6. Graphical representation of data and obtaining best fitting straight line (a) For line passing through origin
28/2/2023	(b) For line not passing through origin
03-01-2023	Numerical problems based on graphical representation
03-02-2023	Numerical problems
03-07-2023	Revision of Unit-I & II
03-09-2023	Revision of Unit-III & IV
14/3/2023	Question answer discussion
15/3/2023	Question answer discussion

T.Y.B.Sc. Chemistry (Physical & Analytical) Semester V

Date	Topic
16-06-2023	Analytical Chemistry UNIT III: OPTICAL METHODS 3.1 Atomic Spectroscopy: Flame Emission spectroscopy(FES) and Atomic Absorption Spectroscopy(AAS) 3.1.1 Introduction, Energy level diagrams, Atomic spectra, Absorption and Emission Spectra 3.1.2 Flame Photometry – Principle, Instrumentation (Flame atomizers, types of Burners, Wavelength selectors, Detectors)
16-06-2023	Syllabus discussion Physical Chemistry UNIT I 1.0 MOLECULAR SPECTROSCOPY
17-06-2023	Physical Chemistry UNIT I 1.1 Rotational Spectrum: Introduction to dipole moment,
20-06-2023	Physical Chemistry UNIT I polarization of a bond, bond moment, molecular structure, .
20-06-2023	Analytical Chemistry UNIT III 3.1.3 Atomic Absorption Spectroscopy – Principle, Instrumentation (Source, Chopper, Flame and Electrothermal Atomiser) 3.1.4 Quantification methods of FES and AAS – Calibration curve method, Standard addition method and Internal standard method.
21-06-2023	Physical Chemistry UNIT I Rotational spectrum of a diatomic molecule, rigid rotor, moment of inertia, energy levels, conditions for obtaining pure rotational spectrum,
21-06-2023	Analytical Chemistry UNIT III 3.1.5 Comparison between FES and AAS
22-06-2023	Analytical Chemistry UNIT III 3.1.6 Applications, Advantages and Limitations
23-06-2023	Physical Chemistry UNIT I selection rule, nature of spectrum, determination of internuclear distance and isotopic shift.

23-06-2023	Analytical Chemistry UNIT III 3.2 Molecular Fluorescence and Phosphorescence Spectroscopy 3.2.1 Introduction and Principle
24-06-2023	Physical Chemistry UNIT I 1.2 Vibrational spectrum: Vibrational motion, degrees of freedom, modes of vibration, vibrational spectrum of a diatomic molecule,
27-06-2023	Analytical Chemistry UNIT III 3.2.2 Relationship of Fluorescence intensity with concentration
27-06-2023	Physical Chemistry UNIT I simple harmonic oscillator, energy levels, zero point energy, conditions for obtaining vibrational spectrum, selection rule, nature of spectrum.
28-06-2023	Analytical Chemistry UNIT III 3.2.3 Factors affecting Fluorescence and Phosphorescence
30-06-2023	Physical Chemistry UNIT I 1.3 Vibrational-Rotational spectrum of diatomic molecule: energy levels, selection rule, nature of spectrum, P and R branch lines.
04-07-2023	Physical Chemistry UNIT I Anharmonic oscillator - energy levels, selection rule, fundamental band, overtones.
04-07-2023	Analytical Chemistry UNIT III 3.2.4 Instrumentation and applications
05-07-2023	Physical Chemistry UNIT I Application of vibrational-rotational spectrum in determination of force constant and its significance.
05-07-2023	Analytical Chemistry UNIT III 3.2.5 Comparison of Fluorimetry and Phosphorimetry
06-07-2023	Analytical Chemistry UNIT III 3.2.6 Comparison with Absorption methods
07-07-2023	Analytical Chemistry UNIT III 3.3 Turbidimetry and Nephelometry 3.3.1 Introduction and Principle
07-07-2023	Physical Chemistry UNIT I Infrared spectra of simple molecules like H2O and CO2.
08-07-2023	Physical Chemistry UNIT I 1.4 Raman Spectroscopy : Scattering of electromagnetic radiation, Rayleigh scattering, Raman scattering,
11-07-2023	Physical Chemistry UNIT I nature of Raman spectrum, Stoke's lines, anti-Stoke's lines, Raman shift,
11-07-2023	Analytical Chemistry UNIT III 3.3.2 Factors affecting scattering of Radiation: Concentration, particle size, wavelength, refractive index
12-07-2023	Physical Chemistry UNIT I quantum theory of Raman spectrum, comparative study of IR and Raman spectra, rule of mutual exclusion- CO2 molecule.
12-07-2023	Analytical Chemistry UNIT IV: METHODS OF SEPARATION – I 4.1 Solvent Extraction 4.1.1 Factors affecting extraction: Chelation, Ion pair formation and Solvation
13-07-2023	Analytical Chemistry UNIT IV: 4.1.2 Graph of percent extraction versus pH. Concept of [pH]1/2 and its significance (derivation not expected)
14-07-2023	Analytical Chemistry UNIT IV 4.1.3 Craig's counter current extraction: Principle, apparatus and applications
14-07-2023	Physical Chemistry Unit II 2.0 CHEMICAL THERMODYNAMICS 2.1.1Colligative properties: Vapour pressure and relative lowering of vapour pressure.
15-07-2023	Physical Chemistry Unit II Measurement of lowering of vapour pressure - Static and Dynamic method.
18-07-2023	Physical Chemistry Unit II 2.1.2 Solutions of Solid in Liquid:
18-07-2023	Analytical Chemistry UNIT IV 4.1.4 Solid phase extraction: Principle, process and applications with special reference to water and industrial effluent analysis.

19-07-2023	Physical Chemistry Unit II 2.1.2.1 Elevation in boiling point of a solution, thermodynamic derivation relating elevation in boiling point of the solution and molar mass of non-volatile solute.
19-07-2023	Analytical Chemistry UNIT IV 4.1.5 Comparison of solid phase extraction and solvent extraction.
20-07-2023	Analytical Chemistry UNIT IV 4.2 High Performance Liquid chromatography (HPLC) 4.2.1 Introduction and Principle Instrumentation- components with their significance: Solvent Reservoir, Degassing system, Pumps-(reciprocating pumps, screw driven- syringe type pumps, pneumatic pumps, advantages and disadvantages of each pump), Precolumn,
21-07-2023	Physical Chemistry Unit II 2.1.2.2 Depression in freezing point of a solution, thermodynamic derivation relating the depression in the freezing point of a solution and the molar mass of the non-volatile solute.
21-07-2023	Analytical Chemistry UNIT IV Sample injection system, HPLC Columns, Detectors(UV – Visible detector, Refractive index detector)
22-07-2023	Physical Chemistry Unit II Beckmann Method and Rast Method. Numericals
25-07-2023	Physical Chemistry Unit II 2.1.3 Osmotic Pressure : Introduction, thermodynamic derivation of Van't Hoff equation, Van't Hoff Factor.
25-07-2023	Analytical Chemistry UNIT IV 4.2.2 Qualitative and Quantitative Applications of HPLC
26-07-2023	Physical Chemistry Unit II Measurement of Osmotic Pressure - Berkeley and Hartley's Method, Reverse Osmosis.
26-07-2023	Analytical Chemistry UNIT IV 4.3 High Performance Thin Layer Chromatography (HPTLC) 4.3.1 Introduction and Principle Stationary phase, Sample application and mobile phase
27-07-2023	Analytical Chemistry UNIT IV 4.3.2 Detectors a) Scanning densitometer- Components. Types of densitometer- Single beam and Double beam b) Fluorometric Detector
28-07-2023	Physical Chemistry Unit II 2.2 CHEMICAL KINETICS 2.2.1 Collision theory of reaction rates : Application of collision theory to 1. Unimolecular reaction Lindemann theory
28-07-2023	Analytical Chemistry UNIT IV 4.3.3 Advantages, disadvantages and applications
01-08-2023	Physical Chemistry Unit II 2. Bimolecular reaction. (derivation expected for both)
01-08-2023	Analytical Chemistry UNIT IV 4.3.4 Comparison of TLC and HPTLC
02-08-2023	Physical Chemistry Unit II 2.2.2 Classification of reactions as slow, fast and ultra -fast. Study of kinetics of fast reactions by Stop flow method and Flash photolysis (No derivation expected).
02-08-2023	Analytical Chemistry UNIT II : CLASSICAL METHODS OF ANALYSIS (TITRIMETRY) 2.1 Redox Titrations (Numerical and word Problems are expected) 2.1.1 Introduction
03-08-2023	Analytical Chemistry UNIT II : 2.1.2 Construction of the titration curves and calculation of Esystem in aqueous medium in case of: (1) One electron system
04-08-2023	Physical Chemistry Unit III 3.0 NUCLEAR CHEMISTRY 3.1. Introduction: Basic terms-radioactive constants (decay constant, half life and average life) and units of radioactivity
04-08-2023	Analytical Chemistry UNIT II (2) Multielectron system
05-08-2023	Physical Chemistry Unit III 3.2 Detection and Measurement of Radioactivity:
08-08-2023	Physical Chemistry Unit III 3.2 Types and characteristics of nuclear radiations, behaviour of ion pairs in electric field,

08-08-2023	Analytical Chemistry UNIT II 2.1.3 Theory of redox indicators, Criteria for selection of an indicator Use of diphenyl amine and ferroin as redox indicators
09-08-2023	Physical Chemistry Unit III detection and measurement of nuclear radiations using G. M. Counter and Scintillation Counter.
09-08-2023	Analytical Chemistry UNIT II 2.2 Complexometric Titrations 2.2.1 Introduction, construction of titration curve
10-08-2023	Analytical Chemistry UNIT II 2.2.2 Use of EDTA as titrant and its standardisation, absolute and conditional formation constants of metal EDTA complexes, Selectivity of EDTA as a titrant.
11-08-2023	Physical Chemistry Unit III 3.3 Application of use of radioisotopes as Tracers : chemical reaction mechanism, age determination - dating by C14.
11-08-2023	Analytical Chemistry UNIT II Factors enhancing selectivity with examples. Advantages and limitations of EDTA as a titrant.
12-08-2023	Physical Chemistry Unit III 3.4 Nuclear reactions: nuclear transmutation (one example for each projectile), artificial radioactivity,
17-08-2023	Analytical Chemistry UNIT II 2.2.3 Types of EDTA titrations.
18-08-2023	Physical Chemistry Unit III 3.4 Q - value of nuclear reaction, threshold energy.
18-08-2023	Analytical Chemistry UNIT II 2.2.4 Metallochromic indicators, theory, examples and applications
19-08-2023	Physical Chemistry Unit III 3.5 Fission Process : Fissile and fertile material, nuclear fission, chain reaction, factor controlling fission process
22-08-2023	Physical Chemistry Unit III 3.5 multiplication factor and critical size or mass of fissionable material,
22-08-2023	Analytical Chemistry UNIT I :INTRODUCTION TO QUALITY CONCEPTS,CHEMICAL CALCULATIONS AND SAMPLING 1.1 Quality in Analytical Chemistry 1.1.1 Concepts of Quality, Quality Control and Quality Assurance
23-08-2023	Physical Chemistry Unit III nuclear power reactor and breeder reactor.
23-08-2023	Analytical Chemistry UNIT I 1.1.2 Importance of Quality concepts in Industry
24-08-2023	Analytical Chemistry UNIT I 1.1.3 Chemical Standards and Certified Reference Materials; Importance in chemical analysis
25-08-2023	Physical Chemistry Unit III 3.6 Fusion Process : Thermonuclear reactions occurring on stellar bodies and earth.
25-08-2023	Analytical Chemistry UNIT I Quality of material: Various grades of laboratory reagents
26-08-2023	Physical Chemistry Unit IV SURFACE CHEMISTRY 4.1.1 Adsorption: Physical and Chemical Adsorption, types of adsorption isotherms .
29-08-2023	Physical Chemistry Unit IV Langmuir's adsorption isotherm (Postulates and derivation expected).
29-08-2023	Analytical Chemistry UNIT I 1.2 Chemical Calculations (Numericals and word problems are expected)
30-08-2023	Physical Chemistry Unit IV B.E.T. equation for multilayer adsorption, (derivation not expected).
30-08-2023	Analytical Chemistry UNIT I 1.2.1 Inter conversion of various concentration units. (Conversion of concentration from one unit to another unit with examples)
31-08-2023	Analytical Chemistry UNIT I 1.2.1 Inter conversion of various concentration units. (Conversion of concentration from one unit to another unit with examples)
01-09-2023	Physical Chemistry Unit IV Determination of surface area of an adsorbent using B.E.T. equation.

01-09-2023	Analytical Chemistry UNIT I 1.2.2 Percent composition of elements in chemical compounds
02-09-2023	Physical Chemistry Unit IV 4.2 COLLOIDAL STATE 4.2.1 Introduction to colloids - Emulsions, Gels and Sols
05-09-2023	Physical Chemistry Unit IV 4.2.2 Electrical Properties : Origin of charges on colloidal particles,
05-09-2023	Analytical Chemistry UNIT I 1.2.2 Percent composition of elements in chemical compounds
06-09-2023	Physical Chemistry Unit IV Concept of electrical double layer, zeta potential, Helmholtz and Stern model.
06-09-2023	Analytical Chemistry UNIT I 1.3 Sampling 1.3.1 Purpose, significance and difficulties encountered in sampling
07-09-2023	Analytical Chemistry UNIT I 1.3.2 Sampling of solids: Sample size – bulk ratio, size to weight ratio, multistage and sequential sampling, size reduction methods,
08-09-2023	Physical Chemistry Unit IV Electro-kinetic phenomena - Electrophoresis,
08-09-2023	Analytical Chemistry UNIT I sampling of compact solids, equipments and methods of sampling of compact solids, sampling of particulate solids, methods and equipments used for sampling of particulate solids.
09-09-2023	Physical Chemistry Unit IV Electro-osmosis, Streaming potential,
12-09-2023	Physical Chemistry Unit IV Sedimentation potential; Donnan Membrane Equilibrium.
12-09-2023	Analytical Chemistry UNIT I 1.3.3 Sampling of liquids: Homogeneous and heterogeneous, Static and flowing liquids.
13-09-2023	Physical Chemistry Unit IV 4.2.3 Colloidal electrolytes : Introduction, micelle formation,
13-09-2023	Analytical Chemistry UNIT I 1.3.4 Sampling of gases: Ambient and stack sampling: Apparatus and methods for sampling of gases.
14-09-2023	Analytical Chemistry UNIT I 1.3.5 Collection, preservation and dissolution of the sample.
15-09-2023	Physical Chemistry Unit IV 4.2.4 Surfactants: Classification
15-09-2023	Revision of Analytical chemistry Unit-I
16-09-2023	Physical Chemistry Unit IV 4.2.4 Surfactants: applications of surfactants in detergents and food industry.
26-09-2023	Revision of physical chemistry Unit-I
26-09-2023	Revision of Analytical chemistry Unit-II
27-09-2023	Revision of physical chemistry Unit-II
27-09-2023	Revision of Analytical chemistry Unit-III
29-09-2023	Revision of physical chemistry Unit-IIII
29-09-2023	Revision of Analytical chemistry Unit-IV
30-09-2023	Revision of physical chemistry Unit-IV

T.Y.B.Sc. Inorganic Chemistry Sem V

Date	Topic
13-06-2023	Recaptulation of Basic Concepts in Chemistry
17/06/2023	**UNIT-III 3.1 Introduction: lanthanides and actinides Position in periodic table**
17/06/2023	Electronic configuration of lanthanides and actinides
19/06/2023	**3.2 Chemistry of Lanthanides with reference to** (i) lanthanide
20/06/2023	Contraction and its consequences
24/06/2023	(ii) Oxidation states (iii) Ability to form complexes

24/06/2023	(iv) Magnetic Properties
26/06/2023	Spectral properties
27/06/2023	3.3 :Occurrence, extraction and separation of lanthanides
01-07-2023	(i)Ion Exchange method
01-07-2023	(ii) Solvent extraction method (Principles and technique)
03-07-2023	3.4 Applications of lanthanides
	UNIT-IV
	4.1 Chemistry of Non-aqueous Solvents
08-07-2023	4.1.1Classification of solvents and
10-07-2023	importance of non-aqueous solvents
11-07-2023	4.1.2 Characteristics and study solvents with respect to (i) acid-base reactions
15/7/2023	(ii) redox reactions.
15/7/2023	1. liquid ammonia,
17/7/2023	2. dinitrogen tetra oxide as non-aqueous solvents
18/7/2023	**4.2 Comparative Chemistry of Group 16**
22/07/2023	4.2.1 Electronic configurations,
22/07/2023	Trends in physical properties,
24/07/2023	Allotropy
25/07/2023	4.2.2 Manufacture of sulphuric acid by Contact process.
01-08-2023	Manufacture of sulphuric acid by Contact process.
	4.3 Comparative Chemistry of Group 17 (5L)
05-08-2023	4.3.1Electronic configuration , General characteristics, anamolous properties of fluorine,
05-08-2023	comparative study of acidity of oxyacids of chlorine w.r.t acidity,
07-08-2023	oxidising properties and structures(on the basis of VSEPR theory)
08-08-2023	4.3.2 Chemistry of interhalogens with reference to preparations,
12-08-2023	properties and structures (on the basis of VSEPR theory) .
	UNIT-II
12-08-2023	**2.1 Structures of Solids**
14/8/2023	2.2.1 Explanation of terms viz.crystal lattice, lattice point,
19/8/2023	Unit cell and lattice constants.
19/8/2023	2.1.2 Closest packing of rigid spheres (hcp,ccp),
21/8/2023	Packing density in simple cubic,
22/8/2023	bcc and fcc lattices.
26/8/2023	Relationship between density, radius of unit cell and lattice parameters.
26/8/2023	2.1.3 Stoichiometric Point defects in solids (discussion on Frenkel
28/8/2023	Schottky defects expected).
29/8/2023	Numericals
	2.2 Superconductivity
02-09-2023	2.2.1 Discovery of superconductivity.
02-09-2023	2.2.2 Explanation of terms like superconductivity, transition, temperature, Meissner effect.
04-09-2023	2.2.3 Different types of super conductors viz.conventional superconductors,
05-09-2023	alkali metal fullerides, high temperature super conductors.
09-09-2023	2.2.4 Brief application of superconductors.
	UNIT-I
	1.1Molecular Symmetry
09-09-2023	1.1.1 Introduction and Importance of Symmetry in Chemistry.
09-11-2023	1.1.2 Symmetry elements and Symmetry operations.
09-12-2023	1.1.3 Concept of a Point Group with illustrations using the
16/9/2023	following point groups :(i)C□V (ii) D□h
16/9/2023	(iii) C2V (iv) C3v
	(v)C2h and (vi)D3h

	1.2 Molecular Orbital Theory for heteronuclear diatomic molecules and polyatomic species
18/9/2023	1.2.1 Comparision between homonuclear and heteronuclear diatomic molecules.
25/9/2023	1.2.2. Heteronuclear diatomic molecules like CO,
	NO and HCl,
	appreciation of modified MO diagram for CO.
26/9/2023	1.2.3 Molecular orbital theory for H3 and H3+ (correlation diagram expected).
30/9/2023	1.2.4. Molecular shape to molecular orbital approach in AB2 molecules.
30/9/2023	Application of symmetry concepts for linear and angular species considering σ-bonding only
	(Examples like : i) BeH2, ii) H2O).

T.Y.B.Sc Organic Chemistry Sem V

Date	Unit-I
14/06/23	Syllabus DISCUSSION AND BASIC
15/06/23	**Unit I 1.1 Mechanism of organic reactions (10 L)** 1.1.1 The basic terms & concepts: bond fission, reaction intermediates
15/06/23	electrophiles & nucleophiles, ligand, base,
16/06/23	electrophilicity vs. acidity & nucleophilicity vs basicity.
21/06/23	1.1.2 Neighbouring group participation in nucleophilic substitution reactions
22/06/23	participation of lone pair of electrons, kinetics and stereochemical outcome
22/06/23	1.1.3 Acyl nucleophilic substitution (Tetrahedral mechanism):
23/06/23	Acid catalyzed esterification of carboxylic acids (AAC2) and base promoted hydrolysis of esters (BAC2).
28/06/23	1.1.4 Pericyclic reactions, classification and nomenclature
30/06/23	1.1.4.1 Electro cyclic reactions (ring opening and ring closing), cycloaddition, sigma tropic Rearrangement, group transfer reactions, cheletropic reaction (definition and one example of each type)
	1.1.4.2 Pyrolytic elimination: Cope, Chugaev, pyrolysis of acetates
07-05-2023	**1.2 Photochemistry (5 L)** 1.2.1 Introduction: Difference between thermal and photochemical reactions.
07-06-2023	Jablonski diagram, singlet and triplet states, allowed and forbidden transitions, fate of excited molecules, photosensitization
07-06-2023	1.2.2 Photochemical reactions of olefins: photoisomerization, photochemical Rearrangement of 1,4- dienes (di- π methane)
07-07-2023	1.2.3 Photochemistry of carbonyl compounds: Norrish I, Norrish II cleavages. Photo reduction (e.g. benzophenone to benzpinacol)
	Unit-II
07-12-2023	**Unit II 2.1 Stereochemistry I (5 L)** 2.1.1 Molecular chirality and elements of symmetry:
13/07/23	Mirror plane symmetry, inversion center,
13/07/23	roation -reflection (alternating) axis.
14/07/23	2.1.2 Chirality of compounds without a stereo genic center
19/07/23	cummulenes and biphenyls
20/07/23	**2.2 Agrochemicals (4 L)** 2.2.1 General introduction & scope, meaning & examples of insecticides, herbicides, fungicide, rodenticide, pesticides, plant growth regulators
20/07/23	2.2.2 Advantages & disadvantages of agrochemicals
21/07/23	2.2.3 Synthesis & application of IAA (Indole Acetic Acid) & Endosulphan
26/07/23	2.2.4 Bio pesticides – Neem oil & Karanj oil

27/07/23	**2.3 Heterocyclic chemistry: (6 L)** 2.3.1 Reactivity of pyridine-N-oxide, quinoline and iso-quionoline.
27/07/23	2.3.2 Preparation of pyridine-N-oxide, quinoline (Skraup synthesis)
28/07/23	iso-quinoline (BischlerNapieralski synthesis).
08-02-2023	2.3.3 Reactions of pyridine-N-oxide: halogenation, nitration and reaction with NaNH2/liq.NH3, n-BuLi
08-03-2023	2.3.4 Reactions of quinoline and isoquinoline;.
08-03-2023	oxidation,reduction,nitration,halogenation and reaction with NaNH2/liq.NH3,n-BuLi
	Unit-III
08-04-2023	**Unit III 3.1 IUPAC (5 L)** IUPAC Systematic nomenclature of the following classes of compounds (including compounds upto two substituents / functional groups)
08-09-2023	3.1.1 Bicyclic compounds – spiro, fused and bridged (upto 11 carbon atoms) – saturated and unsaturated compounds
08-10-2023	3.1.2 Biphenyls
08-10-2023	3.1.3 Cummulenes with upto 3 double bonds
08-11-2023	3.1.4 Quinolines and isoquinolines
17/08/23	**3.2 Synthesis of organic compounds (10L)** 3.2.1 Introduction: Linear and convergent synthesis, criteria for an ideal synthesis,
17/08/23	concept of chemo selectivity and regioselectivity with examples, calculation of yields.
18/08/23	3.2.2 Multicomponent Synthesis: Mannich reaction
23/08/23	Biginelli reaction. Synthesis with examples (no mechanism)
24/08/23	3.2.3 Green chemistry and synthesis: Introduction: Twelve principles of green chemistry,
24/08/23	concept of atom economy and E-factor, calculations and their significance, numerical examples
25/08/23	i) green reagents: dimethyl carbonate
30/08/23	ii) Green starting materials: D-glucose iii) Green solvents : supercritical CO2 iv) Green catalysts: Bio catalysts
31/08/23	.2.4 Planning of organic synthesis i) synthesis of nitroanilines. (o&p) ii) synthesis of halobenzoic acid. (o&p
31/08/23	ii) Alcohols (primary / secondary / tertiary) using Grignard reagents. iv) Alkanes (using organo lithium compounds
	Unit-IV
08-01-2023	4.1 Spectroscopy I (5 L) 4.1.1 Introduction: Electromagnetic spectrum, units of wavelength and frequency
08-06-2023	4.1.2 UV – Visible spectroscopy: Basic theory, solvents, nature of UV-Visible spectrum, concept of chromophore, auxochrome, bathochromic and hypsochromic shifts, hyperchromic and hypochromic effects, chromophore-chromophore and chromophore-auxochrome interactions
08-07-2023	4.1.3 Mass spectrometry: Basic theory. Nature of mass spectrum. General rules of fragmentation.
08-07-2023	Importance of molecular ion peak, isotopic peaks, base peak, nitrogen rule, rule of 13 for determination of empirical formula and molecular formula
08-08-2023	Fragmentation of alkanes and aliphatic carbonyl compounds
13/8/23	**4.2 Natural Products: (10L)** 4.2.1. Terpenoids: Introduction, Isoprene rule, special isoprene rule and the gem-dialkyl rule
14/8/23	4.2.2 Citral: a) Structural determination of citral.
14/8/23	) Synthesis of citral from methyl heptenone
15/8/23	c) Isomerism in citral. (Cis and trans form).

27/8/23	4.2.3. Alkaloids Introduction and occurrence.
29/8/23	Hofmann's exhaustive methylation and degradation in: simple open chain and N – substituted monocyclic amines
	4.2.4 Nicotine: a) Structural determination of nicotine. (Pinner's work included)
21/8/23	b) Synthesis of nicotine from nicotinic acid c) Harmful effects of nicotine
21/8/23	4.2.5 Hormones: Introduction, structure of adrenaline (epinephrine), physiological action of adrenaline
21/8/23	Synthesis of adrenaline from a) Catechol b) p-hydroxybenzaldehyde (Ott's synthesis)

T.Y.B.Sc. Drugs and Dyes Sem V

Date	Topic
11-07-2022	Discovery of a Lead compound: Screening, drug metabolism studies
11-10-2022	Clinical observation, Lipinski's rule of 5
11-11-2022	Medicinal properties of compounds from Natural Sources: Antiinfective and anticancer properties of Turmeric (Curcumin)
11-12-2022	Development of drug: The Pharmacophore identification, modification of structure or functional group, Structure activity relationship (Sulphonamides).
14/11/2022	Structure modification to increase potency: Homologation, Chain branching and Extension of the structure.
15/11/2022	Computer assisted drug design
17/11/2022	Drug Metabolism: Introduction, Absorption, Distribution, Biotransformation, Excretion Different types of chemical transformation of drugs with specific examples.
18/11/2022	Chemotherapeutic Agents: Study of the following chemotherapeutic agents with respect to their chemical structure
19/11/2022	chemical class, therapeutic uses, side effects and introduction to MDR wherever applicable.
21/11/2022	Antibiotics and antivirals: Definition, Amoxicillin (Beta - lactum antibiotics) Cefpodoxime (Cephalosporins
24/11/2022	Doxycycline (Tetracyclines) Levofloxacin (Quinolones) (Synthesis from 2,3,4 – Trifluro - 1- nitrobenzene) Aciclovir/Acyclovir (Purines)
25/11/2022	Antimalarials: Types of malaria; Symptoms; Pathological detection during window period
26/11/2022	Chloroquine (3-Amino quinolones) Artemether(Benzodioxepins)
28/11/2022	Anthelmintics and AntiFungal agents Drugs effective in the treatment of Nematodes and Cestodes infestations. Diethyl carbamazine (Piperazines) Albendazole (Benzimidazoles) (Synthesis from 2- Nitroaniline)
12-01-2022	Clotrimazole (Imidazole) Fluconazole (Triazole) (Synthesis from 1- Bromo – 2,4-difluorobenzene)
12-02-2022	Antiamoebic Drugs Types of Amoebiasis Metronidazole, Ornidazole, Tinidazole (Imidazole) Synthesis of Metronidazole from glyoxal by Debus- Radziszewski imidazole synthesis route
12-03-2022	Antitubercular and Antileprotic Drugs Types of Tuberculosis; Symptoms and diagnosis of Tuberculosis. Types of Leprosy.
12-05-2022	General idea of Antibiotics used in their treatment. PAS (Amino salicylates) Isoniazide (Hydrazides) Pyrazinamide (Pyrazines) (+) Ethambutol (Aliphatic diamines)(Synthesis from 1- Nitropropane) Dapsone(Sulphonamides)(Synthesis from 4- Chloronitrobenzene)

12-08-2022	Clofazimine (Phenazines) Bedaquiline (Quinoline) Following combination therapy to be discussed: (i) Rifampin + Ethambutol + Pyrazinamide (ii) Rifampin + Isoniazide + Pyrazinamide
12-09-2022	Anti-Neoplastic Drugs Idea of malignancy; Causes of cancer Brief idea of Immuno Stimulants &Immuno depressants Lomoustine (Nitrosoureas
12-10-2022	Anastrozole(Triazoles) (Synthesis from 3,5-bis (bromomethyl) toluene) Cisplatin (Chloro Platinum) Vincristine, Vinblastine, Vindesine) (Vinca alkaloids)
12-12-2022	Anti-HIV Drugs Idea of HIV pathogenicity, Symptoms of AIDS AZT/Zidovudine, Lamivudine,DDI (Purines)
15/12/2022	Drug Intermediates: Synthesis and uses 1. 2,3,6-Triamino-6- hydroxypyrimidine from Guanidine 2. p-[2'-(5-Chloro-2-methoxy benzamido) ethyl]- benzenesulphonamide from Methyl-5-chloro-2-methoxybenzene
16/12/2022	3. 3-(p-Chlorophenyl)-3- hydroxypiperidine from 3-Chloroacetophenone 4. p-Acetyl amino benzenesulphonyl chloride from Aniline 5. Epichlorohydrine from propene
17/12/2022	Nano particles in Medicinal Chemistry Introduction; Carbon nano particles (structures) and Carbon nano tubes:
19/12/2022	Functionalization for Pharmaceutical applications Targeted drug delivery
22/12/2022	In vaccine (Foot and mouth disease) Use in Bio-physical treatment.
23/12/2022	Gold nano particles in treatment of: Cancer; Parkinsonism; Alzheimer. Silver nano particles: Antimicrobial activity.
24/12/2022	Drugs and Environmental Aspects Impact of Pharma-industry on environment,
01-02-2023	International regulation for human experimentation with reference to: "The Nuremberg Code" and "The Helsinki Declaration".
01-05-2023	Classification of Dyes based on Chemical Constitution and Synthesis of Selected Dyes
01-06-2023	i)Nitro Dye: Naphthol Yellow S
01-07-2023	ii) Nitroso Dye: Gambine Y
01-09-2023	iii)Azo dyes: a) Monoazo dyes: Orange IV *(from sulphanilic acid) & Eriochrome Black T* (from β- naphthol)
01-12-2023	b) Bisazo dyes: Congo Red* (from nitrobenzene) c) Trisazo Dye: Direct Deep Black EW* (from benzidine)
13/1/2023	iv)Diphenylmethane dye: Auramine O* (from N,N-dimethyl aniline)
14/1/2023	iv)Diphenylmethane dye: Auramine O* (from N,N-dimethyl aniline) v)Triphenylmethane dye: a) Diamine series: Malachite Green* (from benzaldehyde)
16/1/2023	b) Triamine series: Acid Magenta c) Phenol series: Rosolic acid
19/1/2023	vi)Heterocyclic Dyes: a) Thiazine dyes: Methylene Blue b) Azine dyes: Safranin T* (from o-toluidine)
20/1/2023	vii)Quinone Dyes: a) Naphthaquinone: Naphthazarin b) Anthraquinone Dyes: Indanthrene Blue* (from anthraquinone
21/1/2023	viii) Indigoid Dyes: Indigo* (from aniline + monochloroacetic acid)
23/1/2023	ix) Phthalocyanine Dyes: Monastral Fast Blue B

27/1/2023	Health and Environmental Hazards of Synthetic Dyes and their Remediation Processes Impact of the textile and leather dye Industry on the environment with special emphasis on water pollution
28/1/2023	Health Hazards: Toxicity of dyes w.r.t food colours.
30/1/2023	Effluent Treatment Strategies: Brief introduction to effluent treatment plants (ETP) Primary Remediation processes:(Physical Processes) Sedimentation, Aeration, Sorption (activated charcoal, fly ashetc.) Secondary Remediation processes: Biological Remediation – Biosorption, bioremediation and biodegradation Chemical Remediation: Oxidation Processes (chlorination), Coagulation-flocculation-Precipitation
02-02-2023	Biomedical uses of dyes i) Dyes used in formulations (Tablets, capsules, syrups etc) Indigo carmine, Sunset yellow, Tartrazine
01-03-2023	ii) Biological staining agents Methylene blue, Crystal violet and Safranine T
01-04-2023	iii) DNA markers Bromophenol blue, Orange G, Cresol red iv) Dyes as therapeutics Mercurochrome, Acriflavine, Crystal Violet, Prontosil
02-06-2023	Dyes used in food and cosmetics: i) Properties of dyes used in food and cosmetics ii) Introduction to FDA and FSSAI iii) Commonly used food colours and their limits
02-09-2023	Paper and leather dyes i) Structural features of paper and leather ii) Dyes applicable to paper and leather
02-10-2023	Miscellaneous dyes i) Hair dyes ii) Laser dyes
02-11-2023	iii) Indicators
13/2/2023	iv) Security inks iv) Coloured smokes and camouflage colours
16/2/2023	Definition of pigments, examples
17/2/2023	Properties of pigments, difference between dyes and pigments.
18/2/2023	Definition of Lakes and Toners
20/2/2023	Dyestuff Industry - Indian Perspective Growth and development of the Indian Dyestuff Industry
23/2/2023	Strengths, Weaknesses of the Dyestuff industry in India
24/2/2023	Opportunities and Challenges of the Dyestuff industry in India
25/2/2023	Make in India - Future Prospects of the Dye Industry
27/2/2023	Revision of Unit-I
03-02-2023	Revision of Unit- II
03-03-2023	Revision of Unit- III
03-04-2023	Revision of Unit- IV
03-06-2023	Test Conductance
03-09-2023	Test Conductance
03-10-2023	Test Conductance
03-11-2023	Test Conductance
13/3/2023	Test Conductance