LESSON PLAN- B.Sc(Hons.)1st SEMESTER Session: 2024-25

Name of teacher- Dr. Dayawati

Subject- DSC PAPER I General Chemistry-I

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024 29-7-2024 to 3-8-2024 5-8-2024 to 10-8-2024 12-8-2024 to 17-8-2024 20-8-2024 to 24-8-2024 27-8-2024 to 31-8-2024	Atomic Structure and Periodicity of Elements: Bohr's atomic model and its application, quantum numbers, their application and rules of electronic configuration, effective nuclear charge, shielding or screening effect, slater rules, variation of effective nuclear charge in periodic table. Periodic trends in atomic radii, ionic radii and its calculation, covalent radii, electronegativity, electron gain enthalpy, ionization enthalpy and factors affecting ionization energy. Pauling, Mullikan and Allred Rachow scales. Ionic Solids: Ionic bond and its characteristics and factors affecting, types of Bravais lattice, voids, packing in solids, determination of radius ratio of all voids, radius ratio rule and its limitations. Packing of ions in crystals, calculation of density and crystal structuresof ionic solids (NaCl, CsCl, ZnS, CaF2, Na2O), defect structures in crystal. Born-Landé equation with derivation, expression for lattice energy, Madelung constant, Born-Haber cycle and its application with examples, solvation energy. Semiconductors, types of semiconductors, valence bond and band theories (alloys excluded). Gaseous State-I: Elementary treatment of gas laws, kinetic gas equation and its derivation, deviations from ideal gas behaviour, compressibility factor (Z) and its variation with pressure and temperature for different gases,

2-9-2024 to7-9-2024 9-9-2024 to 14-9-2024	Van der Waals equation of state, its derivation and application in explaining real gas behavior, mention other equations of state (Bertheolot, Dielectric or Dieterici), Van der Waals equation expressed in virial form and calculation of Boyle temperature, critical temperature, critical pressure, critical volume and their determination. Isotherms of real gases and their comparison with Van der Waals isotherms, continuity of states, relationship between critical constants and Van der Waals constants, law of corresponding states, reduced equation of state.
16-9-2024 to 21-9-2024 23-9-2024 to 28-9-2024	Basics of Organic Chemistry and Stereochemistry: Electronic displacements and their applications, reactive intermediates, types of organic reactions and energy considerations. Methods of determination of reaction mechanism (product analysis, intermediates, isotope effects, kinetic and stereochemical studies).
30-9-2024 to 5-10-2024 7-10-2024 to 12-10-2024 14-10-2024 to 19-10-2024 21-10-2024 to 26-10-2024 4-11-2024 to 9-11-2024	Stereoisomerism: Optical activity and optical isomerism, asymmetry, chirality, enantiomers, diastereomers. Specific rotation, configuration and projection formulae: Newmann, Sawhorse, Fischer and their interconversion. Chirality in molecules with one and two stereocentres: meso configuration, racemic mixture and their resolution. Relative and absolute configuration: D/L and R/S designations. designations. Geometrical isomerism: cis-trans, syn-anti and E/Z notations using CIP rules.
11-11-2024 to 20-11-2024 23-11-2024 to 20-12-2024 21-12-2024 to 31-12-2024	Assignments, Viva, Test, Revision MDU examination Winter break

LESSON PLAN- B.Sc(Hons.)1st SEMESTER Session: 2024-25

Name of teacher- Dr. Ravinder Singh

Subject- DSC PAPER II General Chemistry-II

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	Chemical Bonding: Covalent bonds and their types, valence shell electron pair repulsion theory (VSEPR etc.). Valence bond theory (Heitler-London approach),and its limitations.
29-7-2024 to 3-8-2024	Bent rule, covalent character in ionic compounds, polarizing power and polarizability. Dipole moment and its applications, Fajan's rules and its applications. Molecular orbital theory and MO diagrams of heteronuclear diatomic molecules (CO, NO, HCl, CO2, HF etc) (idea of s-p mixing and orbital interaction to be given).
5-8-2024 to 10-8-2024	Gaseous State II: Degree of freedom and principle of equipartition of energy, Maxwell's distribution law of molecular velocities and energies, root mean square velocity, average velocity and most probable velocity and their relationship.
12-8-2024 to 17-8-2024	Mean free path and its derivation, collision diameter, collision number and collision frequency, viscosity of gases and effect of temperature and pressure on viscosity of gases, relationship between mean free path and coefficient of viscosity,
20-8-2024 to 24-8-2024	calculation of molecular diameter from coefficient of viscosity. Liquid State: Structure of liquids, properties of liquids – surface tension, refractive index, viscosity, vapour pressure and optical rotation

27-8-2024 to 31-8-2024	Alkanes and Alkenes Carbon-Carbon Sigma Bond: Chemistry of alkanes, methods of preparation of alkanes, physical and chemical properties. Free radical substitution: Halogenation – relative reactivity and selectivity.
2-9-2024 to7-9-2024	Carbon-Carbon Pi Bond: Structure and isomerism, general methods of preparation, mechanism of E1, E2, E1cB reactions, Saytzeff and Hoffmann eliminations. Reactions of alkenes: Electrophilic additions,
9-9-2024 to 14-9-2024	Markownikoff rule, syn and anti-addition, addition of H2 X2 , oxymercuration-demercuration, hydroboration-oxidation, ozonolysis, hydroxylation and polymerization.
16-9-2024 to 21-9-2024	Dienes: Classification, methods of preparation, chemical reaction: Diels Alder reaction, 1,2- and 1,4-addition reactions in conjugated dienes.
23-9-2024 to 28-9-2024	Mechanism of allylic and benzylic bromination in propene, 1-butene, toluene, ethyl benzene.
30-9-2024 to 5-10-2024	Alkynes: General methods of preparation, reactions of alkynes: acidity, electrophilic and
7-10-2024 to 12-10-2024	nucleophilic additions, hydration to form carbonyls.Aromatic Hydrocarbons:
14-10-2024 to 19-10-2024	Concept of aromaticity, Huckel rule, aromatic character of arenes,
21-10-2024 to 26-10-2024	cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples.
4-11-2024 to 9-11-2024	Electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/acylation with their mechanism. Directing effects of groups in electrophilic substitution reactions.

11-11-2024 to 20-11-2024 23-11-2024 to 20-12-2024 21-12-2024 to 31-12-2024	Assignments, Viva, Test, Revision MDU examination Winter break

LESSON PLAN- B.Sc1st SEMESTER Session: 2024-25 Name of teacher- Dr. Suman Bhatti,Dr. Pinki, Dr. Poonam Devi Class: B.Sc.1st sem(MINOR) Name of Subject: Basic Concepts of Chemistry Paper 1	
22nd–27thJuly	**Atomic Structure:** Atomic Models, Rutherford's model and its limitations, Bohr's model and its applications.
28thJuly	**SUNDAY**
29th-03rdAugust	Dual nature of matter and light,De Broglie's relationship,Heisenberg uncertainty principle.
04thAugust	**SUNDAY**
5th-10thAugust	Concept of orbitals,quantum numbers,shapes of s, p and d orbitals,
11thAugust	**SUNDAY**
12th-17thAugust	Rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule
18thAugust	**SUNDAY**
19th-24thAugust	Electronic configuration of atoms,stability of half-filled and completely filled orbitals.Shapes of s, p, d orbitals.
25thAugust	**SUNDAY**
26th–31stAugust	**Periodic table and atomic properties:** Brief history of the development of periodic table, modern periodic law and the present

	form of periodic table,.
1st September	**SUNDAY**
2nd -7th September	Periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii.
08th September	**SUNDAY**
9th-14th September	Periodic trends in properties of elements -Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
15th September	**SUNDAY**
16th-21st September	**Mole concept:** Atomic and molecular masses, mole concept and molar mass.
22nd September	**SUNDAY**
23th-28th September	Avogadro's number and its significance, percentage composition, empirical and molecular formula.
29th September	**SUNDAY**
30th Sep -05th October	Chemical reactions, Solution preparations (Molarity, Normality, molality, mole percentage, strength)Stoichiometric calculations involving reactants and product.
06th October	**SUNDAY**
07th-12th October	Fundamentals of Organic Chemistry: Electronic displacements: Inductive effect, electromeric effect, resonance, hyperconjugation.
13th October	**SUNDAY**
14th-19th October	Cleavage of bonds: homolysis and heterolysis. Reaction intermediates: carbocations, carbanions.

20th October	**SUNDAY**
21st–26th October	Reaction intermediates:free radicals, and carbenes. Electrophiles and nucleophiles.
27th October	**SUNDAY**
4th –9th November	Aromaticity: benzenoids and Huckel's rule.
10th November	**SUNDAY**
11th -16th November	Revision and test
17th November	**SUNDAY**
18th November onwards till Exams.	Test discussion

LESSON PLAN- B.Sc1st SEMESTER Session: 2024-25

Name of teacher- Dr. Rinki , Dr. Pinki , Nidhi Mann

Class: B.Sc.1st Sem(SEC)

Subject-Role of Chemistry in Society

22nd–27thJuly	**Analysis of soil: Composition of soil**
28thJuly	**SUNDAY**
29th-03rdAugust	Concept of pH and pH measurement of soil
04thAugust	**SUNDAY**
5th-10thAugust	Complexometric titrations, Chelation, Chelating agents, use of indicators
11thAugust	**SUNDAY**
12th-17thAugust	Estimation of Calcium and Magnesium ions in soil.
18thAugust	**SUNDAY**
19th-24thAugust	Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods.
25thAugust	**SUNDAY**
26th–31stAugust	water purification methods. Determination dissolved oxygen of a water sample.
1st September	**SUNDAY**

2nd -7th September	A general study including preparation and uses of the Hair dye, soap, shampoo.
08th September	**SUNDAY**
9th-14th September	Preparation and uses of the suntan lotions, face powder, lipsticks, talcum powder, nail enamel.
15th September	**SUNDAY**
16th-21st September	General introduction to pesticides (natural and synthetic), benefits and adverse effects
22nd September	**SUNDAY**
23th-28th September	Changing concepts of pesticides, brief introduction of structure activity relationship
29th September	**SUNDAY**
30th Sep -05th October	Synthesis and technical manufacture and uses of representative pesticides in the Organochlorines (Gammexene,); Organophosphates (Malathion).
06th October	**SUNDAY**
07th-12th October	Basic principle of pH metric, potentiometric and conductometric titrations
13th October	**SUNDAY**
14th-19th October	Applications of conductivity measurements: determination of degree of dissociation

20th October	**SUNDAY**
21st–26th October	Determination of Ka of acids and base, Buffer solution, Buffer action,
27th October	**SUNDAY**
4th –9th November	Henderson – Hazel equation, Buffer mechanism of buffer action.
10th November	**SUNDAY**
11th -16th November	Revision and test
17th November	**SUNDAY**
18th November onwards till Exams.	Test discussion

LESSON PLAN- B.ScChem. Hons. 3rd SEMESTER
Session: 2024-25

Name of teacher- Abhishek
Class- B.Sc. Chemistry Hons. 3rd SEM
Subject- Physical Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Chemical Equilibrium** Types of Reactions (Reversible and irreversible) Equilibrium state. Le-chatelier principle.
29-7-2024 to 3-8-2024	Law of mass action and its application to derive the law of chemicalequilibrium. Thermodynamically derivation of law of chemical equilibrium.
5-8-2024 to 10-8-2024	Equilibrium constant and free energy function, isotherms and reaction isochor, Classius -Claperon equation and its application.
12-8-2024 to 17-8-2024	**Revision and Assignment**
20-8-2024 t 24-8-2024	**Distribution Law** Nernst distribution law, Thermodynamic derivation of Nernst distribution law. Conditions for the validity of Nernst distribution law.
27-8-2024 to 31-8-2024	Derivation of molecular complexity from distribution law. Application of distribution law i.e. calculation of solubility of solute in solvent.
2-9-2024 to 7-9-2024	Determination of extent of association and dissociation of solute in the solvent, distribution indicator, process of extraction and determination of degree of hydrolysis and study of complex ion formation.

9-9-2024 to 14-9-2024	**Thermodynamics-I** Important terms used in thermodynamic system, surrounding, type of system intensiveand extensive property, state and path function and their differentials, thermodynamicequilibrium thermodynamic process
16-9-2024 to 21-9-2024	Concept of heat and work, first law ofthermodynamics, (statement and derivation). Internal energy and enthalpy, internalenergy and enthalpy change and their realtion.
23-9-2024 to 28-9-2024	Heat capacity. Heat capacity at constant volume and pressure and their relationship. Joule- Thomson effect and inversion temperature.
30-9-2024 to 5-10-2024	Calculation of W, Q, dv and the expansion of ideal gas under isothermal and adiabatic conditions for reversible processes.
7-10-2024 to 12-10-2024	**Revision, Test, Assignment**
14-10-2024 to 19-10-2024	**Colloidal States:** Colloids, classification of colloids, solids in liquids (sols) properties: Kinetic, optical andelectrical; stability of colloids
21-10-2024 to 26-10-2024	Protective colloids Hardy-schulze Rule, gold number,Emulsion types of emulsion and their preparation, Emulsifier.
4-11-2024 to 9-11-2024	**Gels(liquid in solids):** Classification and properties, inhibition and general application of colloids
11-11-2024 to 20-11-2024	**Revision, Test, Assignment**
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.ScChem. Homs. 3rd SEMESTER
Session: 2024-25

Name of teacher- Dr. Ravinder Singh
Class- B.Sc. Chemistry Hons. 3rd SEM
Subject- Organic Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Ultraviolet (UV) absorption spectroscopy** Ultraviolet (UV) absorption spectroscopy, absorption laws (Beer-Lambert law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome.

	Bathochromic, hypsochromic, hyperchromic and hypochromic shifts.
29-7-2024 to 3-8-2024	Woodward -Fieser rules, calculation of m a x of simple conjugated dienes
5-8-2024 to 10-8-2024	Woodward -Fieser rules, calculation of m a x of unsaturated ketones. UV spectra of conjugated enes ,enones, dienones, unsaturated acids, unsaturated esters, lactones, unsaturated amides and lactams.
12-8-2024 to 17-8-2024	**Revision, Test, Assignment**
20-8-2024 t 24-8-2024	**Alcohols** Classification and nomenclature. Monohydric alcohols, nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature.
27-8-2024 to 31-8-2024	**Alcohols** Classification and nomenclature. Monohydric alcohols, nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature.
2-9-2024 to 7-9-2024	Dihydric alcohol s — nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [Pb(OAc)4 and HIO4] and pinacol-pinacolone rearrangement
9-9-2024 to 14-9-2024	**Phenols** Nomenclature, structure and bonding. Preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion.
16-9-2024 to 21-9-2024	**Phenols** Reactions of phenols — electrophilic aromatic substitution, acylation and carboxylation. Mechanisms of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesch reaction, Lederer -Manasse reaction and Reimer - Tiemann reaction.
23-9-2024 to 28-9-2024	**Ethers and Epoxides** Nomenclature of ethers and methods of their formation, physical properties. Chemical reactions — cleavage and autoxidation, Ziesel's method. Synthesis of epoxides.
30-9-2024 to 5-10-2024	**Ethers and Epoxides** Acid and base -catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides
7-10-2024 to 12-10-2024	**Revision, Test, Assignment**
14-10-2024 to 19-10-2024	**Carboxylic Acids& Derivatives** Nomenclature, structure and bonding, physical properties, acidity of carboxylic acids, effects of substituents on acid strength.
21-10-2024 to 26-10-2024	Methods of formation and chemical reactions of halo acids. Hydroxy acids: malic, tartaric and citric acids.

4-11-2024 to 9-11-2024	Structure and nomenclature of acid chlorides, esters, amides (urea) and acid anhydrides. Relative stability of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Preparation of carboxylic acid derivatives, chemical reactions. Mechanisms of esterification and hydrolysis (acidic and basic)
11-11-2024 to 20-11-2024	**Revision, Test, Assignment**
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc(Hons.)3rd SEMESTER
Session: 2024-25

Name of teacher- **Dr. Anju Siwach**, Assistant Professor

Subject- Inorganic Chemistry I

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024 29-7-2024 to 3-8-2024 5-8-2024 to 10-8-2024 12-8-2024 to 17-8-2024	**Co-ordination Compounds:**General introduction Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds isomerism in coordination compounds, valence bond theory of transition metal complexes

20-8-2024 to 24-8-2024 27-8-2024 to 31-8-2024 2-9-2024 to7-9-2024 9-9-2024 to 14-9-2024	**Oxidation and Reduction:** Use of redox potential data - analysis of redox cycle, redox stability in water - Frost, Latimer and Pourbaix diagrams, Principles involved in the extraction of elements. **Non-aqueous solvents** Physical properties of solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2.
16-9-2024 to 21-9-2024 23-9-2024 to 28-9-2024	**Chemistry of Elements of First Transition Series-I**Definition, characteristic properties of d-block elements. Properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry.
30-9-2024 to 5-10-2024 7-10-2024 to 12-10-2024 14-10-2024 to 19-10-2024 21-10-2024 to 26-10-2024 4-11-2024 to 9-11-2024	**Chemistry of Elements of First Transition Series-II** Chemistry of Ti, V, Cr, Mn, Fe and Co in various oxidation states. Titanium – oxides, oxyions, peroxides and halides Vanadium – halides, oxides, vanadates and vanadyl compounds Chromium – halides, oxides, chromates & oxyhalides Manganese – oxides, permanganates, halides & acetates Iron – oxides and iron compounds Cobalt – oxides, sulphates, halides and Co(III) complexes.
11-11-2024 to 20-11-2024 23-11-2024 to 20-12-2024 21-12-2024 to 31-12-2024	Assignments, Viva, Test, Revision MDU examination Winter break

LESSON PLAN- B.Sc(Hons.) 5th SEMESTER Session: 2024-25

Name of teacher- **Dr.** .Ravinder Singh

Subject- Organic Chemistry I

22nd–27thJuly	**Spectroscopy** Principleofnuclearmagneticresonance,thePMRspectrum,numberofsignals,peakareas, equivalent and nonequivalent protons
28thJuly	**SUNDAY**
29th-03rdAugust	Positions of signals and chemical shift,shielding and deshielding of protons, proton counting,splitting of signals and coupling constants, magnetic equivalence of protons. Revision,Assignment, Test
04thAugust	**SUNDAY**
5th-10thAugust	DiscussionofPMRspectraofthemolecules:ethylbromide,n-propylbromide,isopropyl bromide, 1,1-dibromoethane, 1,1,2-tribromoethane
11thAugust	**SUNDAY**
12th-17thAugust	Discussion of PMR spectra of the molecules: ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde, acetophenone,*p*-anisidine and *p*-nitrotoluene. Simple problems on PMR spectroscopy for structure determination of organic compounds. Revision,Assignment, Test
18thAugust	**SUNDAY**
19th-24thAugust	**MassSpectroscopy**:Introduction,instrumentation,massspectrum,determinationof molecular formula, parent peak and base peak, recognition of molecular ion peak.
25thAugust	**SUNDAY**
26th–31stAugust	**MassSpectroscopy**:Fragmentationpatternofalkanes,alkenesandbenzene.
1st September	**SUNDAY**

2nd -7th September	**OrganosulphurCompounds** Nomenclature,structuralfeatures,Methodsofformationand chemicalreactionsofthiols, thioethers, sulphonic acids.
08th September	**SUNDAY**
9th-14th September	**OrganosulphurCompounds** Methods of formation andchemicalreactions of sulphonamides andsulphaguanidine. Synthetic detergents alkyl and aryl sulphonates. Revision,Assignment, Test
15th September	**SUNDAY**
16th-21st September	**Carbohydrates** Classificationandnomenclature.Monosaccharides,mechanismofosazon eformation, interconversion of glucose and fructose.
22nd September	**SUNDAY**
23th-28th September	**Carbohydrates** Chainlengtheningandchainshorteningofaldoses.Configurationofmono saccharides. Erythro and threo diastereomers.
29th September	**SUNDAY**
30th Sep -05th October	**Carbohydrates** OpenchainandcyclicstructureofD(+)-glucose&D(-)fructose.Mechanismofmutarotation.
06th October	**SUNDAY**
07th-12th October	**Carbohydrates** Structuresofriboseand deoxyribose.
13th October	**SUNDAY**
14th-19th October	**Carbohydrates**

	Anintroductiontodisaccharides(maltose,sucroseandlactose)
20th October	**SUNDAY**
21st–26th October	**Carbohydrates** Anintroductiontopolysaccharides(starchandcellulose)withoutinvolvingstructure determination.
27th October	**SUNDAY**
4th –9th November	**OrganometallicCompounds** Organomagnesiumcompounds:theGrignardreagents-formation,structureandchemicalreactions. Organolithiumcompounds:formationandchemicalreactions. Organozinc compounds: formation and chemical reactions. Organoleadcompounds:formationandchemical reactions.
10th November	**SUNDAY**
11th -16th November	**OrganometallicCompounds** Organocadmiumcompounds:formationandchemicalreactions. Organo copper compounds: formation and chemical reactions Revision,Assignment, Test
17th November	**SUNDAY**
18th November onwards till Exams.	Revision,Assignment, Test

LESSON PLAN- B.Sc(Hons.) 5th SEMESTER Session: 2024-25

Name of teacher- **Dr.** Anju Siwach

Subject- Organic Chemistry II

22nd–27thJuly	Heterocyclic Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine.
28thJuly	**SUNDAY**
29th-03rdAugust	Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives.
04thAugust	**SUNDAY**
5th-10thAugust	Comparison of basicity of pyridine, piperidine and pyrrole.

11thAugust	**SUNDAY**
12th-17thAugust	Introduction to condensed five and six- membered heterocycles. Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis
18thAugust	**SUNDAY**
19th-24thAugust	Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of indole, quinoline and isoquinoline
25thAugust	**SUNDAY**
26th–31stAugust	Organo Phosphorus Compounds Introduction.
1st September	**SUNDAY**
2nd -7th September	Nomenclature, Trivalent phosphorus compounds - trialkyl and triaryl phosphine (method of formation and reactions), Pentavalent phosphorus compounds, organic phosphoranes phosphorus ylides wittig reaction. Biological role of phosphorus.
08th September	**SUNDAY**
9th-14th September	Polymers: Brief history of macromolecular Science Natural polymers: Starch, cellulose silk resin Classification, types of polymerization Addition, condensation and their mechanisms(free radical, ionic and coordination - Ziegler Natta Catalyst), methods of polymerisation - bulk suspension, emulsion and solution.
15th September	**SUNDAY**
16th-21st September	Detailed study of following polymers with respect to synthesis, properties and applications. (I) Phenol formaldehydes resins. (II) Urea formaldehydes resins. (III) Polyesters (IV) Polyamides. (V) Natural and synthetic rubbers.
22nd September	**SUNDAY**
23th-28th September	1.Organic Synthesis via Enolates -hydrogens, alkylation of diethyl malonate and ethylαAcidity of acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate
29th September	**SUNDAY**
30th Sep -05th October	Alkylation of 1,3-dithianes. Alkylation and acylation of enamines Synthetic Dyes - Colour and constitution (electronic concept). Classification of dyes. Chemistry and synthesis of Methyl orange, Congo red, Malachite green, Crystal violet, Phenolphthalein, Fluorescein Alizarin and Indigo
06th October	**SUNDAY**
07th-12th October	Amino Acids, Peptides, Proteins and Nucleic Acids Classification, structure and stereochemistry of amino acids. Acid- base behavior, isoelectric point and electrophoresis.
13th October	**SUNDAY**
14th-19th October	Preparation -amino acids.αand reactions of alpha -amino acids.

Name of teacher- Dr. Anju Siwach
Class- B.Sc. Chemistry Hons. 5th SEM
Subject- Inorganic Chemistry I

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Unit 1:Metal - ligand Bonding in Transition Metal Complexes:** Valence bond theory and imitation of valence bond theory
29-7-2024 to 3-8-2024	An elementary idea of crystal-field theory, crystal field splitting in octahedral
5-8-2024 to 10-8-2024	Crystal field splitting in tetrahedral and square planar complexes
12-8-2024 to 17-8-2024	Factors affecting the crystal-field parameters.**Revision**
20-8-2024 t 24-8-2024	**Unit 2: Magnetic Properties of Transition Metal complexes:** Types of magnetic behaviour, methods of determining magnetic susceptibility
27-8-2024 to 31-8-2024	Spin-only formula and L-S coupling, correlation of □s and □eff values
2-9-2024 to 7-9-2024	orbital contribution to magnetic moments, application of magnetic moment data for 3d-metal complexes
9-9-2024 to 14-9-2024	**Thermodynamic and Kinetic Aspects of Metal Complexes:** A brief outlines of thermodynamic stability of metal complexes
16-9-2024 to 21-9-2024	Factors affecting the stability, substitution reactions of square planar complexes. **Test and Revision**
23-9-2024 to 28-9-2024	**Unit 3: Electron Spectra of Transition Metal Complexes:** Types of electronic transitions, selection rules of d-d transitions, spectroscopic ground states
30-9-2024 to 5-10-2024	Spectrochemical series, Orgel - energy level diagram for d1 and d9 states, discussion of the electronic spectrum of [Ti (H2O)6]3+

	complex ion.
7-10-2024 to 12-10-2024	**Hard and Soft Acids and Base (HSAB)**Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid-base strength and hardness and softness.
14-10-2024 to 19-10-2024	Symbiosis, theoretical basis of hardness and softness, electronegativity and hardness and softness.**Assignment**
21-10-2024 to 26-10-2024	**Unit 4: Silicons, Phosphazenes and S - N compounds:**Synthesis, properties nature of bonding, structures and applications of Silicons
4-11-2024 to 9-11-2024	Synthesis, properties nature of bonding, structures and applications of Phosphazenes
11-11-2024 to 20-11-2024	Synthesis, properties nature of bonding, structures and applications of S - N compounds **Test and Revision**
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc 5TH SEMESTER Session: 2024-25

Name of teacher- Dr. Rinki
Class- B.Sc. Chemistry Hons. 5th SEM
Subject- Inorganic Chemistry II

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Unit 1:Organometallic Chemistry-I :**Introduction of Organometallic Chemistry,Definition, Nature of Metal Carbon bond and some characteristics
29-7-2024 to 3-8-2024	classification of organometallic compounds by bond typesI)covalent ii) Ionic iii) Electron deficient iv) cluster compounds v) π bond compounds including sand witch derivatives
5-8-2024 to 10-8-2024	Bonding in, metalethylenic, metal-acetylenic complexes,
12-8-2024 to 17-8-2024	**Revision and Assignment**
20-8-2024 t 24-8-2024	**Unit 2: Organometallic Chemistry-II:** Structure and

	bonding in Metal carbonyls, cyclopentadienyl derivative
27-8-2024 to 31-8-2024	Applications of organometallic compounds as homogeneous catalysts in hydrogenation, hydroformylation
2-9-2024 to 7-9-2024	Applications of organometallic compounds in polymerization, oligomerization
9-9-2024 to 14-9-2024	Applications of organometallic compounds in alkynes and Ziegler - Natta polymerization of ethylene and propylene
16-9-2024 to 21-9-2024	Metathesis reactions of alkenes**Test and Revision**
23-9-2024 to 28-9-2024	**Unit 3: Bio- Inorganic Chemistry:**Essential and Trace elements in biological processes,
30-9-2024 to 5-10-2024	Bioinorganic chemistry of haemoglobin and myoglobin,
7-10-2024 to 12-10-2024	vitamin B_{12}, carboxypeptidase A and chlorophyll,
14-10-2024 to 19-10-2024	Biological role of alkali and alkaline earth metal ions with nitrogen fixation (special reference to Ca^{2+}) **Assignment and Revision**
21-10-2024 to 26-10-2024	**Unit 4: Medicinal Chemistry:** Medicinal aspects of some metal complexes - platinum metal complexes as anticanceragents and their probable mechanism
4-11-2024 to 9-11-2024	Anticancer activity of cu, Co and Au complexes. Antibacterial and antiviral activity of metal complexes.
11-11-2024 to 20-11-2024	**Corrosion and Passivity:**Theories of corrosion, prevention of corrosion of metals, passivity**Test and Revision**
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc 5th SEMESTER Session: 2024-25

Name of teacher- Dr.Suman Bhatti
Class- B.Sc. Chemistry Hons. 5th SEM
Subject- Physical Chemistry I

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	Solution and collective - properties Ideal and Non-ideal solution. Methods of expressing concentrations of solution, activity and activity coefficient. Dilute solution. Colligative properties, Raoults law. Relative lowering of vapour pressure.
29-7-2024 to 3-8-2024	Dilute solution. Colligative properties, Raoults law. Relative lowering of vapour pressure.
5-8-2024 to 10-8-2024	Molecular weight determination, osmotic law of osmotic pressure and its measurements. Determination of molecular weight by osmotic pressure method.
12-8-2024 to 17-8-2024	Elevation of boiling point and depression in freezing point. Thermodynamic derivation of relation between molecular weighty and elevation in boiling point and depression in freezing point.
20-8-2024 t 24-8-2024	Experimental methods for determining various colligative properties. Abnormal molar mass. Degree of dissociation and association of solutes.
27-8-2024 to 31-8-2024	Rotational Spectroscopy Introduction of electromagnatic radiations, regions of the spectrum, basic features of different spectrometers.
2-9-2024 to 7-9-2024	Statement of the Born-Openheimer approximation, degree of freedom. of diatomic molecule. Energy level of a rigid rotor (semiclassical principle) selection rule, spectral intensity.
9-9-2024 to 14-9-2024	Distribution using population distribution (Maxwell- Boltzmann distribution) determination of bond length, qualitative description of nonregid rotator. Isotopic effect
16-9-2024 to 21-9-2024	Phase equilibrium Statement and meaning of the terms phase, component and degree of freedom. Phase rule and its thermodynamic derivation,
23-9-2024 to 28-9-2024	Phase equilibria of one component system, water and sulfur system, phase equilibria of two component system, solid-liquid equilibria, simple eutetic (Bi-Cd; Pb-silver system), De-solverisation of lead.
30-9-2024 to 5-10-2024	Solid solution: Compound formation with congruent melting point (Mg-Cu)and incongruent melting point (NaCl-Cu) (FeCl3 and CuSO4 - H2O) system freezing mixture, acetone, dry ice
7-10-2024 to 12-10-2024	Photo Chemistry: Interaction of radiation with matter. Photo chemical reactions and their difference with thermal reaction law of photo chemistry.
14-10-2024 to 19-10-2024	Grothus, Drapper law Stark Einstin law, Lambert law, Beer's law
21-10-2024 to 26-10-2024	Jablonski diagram depicting various processes occuring in the excited state qualitative description of Fluorescence,

4-11-2024 to 9-11-2024	phosphorescence non-radiation processes (internal conversion, inter system crossing) quantum yield photosensitized reactions energy transfer processes (some simple examples).
11-11-2024 to 20-11-2024	Unit Test
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc 5th SEMESTER Session: 2024-25

Name of teacher- Dr. Abhishek

Class: B.Sc. 5thSemester (Chem. Hons.)

Name of Subject: Physical Chemistry-II

22nd–27thJuly	**Statistical Thermodynamics:** Statistical thermodynamics of Maxwell Boltzmann distribution law.
28thJuly	**SUNDAY**
29th-03rdAugust	**Statistical Thermodynamics:** Maxwell-Boltzmannlaw and the concept of negative temperature.
04thAugust	**SUNDAY**
5th-10thAugust	**Statistical Thermodynamics:** Maxwell-Boltzmann law of distribution ofenergy and velocity (evaluation of energy.
11thAugust	**SUNDAY**
12th-17thAugust	**Statistical Thermodynamics:** Derivation of equation of states for amonatomic ideal gas.
18thAugust	**SUNDAY**
19th-24thAugust	**Nuclear Chemistry and Radioactivity:** Nature of radiation from radioactive substances nuclear structure and nuclear properties.
25thAugust	**SUNDAY**

26th–31st August	**Nuclear Chemistry and Radioactivity:** Nuclear reaction, radioactive disintegration series, kinetics of radioactive disintegration. Artificial transmutation of elements.
1st September	**SUNDAY**
2nd -7th September	**Nuclear Chemistry and Radioactivity:** Nuclear fission and nuclear fusion. Radio - carbondating , synthetic elements. Composition of nuclei: forces operating within the nucleus,nuclear stability and mass energy.
08th September	**SUNDAY**
9th-14th September	**Nuclear Chemistry and Radioactivity:** Types of nuclear reaction. The compound nuclear theory, scintillation counters. Activation analysis. Isotopic dilution and radioactivetitration application.
15th September	**SUNDAY**
16th-21st September	**Polymers Chemistry:** Polymerisation, classification of polymers, natural and synthetic polymers. Generalmethods of preparation. addition and condensation polymer's.
22nd September	**SUNDAY**
23th-28th September	**Polymers Chemistry:** Number average molecularweight, Weight average molecular weight.
29th September	**SUNDAY**
30th Sep -05th October	**Polymers Chemistry:** Determination of molecular weight byosmotic, pressure method, viscosity method, light scattering method, kinetics ofcondensation polymerization.
06th October	**SUNDAY**
07th-12th October	**Polymers Chemistry:** kinetics of chain polymerisation, kinetics of cationic,anonic and condensation polymerisation. Copolymerisation.
13th October	**SUNDAY**
14th-19th October	**Physical properties and Molecular structure:** Optical activity, polarization, clausius- mossotti equation, orientation of dipoles in electric field.
20th October	**SUNDAY**
21st–26th October	**Physical properties and Molecular structure:** Dipole moment, induced dipole moment, measurement of dipole moment bytemperature methods and refractivity method.
27th October	**SUNDAY**
4th –9th November	**Physical properties and Molecular structure:** Dipolmoment and chemical constitution,magnetic properties.
10th November	**SUNDAY**

11th -16th November	**Physical properties and Molecular structure:** paramagnetic diamagnetic ferrodynamic.
17th November	**SUNDAY**
18th November onwards till Exams.	Revision, Assignment, Test

Session: 2024-25

Name of teacher- Anil, Rinku, Nidhi Mann, Dr. Poonam Devi

Class- B.Sc. **(**Life Sciences/Physical Sciences)

Subject- DSC Paper – I Fundamental Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Unit–I** **Chemical Bonding and Molecular Structure** Ionic bond, lattice energy, Born-Haber cycle and its applications, Fajan's rules, hydration energy, bond moment, dipole moment and percentage ionic character.
29-7-2024 to 3-8-2024	Resonance and resonance energy: study of some inorganic and organic compounds. Molecular Orbital Approach: LCAO method, bonding and antibonding MOs and their characteristics for s-s, s-p and p-p combination of atomic orbitals, non- bonding combination of orbitals,
5-8-2024 to 10- 8-2024	MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as O2-, O22-, N2-, CO, NO+, CN-. Comparison of VB and MO approaches
12-8-2024 to 17-8-2024	**Unit–II** **p-Block Elements** Oxides – structures of oxides of N, P. Oxyacids – structure and relative acid strengths of oxyacids of nitrogen and phosphorus
20-8-2024 t 24-8-2024	. Structure of white, yellow and red phosphorus. Oxyacids of sulphur – structures and acidic strength, H2O2–structure, properties and uses. Basic properties of halogen, interhalogen compounds-types and properties, halogen-acids and oxyacids of chlorine – structure and comparison of acidic strength.
27-8-2024 to 31-8-2024	**Acids and Bases:** Brönsted–Lowry concept, conjugate acids and bases, relative strengths of acids and bases, effects of substituent and solvent, differentiating and levelling solvents
2-9-2024 to 7-9-2024	. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept.

9-9-2024 to 14-9-2024	**Unit–III** **Gaseous States** Maxwell's distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity.
16-9-2024 to 21-9-2024	Collision diameter, collision number, collision frequency and mean free path, deviation of real gases from ideal behaviour, derivation of Van der Waals Equation of state and its applications in the calculation of Boyle's temperature (compression factor),
23-9-2024 to 28-9-2024	explanation of behavior of real gases using Van der Waals equation.
30-9-2024 to 5-10-2024	**Critical Phenomenon:** Critical temperature, critical pressure, critical volume and their determination. PV isotherms of real gases, continuity of states, isotherms of Van der Waals equation, relationship between critical constants and Van der Waals constants, compressibility factor. Law of corresponding
7-10-2024 to 12-10-2024	**Unit–IV** **Basics of Organic Chemistry and Stereochemistry** Electronic displacements and its applications, reaction intermediates and concept of aromaticity.
14-10-2024 to 19-10-2024	Concept of isomerism, types of isomerism, optical isomerism, optical activity, elements of symmetry, molecular chirality, enantiomers, stereogenic centre,
21-10-2024 to 26-10-2024	properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers
4-11-2024 to 9-11-2024	, meso compounds, resolution of enantiomers, inversion, retention and racemization, relative and absolute configuration, sequence rules, R & S system of nomenclature.
11-11-2024 to 20-11-2024	Unit Test
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc 3rd SEMESTER **Session: 2024-25**

Name of teacher- Dr. Jyoti, Lokesh
Class- B.Sc. Pass Course (Medical and Non-medical)
Subject- Inorganic Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Unit 1: Chemistry of Elements of Ist transition series:** Definition of transition elements.
29-7-2024 to 3-8-2024	Position of lanthanides in the periodic table
5-8-2024 to 10-8-2024	General characteristics &properites of Ist transition elements.
12-8-2024 to 17-8-2024	Structures & properties of some compounds of transition elements – TiO2, VOCl2, FeCl3.
20-8-2024 t 24-8-2024	Structures & properties of some compounds of transition elements – CuCl2 and Ni (CO)4
27-8-2024 to 31-8-2024	**Unit 2: Chemistry of Elements of IInd&IIIrd transition series:**General characteristics and properties of the IInd and IIIrd trans ition elements
2-9-2024 to 7-9-2024	Comparison of properties of 3d elements with 4d & 5d elements with reference only to ionic radii, oxidation state.
9-9-2024 to 14-9-2024	Comparison of properties of 3d elements with 4d & 5d elements with reference only to magnetic and Spectral properties and stereochemistry. **Test and Revision.**
16-9-2024 to 21-9-2024	**Unit 3: Coordination Compounds:** Werner's coordination theory,
23-9-2024 to 28-9-2024	effective atomic number concept, chelates.
30-9-2024 to 5-10-2024	nomenclature of coordination compounds, isomerism in coordination compounds.

7-10-2024 to 12-10-2024	valence bond theory of transition metal complexes
14-10-2024 to 19-10-2024	**Unit 4: Non-aqueous Solvents**: Physical properties of a solvent,
21-10-2024 to 26-10-2024	types of solvents and their general characteristics
4-11-2024 to 9-11-2024	reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2
11-11-2024 to 20-11-2024	**Test, Revision, Assignments, Viva.**
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc 3rd SEMESTER Session: 2024-25

Name of teacher- Kiran Bala, Dr. Ruman Rani
Class- B.Sc. Pass Course (Medical and Non-medical)
Subject- Physical Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Unit 1: Thermodynamics-I** Definition of thermodynamic terms: system,surrounding etc.
29-7-2024 to 3-8-2024	Types of systems, intensive and extensive properties. State and path functions and their differentials. Thermodynamic process. Concept of heat and work.
5-8-2024 to 10-8-2024	Zeroth Law of thermodynamics, First law of thermodynamics: statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship

12-8-2024 to 17-8-2024	Joule's law – Joule – Thomson coefficient for ideal gass and real gas: and inversion temperature. **Test and Revision.**
20-8-2024 t 24-8-2024	**Unit 2: Thermodynamics-II** Calculation of w.q. dU&dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process.
27-8-2024 to 31-8-2024	Temperature dependence of enthalpy, Kirchoffs equation
2-9-2024 to 7-9-2024	Bond energies and applications o f bond energies.
9-9-2024 to 14-9-2024	**Unit 3: Chemical Equilibrium**Equilibrium constant and free energy, concept of chemical potential,
16-9-2024 to 21-9-2024	Thermodynamic derivation of law of chemical equilibrium. Temperature dependence of equilibrium constant; Van't Hoff reaction isochore, Van't Hoff reaction isotherm.
23-9-2024 to 28-9-2024	Le-Chatetier's principle and its applications Clapeyron equation and Clausius – Clapeyron equation its applications.
30-9-2024 to 5-10-2024	**Unit 4: Distribution Law** Nernst distribution law – its thermodynamic derivation,
7-10-2024 to 12-10-2024	Modification of distribution law when solute undergoes dissociation, association and chemical combination.
14-10-2024 to 19-10-2024	Applications of distribution law: (i) Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride.
21-10-2024 to 26-10-2024	) Determination of equilibrium constant of potassium tri-iodide complex and process of extraction.
4-11-2024 to 9-11-2024	**Test, Revision.**

11-11-2024 to 20-11-2024	**Assignments, Viva.**
23-11-2024 to 20-12-2024	**MDU examination**
21-12-2024 to 31-12-2024	**Winter break**

LESSON PLAN- B.Sc 3rdSEMESTER Session: 2024-25 Name of teacher- Dr. Poonam,, Manoj Subject- organic Chemistry	
WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	**Unit 1: Alcohols** Monohydric alcohols nomenclature, methods of formation by reduction of aldehydes, ketone.
29-7-2024 to 3-8-2024	Methods of formation by reduction of carboxylic acids and esters. Hydrogen bonding. Acidic nature.
5-8-2024 to 10- 8-2024	Reactions of alcohols. Dihydric alcohols — nomenclature, methods of formation, chemical reactions of vicinal glycols
12-8-2024 to 17-8-2024	**Unit 2 Epoxides** Synthesis of epoxides. Acid and base-catalyzed ring opening of epoxides, orientation of epoxide ring opening
20-8-2024 t 24-8-2024	Reactions of Grignard and organolithium reagents with epoxides
27-8-2024 to 31-8-2024	**Unit 3: Phenols** Nomenclature, structure and bonding. Preparation of phenols, physical propertiesand acidic character.
2-9-2024 to 7-9-2024	Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols — electrophilic aromatic substitution,

9-9-2024 to 14-9-2024	Mechanisms of Fries rearrangement,Claisen rearrangement, Reimer-Tiemann reaction, Kolbe's reaction. Schotten and Baumann reactions
16-9-2024 to 21-9-2024	**Unit 4: Ultraviole t (UV) absorption spectroscopy** Absorption laws (Beer-Lambert law), molar absorptivity, presentation and analysis of UV spectra Types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome
23-9-2024 to 28-9-2024	.Bathochromic, hypsochromic, hyperchromic andhypochromic shifts. UV spectra of conjugated enes and enones Woodward- Fieser rules, calculation of max of simple conjugated dienes and , -unsaturated ketones. Applications o f UV Spectroscopy in structure elucidation of simple organic compounds.
30-9-2024 to 5-10-2024	**Unit 5: Carboxylic Acids & Acid Derivatives** Nomenclatu re of Carboxylic acids, structure and bonding, physical properties, acidity of carboxylic acids,
7-10-2024 to 12-10-2024	Effects of substituents on acid strength. Preparation of carboxylic acids. Reactions of carboxylic acids.
14-10-2024 to 19-10-2024	Hell-Volhard-Zelinsky reaction. Reduction of carboxylic acids. Mechanism of decarboxylation. Structure , nomenclature and preparation of acid chlorides,
21-10-2024 to 26-10-2024	Structures, nomenclature and preparation of esters, amides and acid anhydrides. Relative stability of acyl derivatives. Phys ical properties,

	interconvers ion of acid derivatives by nucleophilic acyl substitution.
4-11-2024 to 9-11-2024	Mechanisms of esterification and hydrolysis (acidic and basic)
11-11-2024 to 20-11-2024	Assignments, Viva, Test, Revision
23-11-2024 to 20-12-2024	MDU examination
21-12-2024 to 31-12-2024	Winter break

LESSON PLAN- B.Sc5th SEMESTER Session: 2024-25

Name of teacher- Bhupender Singh, Rekha Gautam

Subject- Inorganic Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	Metal-ligand Bonding in Transition Metal Complexes Limitations of valence bond theory,
29-7-2024 to 3-8-2024	an elementary idea of crystal-field theory, crystal field split ting in octahedral
5-8-2024 to 10-8-2024	crystal field split tetrahedral and square planar complexes,
12-8-2024 to 17-8-2024	factors affecting the crystal-field parameters
20-8-2024 t 24-8-2024	Thermodynamic and Kinetic Aspects of Metal Complexe
27-8-2024 to 31-8-2024	A brief outline of thermodynamic stability of metal complexes and factors affecting the stability,
2-9-2024 to 7-9-2024	substitution reactions of square planar complexes of Pt(II)
9-9-2024 to 14-9-2024	Magnetic Properties of Transition Metal Complexe Types of magnetic behaviour

16-9-2024 to 21-9-2024	methods of determining magnetic susceptibility, spin-only formula.
23-9-2024 to 28-9-2024	L-S coupling, correlation of s and eff values, orbital contribution to magnetic moments, application of magnetic moment data for 3dmetal complexes.
30-9-2024 to 5-10-2024	Electron Spectra of Transition Metal Complexes Types of electronic transitions,
7-10-2024 to 12-10-2024	selection rules for d-d transitions, spectroscopic ground states, spectrochemical series.
14-10-2024 to 19-10-2024	Orgel-energy level diagram for d1 and d9 states,
21-10-2024 to 26-10-2024	discussion of the electronic spectrum of [Ti(H2O)6]3+ complex ion
4-11-2024 to 9-11-2024	Revision of Electron Spectra , Doubts
11-11-2024 to 20-11-2024	Assignments, Viva, Test, Revision
23-11-2024 to 20-12-2024	MDU examination
21-12-2024 to 31-12-2024	Winter break

LESSON PLAN- B.Sc 5th SEMESTER Session: 2024-25

Name of teacher- Sandeep Kumar, Praveen

Subject- Physical Chemistry

WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	Quantum Mechanic s-Black-body radiation, Plank's radiation law, photoelectric effect
29-7-2024 to 3-8-2024	heat capacity of solids, Compton effect, wave function and its significance of Postulates of quantum mechanics ,.
5-8-2024 to 10-8-2024	quantum mechanical operator, commutation relations, Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity,
12-8-2024 to 17-8-2024	Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously,
20-8-2024 t 24-8-2024	Determination of wave function & energy of a particle in one dimensional box, Pictorial representation and its significance
27-8-2024 to 31-8-2024	Physical Properties and Molecular Structure Optical activity, polarization – (clausius – Mossotti equation). Orientation of dipoles in an electric field, dipole moment,
2-9-2024 to 7-9-2024	, measurement of dipole moment-temperature method and refractivity method, dipole moment and
9-9-2024 to 14-9-2024	structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Application of magnetic susceptibility, magnetic properties – Para magnetism, diamagnetism and ferromagnetic.
16-9-2024 to 21-9-2024	Spectroscopy-I Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Born Oppenheimer approximation, Degrees of freedom..

23-9-2024 to 28-9-2024	Rotational Spectrum Diatomic molecules. Energy levels of rigid rotator (semi-classical principles), selection rules,
30-9-2024 to 5-10-2024	spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length, qualitative description of non-rigid rotor, isotope effect..
7-10-2024 to 12-10-2024	Vibrational spectrum Infrared spectrum: Energy levels of simple harmonic oscillator,
14-10-2024 to 19-10-2024	selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies,
21-10-2024 to 26-10-2024	effects of anharmonic motion and isotopic effect on the spectra., idea of vibrational frequencies of different functional groups.
4-11-2024 to 9-11-2024	Raman Spectrum: Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selectin rules, Quantum theory of Raman spectra
11-11-2024 to 20-11-2024	Assignments, Viva, Test, Revision
23-11-2024 to 20-12-2024	MDU examination
21-12-2024 to 31-12-2024	Winter break

LESSON PLAN- B.Sc 5th SEMESTER **Session: 2024-25** Name of teacher- Reena, Neeraj Subject- Organic Chemistry	
WEEKS	SYLLABUS
22-7-2024 to 27-7-2024	NMR Spectroscopy-I Principle of nuclear magnetic resonance, the PMR spectrum,number of signals, peak areas,.
29-7-2024 to 3-8-2024	equivalent and nonequivalent protons positions of signals and chemical shift,shielding and deshielding of protons,
5-8-2024 to 10-8-2024	proton counting,splitting of signals and coupling constants, magnetic equivalence of protons
12-8-2024 to 17-8-2024	NMR Spectroscopy-II Discuss ion of PMR spectra of the molecules: ethyl bromide, npropyl bromide, isopropyl bromide,
20-8-2024 t 24-8-2024	1,1-dibromoethane, 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene,
27-8-2024 to 31-8-2024	benzaldehyde and acetophenone. Simple problems on PMR spectroscopy for structure determination of organic compounds
2-9-2024 to 7-9-2024	Carbohydrates-I Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses.

9-9-2024 to 14-9-2024	Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose in to mannose. Formation of glycosides,.
16-9-2024 to 21-9-2024	ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose.
23-9-2024 to 28-9-2024	Mechanism ofmutarotation. Structures of ribose and deoxyribose
30-9-2024 to 5-10-2024	1. Carbohydrates-II An introduction to disaccharides (maltose, sucrose and lactose) and.
7-10-2024 to 12-10-2024	polysaccharides (starch and cellulose) without involving structure determination
14-10-2024 to 19-10-2024	2. Organometallic Compounds Organmagnesium compounds: the Grignard reagents-formation
21-10-2024 to 26-10-2024	, structure and chemical reactions. Organozinc compounds: formation and
4-11-2024 to 9-11-2024	chemical reactions. Organolithium compounds: formation and chemical reactions.
11-11-2024 to 20-11-2024	Assignments, Viva, Test, Revision
23-11-2024 to 20-12-2024	MDU examination
21-12-2024 to 31-12-2024	Winter break