Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 Semester: Odd

Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class: M.Sc. 1st Semester (Chemistry)

Name of Subject: Physical Chemistry-I (Quantum, Thermodynamics & Electrochemistry 24CHE201DS02)

5th August 2025 to 30th November 2025 [M.Sc. 1st Semester (Chemistry)]	
Week 1 **5th August to 9th August**	Elementary idea of quantum mechanics, Schrodinger wave equation for a particle in one dimensional box and its pictorial representation.
10th August	SUNDAY
Week 2 **11th August to 16th August**	Schrodinger wave equation for a particle in a three dimensional box, concept of degeneracy.Schrodinger wave equation for a linear harmonic oscillator & its solution by polynomial method, zero point energy of a particle possessing harmonic motion.
17th August	SUNDAY
Week 3 **18th August to 23rd August**	Schrodinger wave equation for three dimensional rigid rotator, energy of rigid rotator, space quantization.
24th August	SUNDAY
Week 4 **25th August to 30th August**	Schrodinger wave equation for hydrogen atom, separation of variable in polar spherical coordinates and its solution.
31st August	SUNDAY
Week 5 **1st September to 6th September**	Introduction to laws of thermodynamics, Law of mass action and its thermodynamic derivation. Classius-Clapeyron equation and its applications.
7th September	SUNDAY
Week 6 **8st September to 13th September**	Phase diagram for two completely miscible components system. Eutectic systems, calculation of eutectic point, systems forming solid compounds AxBy with congruent and incongruent melting points, phase diagram and thermodynamic treatment of solid solutions.
14th September	SUNDAY
Week 7 **15th September to 20th September**	Rate law for consecutive & parallel reactions (first order), ionic reactions: single and double sphere models, influence of solvent and ionic strength, chain reactions: hydrogen-bromine reaction& hydrogen-chlorine reaction.
21st September	SUNDAY
Week 8 **22nd September to 27th September**	Ortho-para hydrogen conversion, chain length, apparent activation energy of chain reactions. Photochemical reactions (hydrogen-bromine & hydrogen-chlorine reactions). RiceHerzfeld mechanism of organic molecules decomposition (ethane, acetaldehyde).
28th September	SUNDAY
Week 9 **29th September to 4th October**	Enzyme kinetics, Michaelis-Menton treatment, Lineweaver-Burk plot and Eadie–Hofstee methods. Competitive and noncompetitive inhibition.
5th October	SUNDAY
Week 10 **6th September to 11th October**	Debye-Huckel theory of ion-ion interaction and activity coefficient, applicability and limitations of Debye-Huckel limiting law

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 Semester: Odd

Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class: M.Sc. 1st Semester (Chemistry)

Name of Subject: Physical Chemistry-I (Quantum, Thermodynamics & Electrochemistry 24CHE201DS02)

12th October	SUNDAY
Week 11 **13th September to 18th October**	Its modification for finite-sized ions, effect of ion-solvent interaction on activity coefficient. Physical significance of activity coefficients, mean activity coefficient of an electrolyte.
19th October	SUNDAY Diwali Break
Week 12 **20th September to 25th October**	Debye-Huckel-Onsager treatment for aqueous solution and its limitations. Debye-Huckel Onsager theory for non-aqueous solutions, solvent effect on the mobility at infinite dilution,
26th October	SUNDAY
Week 13 **27th September to 1st November**	Equivalent conductivity (λeq) vs. concentration c1/2 as a function of solvent, effect of ion association upon conductivity (Debye-Huckel-Bjerrum equation).
2nd November	SUNDAY
Week 14 **3rd November – 8th November**	: Ionic movement under the influence of an electric field, mobility of ions, ionic drift velocity and its relation with current density,
9th November	SUNDAY
Week 15 **10th November – 15th November**	Einstein relation between absolute mobility and diffusion coefficient, Stokes-Einstein relation, Nernst-Einstein equation, Walden's rule.
16th November	Revision
Week 16 **16th November – 24th November**	**Revision, Assignment and Test**
23rd November	**SUNDAY**
Week 17 **24th November – 29th November**	**Revision, Assignment and Test**
30th November	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 Semester: Odd

Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh

Class: M.Sc. 1st Semester (Chemistry)

Name of Subject: Organic Chemistry-I (Organic Bonding, Reactions & Stereochemistry 24CHE201DS03)

5th August 2025 to 30th November 2025 [M.Sc. 1st Semester (Chemistry)]	
Week 1 **5th August to 9th August**	**Nature of Bonding in Organic molecules:** Delocalized chemical bonding, Conjugation, cross-conjugation, Hyperconjugation and Tautomerism
10th August	**SUNDAY**
Week 2 **11th August to 16th August**	**Nature of Bonding in Organic molecules:** Resonance, Aromaticity in benzenoid and non-benzenoid compounds, Huckel's rule, energy level of π-molecular orbitals, annulenes, antiaromaticity, homoaromaticity
17th August	**SUNDAY**
Week 3 **18th August to 23rd August**	**Nature of Bonding in Organic molecules:** Resonance, Aromaticity in benzenoid and non-benzenoid compounds, Huckel's rule, energy level of π-molecular orbitals, annulenes, antiaromaticity, homoaromaticity, PMO approach, alternant and non-alternant hydrocarbons.
24th August	**SUNDAY**
Week 4 **25th August to 30th August**	**Nature of Bonding in Organic molecules:** Bonds weaker than covalent, addition compounds, crown ether complexes and cryptands, inclusion compounds, cyclodextrins, catenanes and rotaxanes.
31st August	**SUNDAY**
Week 5 **1st September to 6th September**	**Revision, Assignment and Test**
7th September	**SUNDAY**
Week 6 **8st September to 13th September**	**Reaction Mechanism:** Structure and Reactivity: types of mechanisms, thermodynamic and kinetic requirements, kinetic and thermodynamic control, Hammond's postulates
14th September	**SUNDAY**
Week 7 **15th September to 20th September**	**Reaction Mechanism:** Potential energy diagrams, transition states and intermediates, methods of determining mechanisms, isotope effects.
21st September	**SUNDAY**
Week 8 **22nd September to 27th September**	**Reaction Mechanism:** Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes.
28th September	**SUNDAY**
Week 9 **29th September to 4th October**	**Reaction Mechanism:** Curtin-Hammett principle, Effect of structure on reactivity, Hammett equation and linear free energy relationship, substituent and reaction constants, Taft equation.
5th October	**SUNDAY**
Week 10 **6th September to 11th October**	**Revision, Assignment and Test**
12th October	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 Semester: Odd

Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh

Class: M.Sc. 1st Semester (Chemistry)

Name of Subject: Organic Chemistry-I (Organic Bonding, Reactions & Stereochemistry 24CHE201DS03)

Week 11 **13th September to 18th October**	**Elimination Reactions:** The E1, E2 and E1cB mechanisms, orientation of the double bond. Effect of substrate structures, attacking base, leaving group and medium on reactivity. Mechanism and orientation in pyrolytic elimination.
19th October	**SUNDAY**
Week 12 **20th September to 25th October**	**Addition to Carbon-Carbon Multiple Bonds:** Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, orientation and reactivity, addition to cyclopropane ring.
26th October	**SUNDAY**
Week 13 **27th September to 1st November**	**Addition to Carbon-Carbon Multiple Bonds:** Hydrogenation of double and triple bonds, hydrogenation of aromatic rings, hydroboration reaction, Michael reaction, Sharpless asymmetric epoxidation.
2nd November	**SUNDAY**
Week 14 **3rd November – 8th November**	**Stereochemistry:** **Revision, Assignment and Test**
9th November	**SUNDAY**
Week 15 **10th November – 15th November**	**Stereochemistry:** Chirality, elements of symmetry, molecules with more than one chiral center, diastereomerism, methods of resolution, optical purity. Prochirality, enantiotopic and diastereotopic atoms, groups and faces
16th November	**SUNDAY**
Week 16 **16th November – 24th November**	**Stereochemistry:** Asymmetric synthesis, Cram's rule and its modifications, Prelog's rule, conformational analysis of decalins. Optical activity in the absence of chiral carbon (Biphenyls, Allenesand Spiranes), chirality due to helical shape. Geometrical isomerism in alkenes and oximes, methods of determining the configuration.
23rd November	**SUNDAY**
Week 17 **24th November – 29th November**	**Revision, Assignment and Test**
30th November	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 Semester: Odd

Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class: M.Sc. 1st Semester (Chemistry)

Name of Subject: Inorganic Chemistry-I (Coordination Chemistry & Crystal Chemistry 24CHE201DS01)

5th August 2025 to 30th November 2025 [M.Sc. 1st Semester (Chemistry)]	
Week 1 **5th August to 9th August**	Metal-Ligand Bonding: Crystal field theory, spectrochemical series, calculation of CFSE for low and high spin complexes of 3d-series elements, applications of CFSE
10th August	SUNDAY
Week 2 **11th August to 16th August**	Limitations of crystal field theory, Jahn-Teller effect and its applications, ligand field theory, molecular orbital theory
17th August	SUNDAY
Week 3 **18th August to 23rd August**	M.O. diagrams of octahedral and square planar complexes including both σ and π bonding, factors affecting Δ*E*. (Assignment and Test)
24th August	SUNDAY
Week 4 **25th August to 30th August**	Reaction Mechanism of Octahedral Transition Metal Complexes-I: Inert and labile complexes, mechanisms for ligand replacement reactions, formation of complexes from aqua ions, ligand displacement reactions in octahedral complexes – acid hydrolysis, base hydrolysis,
31st August	SUNDAY
Week 5 **1st September to 6th September**	Anation reaction, H2O ligand exchange reactions, factors affecting ligand substitution in octahedral complexes (leaving-group effects, effects of spectator ligands, steric effects),
7th September	SUNDAY
Week 6 **8st September to 13th September**	Optical rotation, cotton effect, racemization of tris-chelate complexes, electrophilic attack on ligands. Thermodynamic aspects: Factors affecting stability of metal complexes, Irving–Williams series (Discussion and Revision)
14th September	SUNDAY
Week 7 **15th September to 20th September**	Reaction Mechanism of Square-Planar Transition Metal Complexes-II: Mechanism of ligand displacement reactions in square planar complexes and related numerical
21st September	SUNDAY
Week 8 **22nd September to 27th September**	Oxidative addition & reductive elimination reactions, trans effect and theories of trans effect, applications of trans effect
28th September	SUNDAY
Week 9 **29th September to 4th October**	Electron Transfer Processes: Types and mechanism-outer sphere electron transfer and inner sphere electron transfer reactions, electron exchange reactions,
5th October	SUNDAY
Week 10 **6th September to 11th**	Factors affecting rate of electron transfer reactions and role of non-bridging ligand on rate of electron transfer. (Revision and Assignment)

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 Semester: Odd

Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class: M.Sc. 1st Semester (Chemistry)

Name of Subject: Inorganic Chemistry-I (Coordination Chemistry & Crystal Chemistry 24CHE201DS01)

October	
12th October	SUNDAY
Week 11 **13th September to 18th October**	Isopoly and Heteropoly Acids and Salts of Mo & W: Isopoly acids and isopoly-ions, preparation and structure of paramolybdate and octamolybdate, heteropoly acids(only classification into six groups),
19th October	SUNDAY Diwali Break
Week 12 **20th September to 25th October**	Keggins's structure of 1:11 & 1:12–heteropoly acids and structure of 1:6 heteropoly acids and heteropoly blue.
26th October	SUNDAY
Week 13 **27th September to 1st November**	Crystal Structures: Structures of some binary and ternary crystalline solid such as fluorite, anti-fluorite, rutile, anti-rutile, Crystobalite,
2nd November	SUNDAY
Week 14 **3rd November – 8th November**	Layered lattices – CdI2, BiI3, ReO3, Mn2O3, NiAs, corundum, pervoskite, Ilmenite, calcite
9th November	SUNDAY
Week 15 **10th November – 15th November**	Nspinel & inverse spinel minerals, Well equation and tolerance factor (Revision and Discussion)
16th November	**SUNDAY**
Week 16 **16th November – 24th November**	**Stereochemistry:** Asymmetric synthesis, Cram's rule and its modifications, Prelog's rule, conformational analysis of decalins. Optical activity in the absence of chiral carbon (Biphenyls, Allenesand Spiranes), chirality due to helical shape. Geometrical isomerism in alkenes and oximes, methods of determining the configuration.
23rd November	**SUNDAY**
Week 17 **24th November – 29th November**	**Revision, Assignment and Test**
30th November	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Dr.Poonam Devi
Class: B.Sc. chemistry hons. 1st SEM

Paper Code: 24CHES401DS01

PaperNomenclature Discipline Specific Course chemistry

Week 1 **15July-19July 2025**	Atomic Structure and Periodicity of Elements: Bohr's atomic model and its application, quantum numbers, their application and rules of electronic configuration
20July	SUNDAY
Week 2 **21July-26July 2025**	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
27July	SUNDAY
Week 3 **28 July-2 August2025**	covalent radii, electronegativity, electron gain enthalpy, ionization enthalpy and factors affecting ionization energy. Pauling, Mullikan and Allred Rachow scales.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	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
10 August	SUNDAY
Week 5 **11August-16August2025**	Packing of ions in crystals, calculation of density and crystal structures of 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).
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	. Born-Landé equation with derivation, expression for lattice energy, Madelung constant, Born-Haber cycle and its application with examples,
24August	SUNDAY
Week 7 **25August-** **30August2025**	solvation energy. Semiconductors, types of semiconductors, valence bond and band theories (alloys excluded).
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	Gaseous State-I: Elementary treatment of gas laws, kinetic gas equation and its derivation, deviations from ideal gas behaviour,
7September	SUNDAY
Week 9 **8September-** **13September2025**	, compressibility factor (Z) and its variation with pressure and temperature for different gases, Van der Waals equation of state
14September	SUNDAY
Week 10 **15September-** **20September2025**	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,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	, critical temperature, critical pressure, critical volume and their determination. Isotherms of real gases and their comparison with Van der Waals isotherms, continuity of states
28September	SUNDAY
Week 12 **29September-4** **October 2025**	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,
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	, intermediates, isotope effects, kinetic and stereochemical studies). Stereoisomerism: Optical activity and optical isomerism, asymmetry, chirality, enantiomers, diastereomers. Specific rotation, configuration and projection formulae
12October **(14-22October)**	SUNDAY
Week 12 **24October-** **1November-2025**	: 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. Geometrical isomerism: cis-trans, synanti and E/Z

2November		SUNDAY
	Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Kiran Bala, Nidhi, Anil, Rinku, Manoj
Class: DSC-Life Science/Physical Science 1st Sem

Name of Course: DSCPaper Code: 24CHEM401DS01

PaperNomenclature: Fundamental Chemistry – I

Week 1 **15July-19July 2025**	**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
20July	SUNDAY
Week 2 **21July-26July 2025**	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
27July	SUNDAY
Week 3 **28 July-2 August2025**	non- bonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) andheteronuclear diatomic molecules such as O2 - , O2 2- , N2 - , CO, NO+ , CN- . Comparison of VB and MO approaches
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Revision and test**
10 August	SUNDAY
Week 5 **11August-16August2025**	**p-Block Elements** Oxides – structures of oxides of N, P. Oxyacids – structure and relative acid strengths of oxyacids of nitrogenand phosphorus. Structure of white, yellow and red phosphorus. Oxyacids of sulphur – structures and acidic strength
17 August	SUNDAY
Week 6 **18August-23 August2025**	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
24August	SUNDAY

Week 7 **25August-30August2(**	Acids and Bases: Brönsted–Lowry concept, conjugate acids and bases, relative strengths of acids and bases,
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	effects of substituent and solvent, differentiating and levelling solvents. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept
7September	SUNDAY
Week 9 **8September-** **13September2025**	**Revision and test**
14September	SUNDAY
Week 10 **15September-** **20September2025**	**Gaseous States** Maxwell's distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity. Collision diameter, collision number, collision frequency and mean free path, deviation of real gases from ideal behaviour,.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	derivation of Van der Waals Equation of state and its applications in the calculation of Boyle's temperature (compression factor), explanation of behavior of real gases using Van der Waals equation.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**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
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	relationship between critical constants and Van der Waals constants, compressibility factor. Law of corresponding states.
12October	SUNDAY

(14-22October)	Diwali Break
Week 14 **23October-25 Octobe**	**Basics of Organic Chemistry and Stereochemistry** Electronic displacements and its applications, reaction intermediates and concept of aromaticity. Concept of isomerism, types of isomerism, optical isomerism, optical activity, elements of symmetry, molecular chirality, enantiomers.
26 October	SUNDAY
Week15 **27 October-** **1November-2025**	stereogeniccentre, properties of enantiomers, chiral and achiral molecules with two stereogeniccentres, diastereomers, threo and erythro diastereomers, meso compounds,
2November	SUNDAY
Week 16 **3November-** **8November-2025**	resolution of enantiomers, inversion, retention and racemization, relative and absolute configuration, sequence rules, R & S system of nomenclature
9 November-2025	SUNDAY
Week 17 **10 November-** **15 November-2025**	**Revision and test**
16 November	SUNDAY
Week 18 **17 November-** **18 November-2025**	**Revision and test**

Summary of Lesson Plan of College Faculty
Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26 **Semester: Odd** **Name of Asstt./Ass. Prof. – Kiran Bala and Pinki Rani**

Class: SEC-Phys Science/Life Science 1st Sem

Name of Course: SECPaper Code: 24CHE401SE01

PaperNomenclature: Role of Chemistry in Society

Week 1 **15July-19July 2025**	Analysis of Soil and Water Composition of soil, concept of pH and pH measurement of soil,.
20July	SUNDAY
Week 2 **21July-26July 2025**	complexometric titrations, chelation, chelating agents, use of indicators, estimation of calcium and magnesium ions in soil.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods, determination of dissolved oxygen of a water sample
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Revision and test**
10 August	SUNDAY
Week 5 **11August-16August2025**	Chemistry in Cosmetics A general study including preparation and uses of the following: Hair dye, soap, shampoo
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	A general study including preparation and uses of the following: suntan lotions, face powder, lipsticks
24August	SUNDAY
Week 7 **25August-30August2**	A general study including preparation and uses of the following: talcum powder, nail enamel
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Revision and test**
7September	SUNDAY
Week 9 **8September-** **13September2025**	**Pesticides** General introduction to pesticides (natural and synthetic),
14September	SUNDAY
Week 10 **15September-** **20September2025**	benefits and adverse effects, changing concepts of pesticides,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	brief introduction of structure activity relationship, synthesis and technical manufacture
28September	SUNDAY
Week 12 **29September-4** **October 2025**	uses of representative pesticides in the following classes: organochlorines (gammexene), organophosphates (malathion).
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	**Revision and test**
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23October-25 Octobe**	**Experimental Techniques** Basic principle of pH metric, potentiometric titrations
26 October	SUNDAY

Week15 **27 October-** **1November-2025**	Basic principle ofapplications of conductometric titrations,conductivity measurements: determination of degree of dissociation
2November	SUNDAY
Week 16 **3November-** **8November-2025**	, determination of Ka of acids and base, buffer solution, buffer action, Henderson–Hazel equation, buffer mechanism of buffer action.
9 November-2025	**SUNDAY**
Week 17 **10 November-** **15 November-2025**	**Revision and test**
16 November	**SUNDAY**
Week 18 **17 November-** **18 November-2025**	**Revision and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – ANIL, Rinku
Class: B.Sc Physical Science/Life Science (Minor chemistry) 1ST SEM

Code: 24CHE401MI01

PaperNomenclature: Basic concepts of chemistry

Week 1 **15July-19July 2025**	**Atomic Structure**: Atomic models, Rutherford's model and its limitations, Bohr's model and its applications, Dual nature of matter and light.
20July	SUNDAY
Week 2 **21July-26July 2025**	De Broglie's relationship, Heisenberg uncertainty principle, Concept of orbitals, Quantum numbers, Shapes of s, p and d orbitals.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule.
3 August	SUNDAY
Week 4 **4 August-** **9 August2025**	Electronic configuration of atoms, Stability of half-filled and completely filled orbitals.
10 August	SUNDAY
Week 5 **11August-16August2025**	**Periodic Table and Atomic Properties:** Brief history of the development of periodic table, Modern periodic law and the present form of periodic table.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Periodic trends in properties of elements -Atomic radii, Ionic radii, Inert gas radii, Ionization enthalpy.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Periodic trends in properties of elements -Electron gain enthalpy, Electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Mole Concept**: Atomic mass, Mole concept and molar mass, Avogadro's number and its significance, Percentage composition.
7September	SUNDAY
Week 9 **8September-** **13September2025**	Empirical and molecular formula, Chemical reactions.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Ways of expressing concentration of solutions (Molarity, Normality, Molality, Mole percentage, Strength).
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Stoichiometric calculations involving reactants and products.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Fundamentals of Organic Chemistry**: Electronic displacements: Inductive effect, Electromeric effect
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Resonance, Hyperconjugation. Cleavage of bonds: Homolysis and Heterolysis
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23 October-** **25 october 2025**	Reaction intermediates: Carbocations, Carbanions
26 0ctober	SUNDAY

Week 15 **27 0ctober –** **1 November-2025**	Reaction intermediates: Free radicals and carbenes. Electrophiles and Nucleophiles
2 November 2025	SUNDAY
Week 16 **3 November-** **8 November 2025**	Aromaticity: Benzenoids and Huckel's rule
9 November 2025	SUNDAY
Week 17 **10 November-** **15 November-2025**	Revison and Test
Week 1 **15July-19July 2025**	**Chemistry of Transition series elements** General characteristics of transition metals, brief discussion of differences between the first, second and third transition series, stability of various oxidation states, magnetic and spectral properties.
20July	**16 November** SUNDAY
Week 2 **21July-26July 2025**	Binary compounds and complexes illustrating relative stability of their oxidation states.
27July	**Week 18** **17 November-** **18 November-2025** SUNDAY
Week 3 **28 July-2 August2025**	Chemistry of Ti, V, Cr, Mn, Fe, Co, Mo and W in various oxidation states, some important compounds as laboratory reagents: potassium dichromate, 19 NOVEMBER 2025 ONWARDS
3 August **EXAMINATION**	SUNDAY
Week 4 **4 August-9 August2025**	potassium permanganate, potassium ferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite.
10 August	SUNDAY
Week 5 **11August-** **16August2025**	**Thermodynamics-II** Third law of thermodynamics: Nernst heat theorem, concept of residual entropy, evaluation of absolute entropy from heat capacity data.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Gibbs and Helmholtz functions, Gibbs function (G) and Helmholtz function (A) as thermodynamic

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26

Name of Asstt./Ass. Prof. – Dr. POONAM NANDAL and DR. JYOTI

Class:B.S.c 2nd (Life Sciences/Physical Science)

Name of Course: Minor CoursePaper Code: 25CHEM403DS01

PaperNomenclature: Discipline Specific Course

	quantities, A & G as criteria for spontaneity
24August	SUNDAY
Week 7 **25August-** **30August2025**	Thermodynamic equilibrium and their advantage over entropy change. Variation of G and A with P, V and T. Partial molar quantities.
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	**Electrochemistry** Arrhenius theory of ionization, Ostwald's Dilution Law. Debye-Huckel–Onsager's equation for strong electrolytes (elementary treatment only),
7September	SUNDAY
Week 9 **8September-** **13September2025**	transport number, definition and determination by Hittorf's methods. Electrolytic conduction, factors affecting electrolytic conduction.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Applications of conductivity measurements: determination of dissociation constant (Ka) and degree of dissociation, determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pKa,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	buffer solution, buffer action, Henderson – Hasselbalch equation, buffer mechanism of buffer action. Reversible electrodes – Metal- metal ion gas electrode, metal – metal insoluble salt- anion electrode and redox electrode.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Alkyl and aryl halides Alkyl halide** Nomenclature and classes of alkyl halides, general methods of preparation, physical properties and chemical reactions, mechanisms (SN1, SN2, E1, E2 and E1cb)
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	stereochemistry of nucleophilic substitution reactions of alkyl halides with energy profile diagrams, elimination vs substitution reactions. Aryl halides: Methods of preparation, Reactions: Aromatic nucleophilic substitution

12October **(14-22October)**		SUNDAY Diwali Break
	Week 12 **24October-** **1November-2025**	effect of substituents on reactivity. Benzyne Mechanism: KNH2/NH3 (or NaNH2/NH3), reactivity and relative strength of C-halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.
2November		SUNDAY
	Week1 3 **3November-** **8November-2025**	Test and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Rekha Gautam and Neeraj
Class: B.Sc. 3rdSEMLife Science and Physical science

PaperName – Minor Course **Paper Code: 25CHE402MI01**

PaperNomenclature: Chemistry of Metals &Non Metals, Hydrocarbons andSolutions

Week 1 **15July-19July 2025**	Metal and Non-Metals Occurrence of elements in nature, physical and chemical properties of metals and non-metals
20July	SUNDAY
Week 2 **21July-26July 2025**	minerals and ores, metallurgical processes (benefaction, roasting, calcination and reduction of metal oxides processes),
27July	SUNDAY
Week 3 **28 July-2 August2025**	refining of metals, metallurgy of Fe, Zn, Al and Cu.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Solution Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions,
10 August	SUNDAY
Week 5 **11August-16August2025**	Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point
17 August	SUNDAY
Week 6 **18August-23 August2025**	depression in freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.
24August	SUNDAY
Week 7 **25August-30August2025**	Test and Problems
31 August	SUNDAY
Week 8 **1September-6September 2025**	Hydrocarbons Alkanes: General methods of preparation and Reactions: free radical substitution. Alkenes: General methods of preparation and Reactions: cis-addition (alk. KMnO4) and trans-addition (bromine),
7September	SUNDAY
Week 9 **8September-13September2025**	addition of HX (Markownikoff's and anti-Markownikoff's addition), hydration, ozonolysis,

	oxymecuration-demercuration, hydroboration oxidation
14September	SUNDAY
Week 10 **15September-** **20September2025**	Alkynes: General methods of preparation and Reactions: formation of metal acetylides and acidity of alkynes,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	addition of bromine and alkaline KMnO4, ozonolysis and oxidation with hot alk. KMnO4, hydration to form carbonyl compounds.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Aromatic Hydrocarbons Structure of benzene (Kekule, hybrid and resonance), preparation of benzene.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Reactions: electrophilic substitution reactions in benzene citing examples of nitration, halogenation, sulphonation
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Friedel-Craft's alkylation and acylation with special emphasis on carbocationic rearrangement, side chain oxidation of alkyl benzene.
2November	SUNDAY
Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak **Academic Sessio**
Semester: Odd
Name of Asstt./Ass. Prof. – Bhupender Singh, Praveen
Class: B.Sc. 3rd Medical/ Non Med. 5th SEM

Name of Course: B.Sc. Pass Course **Paper Code: C**

Paper Nomenclature: Physical Chemistry

Week 1 **15July-19July 2025**	**Quantum Mechanics-I** Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solids effect, wave function, and its significance of Postulates of quantum mechanics.
20July	SUNDAY
Week 2 **21July-26July 2025**	Quantum mechanical operator, commutation relations, Hamiltonian operator, Hermitia average value of square of Hermitian as a positive quantity, Role of operators i mechanics, to show quantum mechanically that position and momentum cannot be simultaneously.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Determination of wave function & energy of a particle in one dimensional box representation and its significance.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Physical Properties and Molecular Structure** Optical activity, polarization – (clausius – Mossotti equation).
10 August	SUNDAY
Week 5 **11August-16August2025**	Orientation of dipoles in an electric field, dipole moment, included dipole moment, meas dipole moment-temperature method and refractivity method, dipole moment and s molecules.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Magnetic permeability, magnetic susceptibility, and its determination. Application of mag susceptibility, magnetic properties – paramagnetism, diamagnetism and ferromagnetics.
24August	SUNDAY

Week 7 **25August-** **30August2025**	**Spectroscopy-I** Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectrosc statement of Bornoppenheimer approximation, Degrees of freedom.
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	**Rotational Spectrum** Diatomic molecules. Energy levels of rigid rotator (semi-classical principles).
7September	SUNDAY
Week 9 **8September-** **13September2025**	Selection rules, spectral intensity distribution using population distribution (Maxwell- distribution), determination of bond length, qualitative description of non-rigid rotor, isot
14September	SUNDAY
Week 10 **15September-** **20September2025**	**Spectroscopy-II** Vibrational spectrum Infrared spectrum: Energy levels of simple harmonic oscillato rules, pure vibrational spectrum, intensity, determination of force constant and qualitative force constant and bond energies.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Effects of anharmonic motion and isotopic effect on the spectra., idea of vibrational frequ different functional groups.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Raman Spectrum:** Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic selectin rules.
5 October	SUNDAY
	Quantum theory of Raman spectra.

Week 13 **6October-** **11October-2025**	
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **24October-** **1November-2025**	Revision
2November	SUNDAY
Week 15 **3November-** **8November 2025**	Revision

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26

Semester: Odd

Name of Asstt./Ass. Prof. – Rekha Gautam and Sandeep

Class: B.Sc. Non Medical and Medical 5th SEM

Paper Code: CH-501

PaperNomenclature: Inorganic Chemistry

Week 1 **15July-19July 2025**	Metal-ligand Bonding in Transition Metal Complexes, Limitations of valence bond theory, an elementary idea of crystal-field theory
20July	SUNDAY
Week 2 **21July-26July 2025**	crystal field splitting in octahedral, tetrahedral and square planar complexes,
27July	SUNDAY
Week 3 **28 July-2 August2025**	factors affecting the crystal- field parameters.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Thermodynamic and Kinetic Aspects of Metal Complexes: A brief outline of thermodynamic stability of metal complexes

10 August	SUNDAY
Week 5 **11August-16August2025**	factors affecting the stability
17 August	SUNDAY
Week 6 **18August-23 August2025**	substitution reactions of square planar complexes of Pt(II)
24August	SUNDAY
Week 7 **25August-30August2025**	Test and Problems
31 August	SUNDAY
Week 8 **1September-6September 2025**	Magnetic Properties of Transition Metal Complexes :Types of magnetic behaviour, methods of determining magnetic susceptibility
7September	SUNDAY
Week 9 **8September-13September2025**	spin-only formula. L-S coupling, correlation of u_s and u_{eff} values, orbital contribution to magnetic moments,
14September	SUNDAY
Week 10 **15September-20September2025**	application of magnetic moment data for 3dmetal complexes.
21September	SUNDAY
Week 11 **22September-27 September 2025**	Electron Spectra of Transition Metal Complexes Types of electronic transitions, selection rules for d-d transitions,
28September	SUNDAY

Week 12 **29September-4** **October 2025**	spectroscopic ground states, spectrochemical series
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Orgel-energy level diagram for d1and d9 states
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	discussion of the electronic spectrum of [Ti(H2O)6]3+complex ion
2November	SUNDAY
Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Neeraj and Reena
Class: B.Sc. Non Medical and Medical 5th SEM

Paper Code: CH-503

PaperNomenclature: Organic Chemistry

Week 1 **15July-19July 2025**	NMR Spectroscopy-I Principle of nuclear magnetic resonance, the PMR spectrum,number of signals
20July	SUNDAY
Week 2 **21July-26July 2025**	peak areas, equivalent and nonequivalent protons positions of signals and chemical shift,
27July	SUNDAY
Week 3 **28 July-2 August2025**	shielding and deshielding of protons, proton counting,splitting of signals and coupling constants, magnetic equivalence of protons.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	NMR Spectroscopy-II Discuss ion of PMR spectra of the molecules: ethyl bromide, npropyl bromide, isopropyl bromide, 1,1-dibromoethane
10 August	SUNDAY
Week 5 **11August-16August2025**	NMR Spectroscopy-II Discuss ion of PMR spectra of the molecules: 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Simple problems on PMR spectroscopy for structure determination of organic compounds.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Test and Problems
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	Carbohydrates-I Classification and nomenclature. Monosaccharides, mechanism of osazone formation,
7September	SUNDAY

Week 9 **8September-** **13September2025**	conversion of glucose and fructose, chain lengthening and chain shortening of aldoses
14September	SUNDAY
Week 10 **15September-** **20September2025**	Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose in to mannose
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose &D(-) fructose
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Mechanism ofmutarotation. Structures of ribose and deoxyribose.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Carbohydrates-II An introduction to disaccharides (maltose, sucrose and lactose)and polysaccharides (starch and cellulose) without involving structure determination.
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Organometallic Compounds :Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions
2November	SUNDAY
Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. –ANIL, RINKU LATHWAL
Class: DSC- physical Science 1st Sem

Name of Course: DSC Paper Code: 24CHEM401DS01

Paper Nomenclature: Fundamental Chemistry – I

Week 1 **15July-19July 2025**	**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
20July	SUNDAY
Week 2 **21July-26July 2025**	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
27July	SUNDAY
Week 3 **28 July-2 August2025**	non- bonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as O2 - , O2 2- , N2 - , CO, NO+ , CN- . Comparison of VB and MO approaches
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Revision and test**
10 August	SUNDAY
Week 5 **11August-16August2025**	**p-Block Elements** Oxides – structures of oxides of N, P. Oxyacids – structure and relative acid strengths of oxyacids of nitrogen and phosphorus. Structure of white, yellow and red phosphorus. Oxyacids of sulphur – structures and acidic strength
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	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
24August	SUNDAY

Week 7 **25August-30August2**	Acids and Bases: Brönsted–Lowry concept, conjugate acids and bases, relative strengths of acids and bases,
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	effects of substituent and solvent, differentiating and levelling solvents. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept
7September	SUNDAY
Week 9 **8September-** **13September2025**	**Revision and test**
14September	SUNDAY
Week 10 **15September-** **20September2025**	**Gaseous States** Maxwell's distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity. Collision diameter, collision number, collision frequency and mean free path, deviation of real gases from ideal behaviour,.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	derivation of Van der Waals Equation of state and its applications in the calculation of Boyle's temperature (compression factor), explanation of behavior of real gases using Van der Waals equation.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**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
5 October	SUNDAY

Week 13 **6October-** **11October-2025**	relationship between critical constants and Van der Waals constants, compressibility factor. Law of corresponding states.
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23October-25 Octobe**	**Basics of Organic Chemistry and Stereochemistry** Electronic displacements and its applications, reaction intermediates and concept of aromaticity. Concept of isomerism, types of isomerism, optical isomerism, optical activity, elements of symmetry, molecular chirality, enantiomers.
26 October	SUNDAY
Week 15 **27 October-** **1November-2025**	stereogenic centre, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers, meso compounds,
2November	SUNDAY
Week 16 **3November-** **8November-2025**	resolution of enantiomers, inversion, retention and racemization, relative and absolute configuration, sequence rules, R & S system of nomenclature
9 November-2025	
Week 17 **10 November-** **15 November-2025**	**Revision and test**
16 November	
Week 18 **17 November-** **18 November-2025**	**Revision and test**

SummaryofLessonPlanofCollegeFaculty

NameofCollege:Pt.NekiRamSharmaGovernmentCollege,RohtakAcademicSession2025-26 Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class:M.Sc.1st Semester(Chemistry)

NameofSubject:InorganicChemistry-I(CoordinationChemistry&CrystalChemistry24CHE201DS01)

Week10 6th Septemberto11th October	Factors affecting rate of electron transfer reactions and role of non-bridgingligandonrateofelectron transfer. (Revision and Assignment)
12th October	SUNDAY
Week11 13th Septemberto18th October	Isopoly and Heteropoly Acids and Salts of Mo & W: Isopoly acids and isopoly-ions, preparationand structure of paramolybdate and octamolybdate, heteropoly acids(only classification into six groups),
19th October	SUNDAY DiwaliBreak
Week12 20th Septemberto25th October	Keggins'sstructureof1:11&1:12–heteropolyacidsandstructureof1:6heteropolyacidsand heteropoly blue.
26th October	SUNDAY
Week13 27th Septemberto1st November	CrystalStructures:Structuresofsomebinaryandternarycrystallinesolidsuchasfluorite, anti-fluorite, rutile, anti-rutile, Crystobalite,
2nd November	SUNDAY
Week14 3rd November – 8th November	Layeredlattices–CdI2,BiI3,ReO3,Mn2O3,NiAs,corundum,pervoskite,Ilmenite,calcite
9th November	SUNDAY
Week15 10th November–15th November	Nspinel&inversespinelminerals,Wellequationandtolerancefactor(RevisionandDiscussion)
16th November	**SUNDAY**
Week16 16th November–24th November	**Stereochemistry:** Asymmetric synthesis, Cram's rule and its modifications, Prelog's rule, conformational analysis of decalins. Optical activity in the absence of chiral carbon (Biphenyls, Allenesand Spiranes), chirality due to helical shape. Geometrical isomerism in alkenes and oximes, methods of determining the configuration.
23rd November	**SUNDAY**
Week17 24th November–29th November	**Revision,AssignmentandTest**
30th November	**SUNDAY**

Summary o fLesson Planof College Faculty

NameofCollege:Pt.NekiRamSharmaGovernmentCollege,RohtakAcademicSession2025-26 Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class:M.Sc.1st Semester(Chemistry)

NameofSubject:InorganicChemistry-I(CoordinationChemistry&CrystalChemistry24CHE201DS01)

5th August2025to30th November2025 [M.Sc.1st Semester(Chemistry)]	
Week1 5th August to 9th August	Elementary idea of quantum mechanics, Schrodinger wave equation for a particle inonedimensional box and its pictorial representation.
10th August	SUNDAY
Week2 11th August to 16th August	Schrodinger wave equation for a particle in a three dimensional box, concept of degeneracy.Schrodinger waveequationforalinearharmonicoscillator&itssolutionbypolynomial method, zero point energy of a particle possessing harmonic motion.
17th August	SUNDAY
Week3 18th August to23rd August	Schrodingerwaveequationforthreedimensionalrigidrotator,energyofrigidrotator,space quantization.
24th August	SUNDAY
Week4 25th August to 30th August	Schrodinger wave equation for hydrogen atom, separation of variable in polar spherical coordinatesand its solution.
31st August	SUNDAY
Week5 1st September to6th September	Introduction to laws of thermodynamics, Law of mass action and its thermodynamic derivation.Classius-Clapeyron equation and its applications.
7th September	SUNDAY
Week6 8stSeptemberto13thSeptember	Phasediagramfortwocompletelymisciblecomponentssystem.Eutecticsystems,calculationof eutecticpoint,systemsformingsolidcompoundsAxBywithcongruentandincongruentmelting points,phasediagramandthermodynamictreatmentofsolidsolutions.
14th September	SUNDAY
Week7 15thSeptemberto20thSeptember	Ratelawforconsecutive&parallelreactions(firstorder),ionicreactions:singleanddoublesphere models,influenceofsolventandionicstrength,chainreactions:hydrogen-brominereaction& hydrogen-chlorine reaction.
21st September	SUNDAY
Week8 22ndSeptemberto27thSeptember	Ortho-parahydrogenconversion,chainlength,apparentactivationenergyofchainreactions. Photochemical reactions (hydrogen-bromine & hydrogen-chlorine reactions). RiceHerzfeld mechanism of organic molecules decomposition (ethane, acetaldehyde).
28th September	SUNDAY

Week9 29th Septemberto4th October	Enzymekinetics,Michaelis-Mentontreatment,Lineweaver-BurkplotandEadie–Hofsteemethods. Competitive and noncompetitive inhibition.

Summary o fLesson Planof College Faculty

NameofCollege:Pt.NekiRamSharmaGovernmentCollege,RohtakAcademicSession2025-26 Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki

Class:M.Sc.1st Semester(Chemistry)

NameofSubject:InorganicChemistry-I(CoordinationChemistry&CrystalChemistry24CHE201DS01)

5th October	SUNDAY
Week10 6th Septemberto11th October	Debye-Huckeltheoryof ion-ion interaction and activity coefficient, applicability and limitations of Debye-Huckel limiting law
12th October	SUNDAY
Week11 13th Septemberto18th October	Its modification for finite-sized ions, effect of ion-solvent interaction on activity coefficient. Physical significance of activity coefficients, mean activity coefficient of an electrolyte.
19th October	SUNDAY DiwaliBreak
Week12 20th Septemberto25th October	Debye-Huckel-Onsagertreatmentforaqueoussolutionanditslimitations.Debye-HuckelOnsager theory for non-aqueous solutions, solvent effect on the mobility at infinite dilution,
26th October	SUNDAY
Week13 27th Septemberto1st November	Equivalent conductivity (λeq) vs. concentration c1/2 as a function ofsolvent,effectofionassociation upon conductivity (Debye-Huckel-Bjerrum equation).
2nd November	SUNDAY
Week14 3rd November – 8th November	: Ionic movement under the influence of an electric field, mobility of ions, ionic driftvelocityandits relation with current density,
9th November	SUNDAY
Week15 10th November–15th November	Einsteinrelationbetweenabsolutemobilityanddiffusioncoefficient,Stokes-Einsteinrelation, Nernst-Einstein equation, Walden's rule.
16th November	Revision
Week16 16th November–24th November	**Revision,AssignmentandTest**
23rd November	**SUNDAY**
Week17 24th November–29th November	**Revision,AssignmentandTest**
30th November	**SUNDAY**

Summary o fLesson Planof College Faculty

NameofCollege:Pt.NekiRamSharmaGovernmentCollege,RohtakAcademicSession2025-26 Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki
Class:M.Sc.1st Semester(Chemistry)
NameofSubject:InorganicChemistry-I(CoordinationChemistry&CrystalChemistry24CHE201DS01)

5th August 2025 to 30th November 2025 [M.Sc.1st Semester(Chemistry)]	
Week1 **5th August to 9th August**	**NatureofBondinginOrganicmolecules:** Delocalizedchemicalbonding,Conjugation,cross-conjugation,Hyperconjugationand Tautomerism
10th August	**SUNDAY**
Week2 **11th August to 16th August**	**NatureofBondinginOrganicmolecules:** Resonance, Aromaticity in benzenoid and non-benzenoidcompounds,Huckel'srule,energy level of π-molecular orbitals, annulenes, antiaromaticity, homoaromaticity
17th August	**SUNDAY**
Week3 **18th August to23rd August**	**NatureofBondinginOrganicmolecules:** Resonance, Aromaticity in benzenoid and non-benzenoidcompounds,Huckel'srule,energy level of π-molecular orbitals, annulenes, antiaromaticity, homoaromaticity, PMO approach, alternant and non-alternant hydrocarbons.
24th August	**SUNDAY**
Week4 **25th August to 30th August**	**NatureofBondinginOrganicmolecules:** Bondsweakerthancovalent,additioncompounds,crownethercomplexesandcryptands,inclusion compounds, cyclodextrins, catenanes and rotaxanes.
31st August	**SUNDAY**
Week5 **1st September to6th September**	**Revision,AssignmentandTest**
7th September	**SUNDAY**
Week6 **8st Septemberto13th September**	**ReactionMechanism:** Structure and Reactivity: types of mechanisms, thermodynamic and kinetic requirements, kinetic and thermodynamic control, Hammond's postulates
14th September	**SUNDAY**
Week7 **15th Septemberto20th September**	**ReactionMechanism:** Potentialenergydiagrams,transitionstatesandintermediates,methodsofdeterminingmechanisms, isotope effects.
21st September	**SUNDAY**
Week8 **22nd Septemberto27th September**	**ReactionMechanism:** Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes.
28th September	**SUNDAY**
Week9 **29th Septemberto4th October**	**ReactionMechanism:** Curtin-Hammettprinciple,Effectofstructureonreactivity,Hammettequationandlinearfreeenergy relationship, substituent and reaction constants, Taft equation.
5th October	**SUNDAY**
Week10 **6th Septemberto11th October**	**Revision,AssignmentandTest**

12thOctober	**SUNDAY**
Week11	**EliminationReactions:**TheE1,E2andE1cBmechanisms,orientationofthedoublebond.Effectof

NameofCollege:Pt.NekiRamSharmaGovernmentCollege,RohtakAcademicSession2025-26 Name of Asstt./Ass. Prof /Professor: Dr. Ravinder Singh, Dr. Dayawati, Dr. Rinki
Class:M.Sc.1stSemester(Chemistry)
NameofSubject:InorganicChemistry-I(CoordinationChemistry&CrystalChemistry24CHE201DS01)

13thSeptemberto18thOctober	substratestructures,attackingbase,leavinggroupandmediumonreactivity.Mechanismand orientation in pyrolytic elimination.
19thOctober	**SUNDAY**
Week12 20thSeptemberto25thOctober	**Addition to Carbon-Carbon Multiple Bonds:** Mechanistic and stereochemical aspects of addition reactionsinvolvingelectrophiles,nucleophilesandfreeradicals,orientationandreactivity,additionto cyclopropane ring.
26thOctober	**SUNDAY**
Week13 27thSeptemberto1stNovember	**Addition to Carbon-Carbon Multiple Bonds:** Hydrogenation of double and triple bonds, hydrogenation of aromatic rings, hydroboration reaction, Michael reaction, Sharpless asymmetric epoxidation.
2ndNovember	**SUNDAY**
Week14 3rd November – 8thNovember	**Stereochemistry: Revision,AssignmentandTest**
9thNovember	**SUNDAY**
Week15 10thNovember–15thNovember	**Stereochemistry:** Chirality, elements of symmetry, molecules with more than one chiral center, diastereomerism, methods of resolution, optical purity. Prochirality, enantiotopic and diastereotopic atoms, groups and faces
16thNovember	**SUNDAY**
Week16 16thNovember–24thNovember	**Stereochemistry:** Asymmetric synthesis, Cram's rule and its modifications, Prelog's rule, conformational analysis of decalins. Optical activity in the absence of chiral carbon (Biphenyls, Allenesand Spiranes), chirality due to helical shape. Geometrical isomerism in alkenes and oximes, methods of determining the configuration.
23rdNovember	**SUNDAY**
Week17 24thNovember–29thNovember	**Revision,AssignmentandTest**
30thNovember	**SUNDAY**

Academic Session 2025-26 **Class: B.Sc. Chem (H) Final Year**

Semester: 5th

Name of Asstt./Ass. Prof. – Dr. Rinki Malik

Paper Code: CH (H) -501

Paper Nomenclature: In- Organic Chemistry I

Week 1 **15July-19July 2025**	Metal - ligand Bonding in Transition Metal Complexes: Limitation of valence bond theory, an elementary idea of crystal-field theory
20July	SUNDAY
Week 2 **21July-26July 2025**	Crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters. (Revision and Assignment)
27July	SUNDAY
Week 3 **28 July-2 August2025**	Magnetic Properties of Transition Metal complexes: Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula
3 August	SUNDAY
Week 4 **4 August-9 August2025**	L-S coupling, correlation of μs and μeff values,
10 August	SUNDAY
Week 5 **11August-16August2025**	orbital contribution to magnetic moments, application of magnetic moment data for 3d-metal complexes
17 August	SUNDAY
Week 6 **18 Augu-23 August**	Thermodynamic and Kinetic Aspects of Metal Complexes: A brief outlines of thermodynamic stability of metal complexes and factors affecting the stability
24August	SUNDAY
Week 7 **25 August-30 August**	Substitution reactions of square planar complexes. (Test and Discussion)
31 August	SUNDAY
Week 8 **1 September-6 September**	Electron Spectra of Transition Metal Complexes: Types of electronic transitions, selection rules of d-d transitions, spectroscopic ground states, spectrochemical series
7September	SUNDAY
Week 9 **8 September-13 September**	Orgel - energy level diagrame for d1 and d9 states, discussion of the electronic spectrum of [Ti (H2O)6]3+ complex ion.
14September	SUNDAY
Week 10 **15 sptember-20 September**	Revision, Discussion and Test
21September	SUNDAY
Week 11 **22 September- 27 September**	Hard and Soft Acids and Bases (HSAB) Classification of acids and bases as hard and soft. Pearson's HSAB concept

28September	SUNDAY
Week 12 **23 September-4 October**	Acid-base strength and hardness and softness. Symbiosis, theoretical basis of hardness and softness, electronegativity and hardness and softness.
5 October	SUNDAY
Week 13 **6 october- 11 october**	Synthesis, properties nature of bonding, structures and applications of silicones
12October **(14-23October)**	SUNDAY Diwali Break
Week 14 **24 October-1 November**	Synthesis, properties nature of bonding, structures and applications of phosphazenes
2November	SUNDAY
Week 15 **3 November – 8 November**	Synthesis, properties nature of bonding, structures and applications and S-N componds
9 November	SUNDAY
Week 16 **10 November-** **15 November 2025**	Test and Group Discussion
16 November 2025	SUNDAY
17 November 2025	Revision of full syllabus and Discussion of previous papers.

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – RINKU LATHWAL
Class: B.Sc Life Science (Minor chemistry) 1ST SEM

Code: 24CHE401MI01

PaperNomenclature: Basic concepts of chemistry

Week 1 **15July-19July 2025**	**Atomic Structure**: Atomic models, Rutherford's model and its limitations, Bohr's model and its applications, Dual nature of matter and light.
20July	SUNDAY
Week 2 **21July-26July 2025**	De Broglie's relationship, Heisenberg uncertainty principle, Concept of orbitals, Quantum numbers, Shapes of s, p and d orbitals.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule.
3 August	SUNDAY
Week 4 **4 August-** **9 August2025**	Electronic configuration of atoms, Stability of half-filled and completely filled orbitals.
10 August	SUNDAY
Week 5 **11August-16August2025**	**Periodic Table and Atomic Properties:** Brief history of the development of periodic table, Modern periodic law and the present form of periodic table.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Periodic trends in properties of elements -Atomic radii, Ionic radii, Inert gas radii, Ionization enthalpy.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Periodic trends in properties of elements -Electron gain enthalpy, Electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Mole Concept**: Atomic mass, Mole concept and molar mass, Avogadro's number and its significance, Percentage composition.
7September	SUNDAY
Week 9 **8September-** **13September2025**	Empirical and molecular formula, Chemical reactions.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Ways of expressing concentration of solutions (Molarity, Normality, Molality, Mole percentage, Strength).
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Stoichiometric calculations involving reactants and products.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Fundamentals of Organic Chemistry**: Electronic displacements: Inductive effect, Electromeric effect
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Resonance, Hyperconjugation. Cleavage of bonds: Homolysis and Heterolysis
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23 October-** **25 october 2025**	Reaction intermediates: Carbocations, Carbanions
26 0ctober	SUNDAY

Week 15 **27 0ctober –** **1 November-2025**	Reaction intermediates: Free radicals and carbenes. Electrophiles and Nucleophiles
2 November 2025	SUNDAY
Week 16 **3 November-** **8 November-2025**	Aromaticity: Benzenoids and Huckel's rule
9 November 2025	SUNDAY
Week 17 **10 November-** **15 November-2025**	Revison and Test
16 November	SUNDAY
Week 18 **17 November-** **18 November-2025**	Test Discussion
EXAMINATION	19 NOVEMBER 2025 ONWARDS

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – ANIL
Class: B.Sc Physical Science (Minor chemistry) 1ST SEM

Code: 24CHE401MI01

PaperNomenclature: Basic concepts of chemistry

Week 1 **15July-19July 2025**	**Atomic Structure**: Atomic models, Rutherford's model and its limitations, Bohr's model and its applications, Dual nature of matter and light.
20July	SUNDAY
Week 2 **21July-26July 2025**	De Broglie's relationship, Heisenberg uncertainty principle, Concept of orbitals, Quantum numbers, Shapes of s, p and d orbitals.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule.
3 August	SUNDAY
Week 4 **4 August-** **9 August2025**	Electronic configuration of atoms, Stability of half-filled and completely filled orbitals.
10 August	SUNDAY
Week 5 **11August-16August2025**	**Periodic Table and Atomic Properties:** Brief history of the development of periodic table, Modern periodic law and the present form of periodic table.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Periodic trends in properties of elements -Atomic radii, Ionic radii, Inert gas radii, Ionization enthalpy.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Periodic trends in properties of elements -Electron gain enthalpy, Electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Mole Concept**: Atomic mass, Mole concept and molar mass, Avogadro's number and its significance, Percentage composition.
7September	SUNDAY
Week 9 **8September-** **13September2025**	Empirical and molecular formula, Chemical reactions.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Ways of expressing concentration of solutions (Molarity, Normality, Molality, Mole percentage, Strength).
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Stoichiometric calculations involving reactants and products.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Fundamentals of Organic Chemistry**: Electronic displacements: Inductive effect, Electromeric effect
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Resonance, Hyperconjugation. Cleavage of bonds: Homolysis and Heterolysis
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23 October-** **25 october 2025**	Reaction intermediates: Carbocations, Carbanions
26 0ctober	SUNDAY

Week 15 **27 0ctober –** **1 November-2025**	Reaction intermediates: Free radicals and carbenes. Electrophiles and Nucleophiles
2 November 2025	SUNDAY
Week 16 **3 November-** **8 November-2025**	Aromaticity: Benzenoids and Huckel's rule
9 November 2025	SUNDAY
Week 17 **10 November-** **15 November-2025**	Revison and Test
16 November	SUNDAY
Week 18 **17 November-** **18 November-2025**	Test Discussion
EXAMINATION	19 NOVEMBER 2025 ONWARDS

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Kiran Bala, Nidhi
Class: DSC- Life Science 1st Sem

Name of Course: DSC Paper Code: 24CHEM401DS01

Paper Nomenclature: Fundamental Chemistry – I

Week 1 **15July-19July 2025**	**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
20July	SUNDAY
Week 2 **21July-26July 2025**	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
27July	SUNDAY
Week 3 **28 July-2 August2025**	non- bonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as O2 - , O2 2- , N2 - , CO, NO+ , CN- . Comparison of VB and MO approaches
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Revision and test**
10 August	SUNDAY
Week 5 **11August-16August2025**	**p-Block Elements** Oxides – structures of oxides of N, P. Oxyacids – structure and relative acid strengths of oxyacids of nitrogen and phosphorus. Structure of white, yellow and red phosphorus. Oxyacids of sulphur – structures and acidic strength
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	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
24August	SUNDAY

Week 7 **25August-30August2**	Acids and Bases: Brönsted–Lowry concept, conjugate acids and bases, relative strengths of acids and bases,
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	effects of substituent and solvent, differentiating and levelling solvents. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept
7September	SUNDAY
Week 9 **8September-** **13September2025**	**Revision and test**
14September	SUNDAY
Week 10 **15September-** **20September2025**	**Gaseous States** Maxwell's distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity. Collision diameter, collision number, collision frequency and mean free path, deviation of real gases from ideal behaviour,.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	derivation of Van der Waals Equation of state and its applications in the calculation of Boyle's temperature (compression factor), explanation of behavior of real gases using Van der Waals equation.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**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
5 October	SUNDAY

Week 13 **6October-** **11October-2025**	relationship between critical constants and Van der Waals constants, compressibility factor. Law of corresponding states.
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23October-25 Octobe**	**Basics of Organic Chemistry and Stereochemistry** Electronic displacements and its applications, reaction intermediates and concept of aromaticity. Concept of isomerism, types of isomerism, optical isomerism, optical activity, elements of symmetry, molecular chirality, enantiomers.
26 October	SUNDAY
Week 15 **27 October-** **1November-2025**	stereogenic centre, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers, meso compounds,
2November	SUNDAY
Week 16 **3November-** **8November-2025**	resolution of enantiomers, inversion, retention and racemization, relative and absolute configuration, sequence rules, R & S system of nomenclature
9 November-2025	
Week 17 **10 November-** **15 November-2025**	**Revision and test**
16 November	
Week 18 **17 November-** **18 November-2025**	**Revision and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Kiran Bala and Pinki Rani
Class: SEC- Phys Science 1st Sem

Name of Course: SEC **Paper Code: 24CHE401SE01**

Paper Nomenclature: Role of Chemistry in Society

Week 1 **15July-19July 2025**	Analysis of Soil and Water Composition of soil, concept of pH and pH measurement of soil,.
20July	SUNDAY
Week 2 **21July-26July 2025**	complexometric titrations, chelation, chelating agents, use of indicators, estimation of calcium and magnesium ions in soil.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods, determination of dissolved oxygen of a water sample
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Revision and test**
10 August	SUNDAY
Week 5 **11August-16August2025**	Chemistry in Cosmetics A general study including preparation and uses of the following: Hair dye, soap, shampoo
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	A general study including preparation and uses of the following: suntan lotions, face powder, lipsticks
24August	SUNDAY
Week 7 **25August-30August2**	A general study including preparation and uses of the following: talcum powder, nail enamel
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Revision and test**
7September	SUNDAY
Week 9 **8September-** **13September2025**	**Pesticides** General introduction to pesticides (natural and synthetic),
14September	SUNDAY
Week 10 **15September-** **20September2025**	benefits and adverse effects, changing concepts of pesticides,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	brief introduction of structure activity relationship, synthesis and technical manufacture
28September	SUNDAY
Week 12 **29September-4** **October 2025**	uses of representative pesticides in the following classes: organochlorines (gammexene), organophosphates (malathion).
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	**Revision and test**

12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23October-25 Octobe**	**Experimental Techniques** Basic principle of pH metric, potentiometric titrations
26 October	SUNDAY
Week 15 **27 October-** **1November-2025**	Basic principle of applications of conductometric titrations, conductivity measurements: determination of degree of dissociation
2November	SUNDAY
Week 16 **3November-** **8November-2025**	, determination of Ka of acids and base, buffer solution, buffer action, Henderson–Hazel equation, buffer mechanism of buffer action.
9 November-2025	**SUNDAY**
Week 17 **10 November-** **15 November-2025**	**Revision and test**
16 November	**SUNDAY**
Week 18 **17 November-** **18 November-2025**	**Revision and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Nidhi Mann
Class: B.Sc. (Chemistr Single Major) 3rd sem

Name of Course: DSC **Paper Code: 25CHES403DS01**

Paper : General Chemistry-V

Week 1 **15July-19July 2025**	**Bioinorganic I:** Metal ions present in biological system, classification based on action (essential, non- essential, trace, toxic
20July	SUNDAY
Week 2 **21July-26July 2025**	biological role of Na+ , K+ , Ca+2, Mg+2, Fe+2 ions, ionophores, active transport of cations across membrane
27July	SUNDAY
Week 3 **28 July-2 August2025**	Na/K-pump. Vitamin B12, carboxypeptidase A and chlorophyll (w.r.t. photosynthesis).
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Revision and test**
10 August	SUNDAY
Week 5 **11August-16August2025**	**Systems of Variable Composition:** Partial molar quantities,
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	dependence of thermodynamic 40 parameters on composition, Gibbs Duhem equation, chemical potential of ideal mixtures.
24August	SUNDAY
Week 7 **25August-30August2**	change in thermodynamic functions in mixing of ideal gases. Clausius-Clapeyron equation and its applications to solid, liquid, liquid-vapour and solid-vapour equilibria
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Revision and test**
7September	SUNDAY
Week 9 **8September-** **13September2025**	**Alcohols**: Classification and nomenclature. Monohydric Alcohols: Nomenclature, methods of preparation by reduction of aldehydes, ketones, carboxylic acids and esters,
14September	SUNDAY
Week 10 **15September-** **20September2025**	comparison of acidic behaviour, chemical reactions of alcohols. Industrial manufacture of methanol (from CO and H2) and ethanol (flow sheet diagram).
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Dihydric Alcohols: Nomenclature, methods of preparation, chemical reactions of vicinal glycols, oxidative cleavage (PbOAc4 and HIO4) and pinacol-pinacolone rearrangement
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Trihydric Alcohols: Nomenclature and methods of preparation, chemical reactions of glycerol.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	**Revision and test**

12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23October-25 Octobe**	**Phenols, Ethers and Epoxides Phenols**: Preparation and properties, acidity and affecting factors, ring substitution reactions,
26 October	SUNDAY
Week 15 **27 October-** **1November-2025**	Reimer–Tiemann and Kolbe's–Schmidt reactions, Fries and Claisen rearrangements and their mechanism. Ethers: Methods of preparation, physical properties and chemical reactions
2November	SUNDAY
Week 16 **3November-** **8November-2025**	Epoxides: Synthesis of epoxides, acid and base- catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides.
9 November-2025	**SUNDAY**
Week 17 **10 November-** **15 November-2025**	**Revision and test**
16 November	**SUNDAY**
Week 18 **17 November-** **18 November-2025**	**Revision and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Dr.Pinki Rani
Class:B.S.c 3rd (Physical Sciences)

Name of Course: SEC Paper –III Code: 25CHEM403SE01

PaperNomenclature: Skill Enhancement Course

Week 1 **15July-19July 2025**	Basic Concepts Components of cells and batteries, classification of cells and batteries, operation of a cell,
20July	SUNDAY
Week 2 **21July-26July 2025**	Theoretical cell voltage, capacity, energy, specific energy and energy density of practical batteries.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Battery Design and Factors Affecting Battery Performance General introduction, designing to eliminate potential safety problems,
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Battery safeguards when using discrete batteries, battery construction, design of rechargeable batteries, factors affecting battery performance.
10 August	SUNDAY
Week 5 **11August-16August2025**	Primary Batteries General characteristics and applications of primary batteries,
17 August	SUNDAY
Week 6 **18August-23 August2025**	Types and characteristics of primary batteries comparison of the performance characteristics of primary battery systems
24August	SUNDAY
Week 7 **25August-30August2025**	Recharging primary batteries. A) Zinc-Carbon Batteries (Leclanche´ and Zinc Chloride Cell Systems)
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	General characteristics, cell chemistry, types of cells and batteries, construction, cell components. B) Magnesium and Aluminum Batteries:
7September	SUNDAY
Week 9 **8September-** **13September2025**	General characteristics, cell chemistry, construction of Mg/MnO2 batteries, performance characteristics of Mg/MnO2 batteries, sizes and types of Mg/MnO2 batteries, other types of magnesium primary batteries.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Secondary Batteries General characteristics and applications of secondary batteries, types and characteristics of secondary batteries, comparison of performance characteristics for secondary battery systems and introduction,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Chemistry, construction, performance characteristics, charging characteristics of following batteries: Lead batteries, Lithium ionbatteries, Iron electrode batteries
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Nickel-Cadmium, Nickel-Metal hydride, NickelZinc batteries
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Test and Assignment
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Test and Assignment

2November	SUNDAY
Week1 3 **3November-** **8November-2025**	Test and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Dr. POONAM NANDAL and DR. JYOTI
Class:B.S.c 2nd (Life Sciences/Physical Science)

Name of Course: Minor CoursePaper Code: 25CHEM403DS01

PaperNomenclature: Discipline Specific Course

Week 1 **15July-19July 2025**	**Chemistry of Transition series elements** General characteristics of transition metals, brief discussion of differences between the first, second and third transition series, stability of various oxidation states, magnetic and spectral properties.
20July	SUNDAY
Week 2 **21July-26July 2025**	Binary compounds and complexes illustrating relative stability of their oxidation states.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Chemistry of Ti, V, Cr, Mn, Fe, Co, Mo and W in various oxidation states, some important compounds as laboratory reagents: potassium dichromate,
3 August	SUNDAY
Week 4 **4 August-9 August2025**	potassium permanganate, potassium ferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite.
10 August	SUNDAY
Week 5 **11August-16August2025**	**Thermodynamics-II** Third law of thermodynamics: Nernst heat theorem, concept of residual entropy, evaluation of absolute entropy from heat capacity data.
17 August	SUNDAY
Week 6 **18August-23 August2025**	Gibbs and Helmholtz functions, Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, A & G as criteria for spontaneity
24August	SUNDAY
Week 7 **25August-30August2025**	Thermodynamic equilibrium and their advantage over entropy change. Variation of G and A with P, V and T. Partial molar quantities.
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	**Electrochemistry** Arrhenius theory of ionization, Ostwald's Dilution Law. Debye-Huckel–Onsager's equation for strong electrolytes (elementary treatment only),
7September	SUNDAY
Week 9 **8September-** **13September2025**	transport number, definition and determination by Hittorf's methods. Electrolytic conduction, factors affecting electrolytic conduction.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Applications of conductivity measurements: determination of dissociation constant (Ka) and degree of dissociation, determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pKa,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	buffer solution, buffer action, Henderson – Hasselbalch equation, buffer mechanism of buffer action. Reversible electrodes – Metal- metal ion gas electrode, metal – metal insoluble salt- anion electrode and redox electrode.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Alkyl and aryl halides Alkyl halide** Nomenclature and classes of alkyl halides, general methods of preparation, physical properties and chemical reactions, mechanisms (SN1, SN2, E1, E2 and E1cb)
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	stereochemistry of nucleophilic substitution reactions of alkyl halides with energy profile diagrams, elimination vs substitution reactions. Aryl halides: Methods of preparation, Reactions: Aromatic nucleophilic substitution
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	effect of substituents on reactivity. Benzyne Mechanism: KNH2/NH3 (or NaNH2/NH3), reactivity and relative strength of C-halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.

2November	SUNDAY
Week1 3 **3November-** **8November-2025**	Test and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Manoj
Class:B.S.c 1st Year (Life Sciences)

Name of Course: Discipline Specific Course Code: 25CHEM401DS01

PaperNomenclature: Discipline Specific Course

Week 1 **15July-19July 2025**	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.
20July	SUNDAY
Week 2 **21July-26July 2025**	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,
27July	SUNDAY
Week 3 **28 July-2 August2025**	MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as O2 - , O2 2- , N2 - , CO, NO+ , CN- . Comparison of VB and MO approaches
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**P-Block Elements Oxides** – structures of oxides of N, P. Oxyacids – structure and relative acid strengths of oxyacids of nitrogen and phosphorus. Structure of white, yellow and red phosphorus
10 August	SUNDAY
Week 5 **11August-16August2025**	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.
17 August	SUNDAY
Week 6 **18August-23 August2025**	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. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept
24August	SUNDAY
Week 7 **25August-30August2025**	Gaseous States Maxwell's distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	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
7September	SUNDAY
Week 9 **8September-** **13September2025**	Van der Waals Equation of state and its applications in the calculation of Boyle's temperature (compression factor), explanation of behavior of real gases using Van der Waals equation.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Critical Phenomenon: Critical temperature, critical pressure, critical volume and their determination. PV isotherms of real gases, continuity of states,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	isotherms of Van der Waals equation, relationship between critical constants and Van der Waals constants, compressibility factor. Law of corresponding states.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Basics of Organic Chemistry and Stereochemistry Electronic displacements and its applications, reaction intermediates and concept of aromaticity. Concept of isomerism, types of isomerism,
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	optical isomerism, optical activity, elements of symmetry, molecular chirality, enantiomers, stereogenic centre, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers,
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	meso compounds, resolution of enantiomers, inversion, retention and racemization, relative and absolute configuration, sequence rules, R & S system of nomenclature.

2November	SUNDAY
Week1 3 **3November-** **8November-2025**	Test and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Rekha Gautam and Sandeep
Class: B.Sc. Non Medical and Medical 5th SEM

Paper Code: CH-501

Paper Nomenclature: Inorganic Chemistry

Week 1 **15July-19July 2025**	Metal-ligand Bonding in Transition Metal Complexes, Limitations of valence bond theory, an elementary idea of crystal-field theory
20July	SUNDAY
Week 2 **21July-26July 2025**	crystal field splitting in octahedral, tetrahedral and square planar complexes,
27July	SUNDAY
Week 3 **28 July-2 August2025**	factors affecting the crystal- field parameters.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Thermodynamic and Kinetic Aspects of Metal Complexes: A brief outline of thermodynamic stability of metal complexes
10 August	SUNDAY
Week 5 **11August-16August2025**	factors affecting the stability
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	substitution reactions of square planar complexes of Pt(II)
24August	SUNDAY
Week 7 **25August-** **30August2025**	Test and Problems
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	Magnetic Properties of Transition Metal Complexes :Types of magnetic behaviour, methods of determining magnetic susceptibility
7September	SUNDAY
Week 9 **8September-** **13September2025**	spin-only formula. L-S coupling, correlation of u_s and u_{eff} values, orbital contribution to magnetic moments,
14September	SUNDAY
Week 10 **15September-** **20September2025**	application of magnetic moment data for 3d metal complexes.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Electron Spectra of Transition Metal Complexes Types of electronic transitions, selection rules for d-d transitions,
28September	SUNDAY
Week 12 **29September-4** **October 2025**	spectroscopic ground states, spectrochemical series
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Orgel-energy level diagram for d1and d9 states

12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	discussion of the electronic spectrum of [Ti(H2O)6]3+complex ion
2November	SUNDAY
Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Neeraj and Reena
Class: B.Sc. Non Medical and Medical 5th SEM

Paper Code: CH-503

Paper Nomenclature: Organic Chemistry

Week 1 **15July-19July 2025**	NMR Spectroscopy-I Principle of nuclear magnetic resonance, the PMR spectrum,number of signals
20July	SUNDAY
Week 2 **21July-26July 2025**	peak areas, equivalent and nonequivalent protons positions of signals and chemical shift,
27July	SUNDAY
Week 3 **28 July-2 August2025**	shielding and deshielding of protons, proton counting,splitting of signals and coupling constants, magnetic equivalence of protons.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	NMR Spectroscopy-II Discuss ion of PMR spectra of the molecules: ethyl bromide, npropyl bromide, isopropyl bromide, 1,1-dibromoethane
10 August	SUNDAY
Week 5 **11August-16August2025**	NMR Spectroscopy-II Discuss ion of PMR spectra of the molecules: 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Simple problems on PMR spectroscopy for structure determination of organic compounds.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Test and Problems
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	Carbohydrates-I Classification and nomenclature. Monosaccharides, mechanism of osazone formation,
7September	SUNDAY
Week 9 **8September-** **13September2025**	conversion of glucose and fructose, chain lengthening and chain shortening of aldoses
14September	SUNDAY
Week 10 **15September-** **20September2025**	Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose in to mannose
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Mechanism of mutarotation. Structures of ribose and deoxyribose.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Carbohydrates-II An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.

12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Organometallic Compounds : Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions
2November	SUNDAY
Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Rekha Gautam and Neeraj
Class: B.Sc. 3rd SEM Life Science and Physical science

Paper Name – Minor Course **Paper Code: 25CHE402MI01**

Paper Nomenclature: Chemistry of Metals & Non Metals, Hydrocarbons and Solutions

Week 1 **15July-19July 2025**	Metal and Non-Metals Occurrence of elements in nature, physical and chemical properties of metals and non-metals
20July	SUNDAY
Week 2 **21July-26July 2025**	minerals and ores, metallurgical processes (benefaction, roasting, calcination and reduction of metal oxides processes),
27July	SUNDAY
Week 3 **28 July-2 August2025**	refining of metals, metallurgy of Fe, Zn, Al and Cu.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Solution Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions,
10 August	SUNDAY
Week 5 **11August-16August2025**	Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	depression in freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Test and Problems
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	Hydrocarbons Alkanes: General methods of preparation and Reactions: free radical substitution. Alkenes: General methods of preparation and Reactions: cis-addition (alk. KMnO4) and trans-addition (bromine),
7September	SUNDAY
Week 9 **8September-** **13September2025**	addition of HX (Markownikoff's and anti-Markownikoff's addition), hydration, ozonolysis, oxymecuration-demercuration, hydroboration oxidation
14September	SUNDAY
Week 10 **15September-** **20September2025**	Alkynes: General methods of preparation and Reactions: formation of metal acetylides and acidity of alkynes,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	addition of bromine and alkaline KMnO4, ozonolysis and oxidation with hot alk. KMnO4, hydration to form carbonyl compounds.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Aromatic Hydrocarbons Structure of benzene (Kekule, hybrid and resonance), preparation of benzene.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Reactions: electrophilic substitution reactions in benzene citing examples of nitration, halogenation, sulphonation

12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Friedel-Craft's alkylation and acylation with special emphasis on carbocationic rearrangement, side chain oxidation of alkyl benzene.
2November	SUNDAY
Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Dr.Poonam Devi
Class: B.Sc. chemistry hons. 1st SEM

Paper Code: 24CHES401DS01

PaperNomenclature Discipline Specific Course chemistry

Week 1 **15July-19July 2025**	Atomic Structure and Periodicity of Elements: Bohr's atomic model and its application, quantum numbers, their application and rules of electronic configuration
20July	SUNDAY
Week 2 **21July-26July 2025**	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
27July	SUNDAY
Week 3 **28 July-2 August2025**	covalent radii, electronegativity, electron gain enthalpy, ionization enthalpy and factors affecting ionization energy. Pauling, Mullikan and Allred Rachow scales.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	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
10 August	SUNDAY
Week 5 **11August-16August2025**	Packing of ions in crystals, calculation of density and crystal structures of 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).
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	. Born-Landé equation with derivation, expression for lattice energy, Madelung constant, Born-Haber cycle and its application with examples,
24August	SUNDAY
Week 7 **25August-** **30August2025**	solvation energy. Semiconductors, types of semiconductors, valence bond and band theories (alloys excluded).
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	Gaseous State-I: Elementary treatment of gas laws, kinetic gas equation and its derivation, deviations from ideal gas behaviour,
7September	SUNDAY
Week 9 **8September-** **13September2025**	, compressibility factor (Z) and its variation with pressure and temperature for different gases, Van der Waals equation of state
14September	SUNDAY
Week 10 **15September-** **20September2025**	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,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	, critical temperature, critical pressure, critical volume and their determination. Isotherms of real gases and their comparison with Van der Waals isotherms, continuity of states
28September	SUNDAY
Week 12 **29September-4** **October 2025**	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,
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	, intermediates, isotope effects, kinetic and stereochemical studies). Stereoisomerism: Optical activity and optical isomerism, asymmetry, chirality, enantiomers, diastereomers. Specific rotation, configuration and projection formulae
12October **(14-22October)**	SUNDAY
Week 12 **24October-** **1November-2025**	: 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. Geometrical isomerism: cis-trans, synanti and E/Z

2November		SUNDAY
	Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Dr.Poonam Devi
Class: B.Sc. chemistry hons. 5th SEM

Paper Code: CH (H) -504

PaperNomenclature Physical Chemistry (Theory) - II

Week 1 **15July-19July 2025**	Statistical thermodynamics of Maxwell Boltzmann distribution law. Maxwell-Boltzmann law and the concept of negative temperature,
20July	SUNDAY
Week 2 **21July-26July 2025**	Maxwell-Boltzmann law of distribution of energy and velocity (evaluation of energy. Derivation of equation of states for a monatomic ideal gas
27July	SUNDAY
Week 3 **28 July-2 August2025**	Nature of radiation from radioactive substances nuclear structure and nuclear properties. Nuclear reaction, radioactive disintegration series, kinetics of radioactive disintegration. Artificial transmutation of elements.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Nuclear fission and nuclear fusion. Radio-carbon dating, synthetic elements. Composition of nuclei:forces operating within the nucleus, nuclear stability and mass energy. Types of nuclear reaction.
10 August	SUNDAY
Week 5 **11August-16August2025**	The compound nuclear theory , scintillation counters. Activation analysis. Isotopic dilution and radioactive titration. Application
17 August	SUNDAY
Week 6 **18August-23 August2025**	Polymerisation, classification of polymers, natural and synthetic polymers. General methods of preparation. addition and condesation polymer's. Number average molecular weight, Weight average molecular weight.
24August	SUNDAY
Week 7 **25August-30August2025**	Determination of molecular weight by osmotic, pressure method, viscosity method, light scattering method, kinetics of condensation polymerisation,
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	kinetics of chain polymerisation, kinetics of cationic, anonic and condensation polymerisation. Copolymerisation
7September	SUNDAY
Week 9 **8September-** **13September2025**	Optical activity, polarization, clausius- mossotti equation , orientation of dipoles in electric field.
14September	SUNDAY
Week 10 **15September-** **20September2025**	. Dipole moment, induced dipolemoment,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	measurement of dipolemoment by temperature methods and refrectivity method.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Dipolmoment and chemical constitution,
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	magnetic properties - paramagnetic diamagnetic ferrodynamic.
12October **(14-22October)**	SUNDAY
Week 12 **24October-** **1November-2025**	Revision and Assignment

2November		SUNDAY
	Week1 3 **3November-** **18November-2025**	Revision and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Dr. Ruman Rani
Class: Minor- Chemistry (H) 1nd SEM

Name of Course: Minor Course Paper Code: 24CHE401MI01

Paper Nomenclature: Basic Concepts of Chemistry

Week 1 **15July-19July 2025**	Atomic Structure: Atomic models, Rutherford's model and its limitations, Bohr's model and its applications, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle
20July	SUNDAY
Week 2 **21July-26July 2025**	Concept of orbitals, quantum numbers, shapes of s, p and d orbitals, 24 rules for filling electrons in orbitals - Aufbau principle
27July	SUNDAY
Week 3 **28 July-2 August2025**	Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Brief history of the development of periodic table, modern periodic law and the present form of periodic table,
10 August	SUNDAY
Week 5 **11August-16August2025**	Periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, ionization enthalpy
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Eectron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Atomic mass, mole concept and molar mass, Avogadro's number and its significance, percentage composition, empirical and molecular formula
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	Chemical reactions, ways of expressing concentration of solutions (molarity, normality, molality, mole percentage, strength
7September	SUNDAY
Week 9 **8September-** **13September2025**	Stoichiometric calculations involving reactants and products
14September	SUNDAY
Week 10 **15September-** **20September2025**	Electronic displacements: Inductive effect, electromeric effect, resonance, hyperconjugation
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Electronic displacements: Inductive effect, electromeric effect, resonance, hyperconjugation. Cleavage of bonds: homolysis and heterolysis
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Cleavage of bonds: homolysis and heterolysis. Reaction intermediates: carbocations,
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	carbanions, free radicals, and carbenes. Electrophiles and nucleophiles. Aromaticity: benzenoids and Huckel's rule.

12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Revision
2November	SUNDAY
Week1 3 **3November-** **8November-2025**	Revision

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – Manoj
Class:B.S.c 3rd (Physical Sciences)

Name of Course: SEC Paper –III Code: 25CHEM403SE01

PaperNomenclature: Skill Enhancement Course

Week 1 **15July-19July 2025**	Basic Concepts Components of cells and batteries, classification of cells and batteries, operation of a cell,
20July	SUNDAY
Week 2 **21July-26July 2025**	Theoretical cell voltage, capacity, energy, specific energy and energy density of practical batteries.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Battery Design and Factors Affecting Battery Performance General introduction, designing to eliminate potential safety problems,
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Battery safeguards when using discrete batteries, battery construction, design of rechargeable batteries, factors affecting battery performance.
10 August	SUNDAY
Week 5 **11August-16August2025**	Primary Batteries General characteristics and applications of primary batteries,
17 August	SUNDAY
Week 6 **18August-23 August2025**	Types and characteristics of primary batteries comparison of the performance characteristics of primary battery systems
24August	SUNDAY
Week 7 **25August-30August2025**	Recharging primary batteries. A) Zinc-Carbon Batteries (Leclanche´ and Zinc Chloride Cell Systems)
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	General characteristics, cell chemistry, types of cells and batteries, construction, cell components. B) Magnesium and Aluminum Batteries:
7September	SUNDAY
Week 9 **8September-** **13September2025**	General characteristics, cell chemistry, construction of Mg/MnO2 batteries, performance characteristics of Mg/MnO2 batteries, sizes and types of Mg/MnO2 batteries, other types of magnesium primary batteries.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Secondary Batteries General characteristics and applications of secondary batteries, types and characteristics of secondary batteries, comparison of performance characteristics for secondary battery systems and introduction,
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Chemistry, construction, performance characteristics, charging characteristics of following batteries: Lead batteries, Lithium ionbatteries, Iron electrode batteries
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Nickel-Cadmium, Nickel-Metal hydride, NickelZinc batteries
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Test and Assignment
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Test and Assignment

2November	SUNDAY
Week1 3 **3November-** **8November-2025**	Test and Assignment

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak **Academic Sess**
Semester: Odd
Name of Asstt./Ass. Prof. – Bhupender Singh, Praveen
Class: B.Sc. 3rd Medical/ Non Med. 5th SEM

Name of Course: B.Sc. Pass Course **Paper Code: C**

Paper Nomenclature: Physical Chemistry

Week 1 **15July-19July 2025**	**Quantum Mechanics-I** Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solic effect, wave function, and its significance of Postulates of quantum mechanics.
20July	SUNDAY
Week 2 **21July-26July 2025**	Quantum mechanical operator, commutation relations, Hamiltonian operator, Hermiti average value of square of Hermitian as a positive quantity, Role of operators in quantun to show quantum mechanically that position and momentum cannot be predicated simul
27July	SUNDAY
Week 3 **28 July-2 August2025**	Determination of wave function & energy of a particle in one dimensional bo representation and its significance.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	**Physical Properties and Molecular Structure** Optical activity, polarization – (clausius – Mossotti equation).
10 August	SUNDAY
Week 5 **11August-16August2025**	Orientation of dipoles in an electric field, dipole moment, included dipole moment, mea dipole moment-temperature method and refractivity method, dipole moment and molecules.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Magnetic permeability, magnetic susceptibility, and its determination. Application of ma susceptibility, magnetic properties – paramagnetism, diamagnetism and ferromagnetics.
24August	SUNDAY

Week 7 **25August-** **30August2025**	**Spectroscopy-I** Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectros statement of Bornoppenheimer approximation, Degrees of freedom.
31 August	SUNDAY
Week 8 **1September-** **6September 2025**	**Rotational Spectrum** Diatomic molecules. Energy levels of rigid rotator (semi-classical principles).
7September	SUNDAY
Week 9 **8September-** **13September2025**	Selection rules, spectral intensity distribution using population distribution (Maxwel distribution), determination of bond length, qualitative description of non-rigid rotor, iso
14September	SUNDAY
Week 10 **15September-** **20September2025**	**Spectroscopy-II** Vibrational spectrum Infrared spectrum: Energy levels of simple harmonic oscillator, sel pure vibrational spectrum, intensity, determination of force constant and qualitative rela constant and bond energies.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Effects of anharmonic motion and isotopic effect on the spectra., idea of vibrational freq different functional groups.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Raman Spectrum:** Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomi molecules, selectin rules.
5 October	SUNDAY
	Quantum theory of Raman spectra.

Week 13 **6October-** **11October-2025**	
12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **24October-** **1November-2025**	Revision
2November	SUNDAY
Week 15 **3November-** **8November-2025**	Revision

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – LOKESH KUMAR
Class: B.Sc Chemistry (H) 5th SEM

Code: CH (H) -502

PaperNomenclature: Inorganic Chemistry (Theory) - II

Week 1 **15July-19July 2025**	Organometallic Chemistry-I Definition, Nature of Metal Carbon bond, classification of organometallic compounds by bond type
20July	SUNDAY
Week 2 **21July-26July 2025**	pI)covalent ii) Ionic iii) Electron deficient iv) cluster compounds v) bond compounds including sandwitch derivatives.
27July	SUNDAY
Week 3 **28 July-2 August2025**	. Structure and bonding in, metal- ethylenic, metal-acetylenic complexes,
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Structure and bonding in Metal carbonyls, cyclopentadienyl derivative,
10 August	SUNDAY
Week 5 **11August-16August2025**	Applications of organometallic compounds as homogeneous catalysts in hydrogenation, hydroformylation
17 August	SUNDAY
Week 6 **18August-23 August2025**	polymerization, oligomerization and metathesis reactions of alkenes and alkynes (Ziegler - Natta polymerization of ethylene and propylene.)
24August	SUNDAY
Week 7 **25August-30August2025**	Bio- Inorganic Chemistry: Essential and Trace elements in biological processes, bioinorganic chemistry of haemoglobin and myoglobin,
31 August	SUNDAY

Week 8 **1September-** **6September 2025**	vitamin B12, carboxypeptidase A and chlorophyll, biological role of alkali and alkaline earth metal ions with notrogen fixation (special reference to Ca2+ .
7September	SUNDAY
Week 9 **8September-** **13September2025**	Revision
14September	SUNDAY
Week 10 **15September-** **20September2025**	Medicinal Chemistry: Medicinal aspects of some metal complexes - platinum metal complexes as anticancer agents and.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	their probable mechanism, anticancer activity of cu, Co and Au complexes. Antibacterial and antiviral activity of metal complexes
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Revision
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Corrosion and Passivity: Theories of corrosion,
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	prevention of corrosion of metals, passivity

2November		SUNDAY .
	Week1 3 **3November-** **8November-2025**	Revision

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – LOKESH KUMAR
Class: B.Sc Chemistry (H) 5th SEM

Paper Code: CH (H) -503

PaperNomenclature: Physical Chemistry- I

Week 1 **15July-19July 2025**	Solution and collective - properties Ideal and Non-ideal solution. Methods of expressing concentrations of solution, activity and activity coefficient. Dilute solution.
20July	SUNDAY
Week 2 **21July-26July 2025**	Colligative properties, Raoults law. Relative lowering of vapour pressure. Molecular weight determination, osmotic law of osmotic pressure and its measurements.
27July	SUNDAY
Week 3 **28 July-2 August2025**	. Determination of molecular weight by osmotic pressure method. Elevation of boiling point and depression in freezing point.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Thermodynamic derivation of relation between molecular weighty and elevation in boiling point and depression in freezing point..
10 August	SUNDAY
Week 5 **11August-16August2025**	Experimental methods for determining various colligative properties. Abnormal molar mass. Degree of dissociation and association of solutes
17 August	SUNDAY
Week 6 **18August-23 August2025**	Rotational Spectroscopy Introduction of electromagnatic radiations, regions of the spectrum, basic features of different spectrometers. Statement of the Born-Openheimer approximation
24August	SUNDAY
Week 7 **25August-30August2025**	, degree of freedom. of diatomic molecule. Energy level of a rigid rotor (semiclassical principle) selection rule, spectral intensity.
31 August	SUNDAY
Week 8 **1September-6September 2025**	Distribution using population distribution (Maxwell- Boltzmann distribution) determination of bond length, qualitative description of nonregid rotator. Isotopic effect
7September	SUNDAY
Week 9 **8September-13September2025**	Phase equilibrium Statement and meaning of the terms phase, component and degree of freedom.

	Phase rule and its thermodynamic derivation, phase equilibria of one component system
14September	SUNDAY
Week 10 **15September-** **20September2025**	, water and sulfur system, phase equilibria of two component system, solid-liquid equilibria, simple eutetic (Bi-Cd; Pb-silver system), De-solverisation of lead. Solid solution:
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Compound formation with congruent melting point (Mg-Cu)and incongruent melting point (NaCl-Cu) (FeCl3 and CuSO4 - H2O) system freezing mixture, acetone, dry ice
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Photo Chemistry: Interaction of radiation with matter. Photo chemical reactions and their difference with thermal reaction law of photo chemistry.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Grothus, Drapper law Stark Einstin law, Lambert law, Beer's law. Jablonski diagram depicting various processes occuring in the excited state qualitative description of Fluorescence,
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	phosphorescence non-radiation processes (internal conversion, inter system crossing) quantum yield photosensitized reactions energy transfer processes (some simple examples).
2November	SUNDAY
Week 13 **3November-** **8November 2025**	Revision

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26

Semester: Odd

Name of Asstt./Ass. Prof. – Abhishek

Class: Bsc Chemistry (H) 5th Sem

Paper Code: CH (H) - 505

PaperNomenclature: Organic Chemistry-I

Week 1 **15July-19July 2025**	Spectroscopy Principle of nuclear magnetic resonance,the PMR spe ctrum,number of signals, peak areas,
20July	SUNDAY
Week 2 **21July-26July 2025**	equivalent and nonequivalent protons positions of signals and chemical shift,shielding and deshielding of protons, proton counting,splitting of signals and coupling constants, magnetic equivalence of protons
27July	SUNDAY
Week 3 **28 July-2 August2025**	..Discussion of PMR spectra of the molecules: ethyl bromide, n -propyl bromide, isopropyl bromide, 1,1-dibromoethane, 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde, acetophenone,p-anisidine and p-nitrotoluene.Simple problems on PMR spectroscopy for structure determination of organic compounds.
3 August	SUNDAY
Week 4 **4 August-9 August2025**	1. Mass Spectroscopy: Introduction, instrumentation, mass spectrum, determination of molecular formula, parent peak and base peak
10 August	SUNDAY
Week 5 **11August-16August2025**	, recognition of molecular ion peak, fragmentation pattern of alkanes, alkenes and benzene
17 August	SUNDAY
Week 6 **18August-23 August2025**	.Organosulphur Compounds Nomenclature, structural features, Methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and sulphaguanidine. Synthetic detergents alkyl and aryl sulphonates.
24August	SUNDAY
Week 7 **25August-30August2025**	Carbohydrates Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides.
31 August	SUNDAY
Week 8 **1September-6September 2025**	Erythro and threo diastereomers. Conversion of glucose into mannose. Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose

7September	SUNDAY
Week 9 **8September-** **13September2025**	. Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism of mutarotation
14September	SUNDAY
Week 10 **15September-** **20September2025**	Structures of ribose and deoxyribose. An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Organometallic Compounds Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions..
28September	SUNDAY
Week 12 **29September-4** **October 2025**	Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions.
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Organo lead compounds: formation and chemical reactions. Organo cadmium compounds: formation and chemical reactions. Organo copper compounds: formation and chemical reactions
12October **(14-22October)**	SUNDAY Diwali Break
Week 12 **24October-** **1November-2025**	Revision
2November	SUNDAY
Week1 3 **3November-** **8November-2025**	Revision

Academic Session 2025-26 **Class: B.Sc. Chem (H) Final Year**

Semester: 5th

Name of Asstt./Ass. Prof. – Dr. Rinki Malik

Paper Code: CH (H) -506

Paper Nomenclature: Organic Chemistry II

Week 1 **15July-19July 2025**	Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution.
20July	SUNDAY
Week 2 **21July-26July 2025**	Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Introduction to condensed five and six - membered heterocycles. Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis
3 August	SUNDAY
Week 4 **4 August-9 August2025**	Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of indole, quinoline and isoquinoline (Assignement)
10 August	SUNDAY
Week 5 **11August-16August2025**	Nomenclature, Trivalent phosphorus compounds - trialkyl and triaryl phosphine (method of formation and reactions), Penta valent phosphorus compounds, organic phosphoranes, phosphorus ylides, wittig reaction. Biological role of phosphorus.
17 August	SUNDAY
Week 6 **18 Augu-23 August**	Brief history of macromolecular Science,Natural polymers: Starch, cellulose silk resin. Classification, types of polymerisation: Addition, condensation
24August	SUNDAY
Week 7 **25 August-30 August**	Addition, condensation and their mechanisms(free radical, ionic and coordination - Ziegler Natta Catalyst)
31 August	SUNDAY
Week 8 **1 September-6 September**	Methods of polymerisation - bulk suspension, emulsion and solution. Detailed study of following polymers with respect to synthesis, properties and applications. (I) Phenol formaldehydes resins. (II) Urea formaldehydes resins. (III) Polyesters
7September	SUNDAY
Week 9 **8 September-13 September**	Detailed study of following polymers with respect to synthesis, properties and applications. (IV) Polyamides. (V) Natural and synthetic rubbers (Revision, Test and Discussion on polymer products)
14September	SUNDAY
Week 10 **15 sptember-20 September**	Acidity of alpha -hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate:
21September	SUNDAY

Week 11 **22 September- 27 September**	The Claisen condensation. Keto -enol tautomerism of ethyl acetoacetate. Alkylation of 1,3-dithianes. Alkylation and acylation of enamines
28September	SUNDAY
Week 12 **23 September-4 October**	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 (Revision and Test)
5 October	SUNDAY
Week 13 **6 october- 11 october**	Classification, structure and stereochemistry of amino acids. Acid - base behavior, isoelectric point and electrophoresis. Preparation and reactions of alpha -amino acids
12October **(14-23October)**	SUNDAY Diwali Break
Week 14 **24 October-1 November**	Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end gro up analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid – phase peptide synthesis. Structures of peptides and proteins. Levels of protein structure. Protein denaturation/renaturation.
2November	SUNDAY
Week 15 **3 November – 8 November**	Purines and pyrimidines: Introduction to purines andpyrimidines, preparation and reactions of adenine, guanine, cytosine, uracil, thymine, tautomerism in purines and pyrimidines
9 November	SUNDAY
Week 16 **10 November-** **15 November 2025**	Nucleic acids: introduction. Constituents of nucleic acids. Ribonucleosides and ribonucleotides. The double helical structure of DNA. (Revision, and Test)
16 November 2025	SUNDAY
17 November 2025	Revision of full syllabus and Discussion of previous papers.

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – RINKU LATHWAL
Class: B.Sc Life Science (Minor chemistry) 1ST SEM

Code: 24CHE401MI01

PaperNomenclature: Basic concepts of chemistry

Week 1 **15July-19July 2025**	**Atomic Structure**: Atomic models, Rutherford's model and its limitations, Bohr's model and its applications, Dual nature of matter and light.
20July	SUNDAY
Week 2 **21July-26July 2025**	De Broglie's relationship, Heisenberg uncertainty principle, Concept of orbitals, Quantum numbers, Shapes of s, p and d orbitals.
27July	SUNDAY
Week 3 **28 July-2 August2025**	Rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule.
3 August	SUNDAY
Week 4 **4 August-** **9 August2025**	Electronic configuration of atoms, Stability of half-filled and completely filled orbitals.
10 August	SUNDAY
Week 5 **11August-16August2025**	**Periodic Table and Atomic Properties:** Brief history of the development of periodic table, Modern periodic law and the present form of periodic table.
17 August	SUNDAY
Week 6 **18August-** **23 August2025**	Periodic trends in properties of elements -Atomic radii, Ionic radii, Inert gas radii, Ionization enthalpy.
24August	SUNDAY
Week 7 **25August-** **30August2025**	Periodic trends in properties of elements -Electron gain enthalpy, Electronegativity, valency. Nomenclature of elements with atomic number greater than 100.

31 August	SUNDAY
Week 8 **1September-** **6September 2025**	**Mole Concept**: Atomic mass, Mole concept and molar mass, Avogadro's number and its significance, Percentage composition.
7September	SUNDAY
Week 9 **8September-** **13September2025**	Empirical and molecular formula, Chemical reactions.
14September	SUNDAY
Week 10 **15September-** **20September2025**	Ways of expressing concentration of solutions (Molarity, Normality, Molality, Mole percentage, Strength).
21September	SUNDAY
Week 11 **22September-27** **September 2025**	Stoichiometric calculations involving reactants and products.
28September	SUNDAY
Week 12 **29September-4** **October 2025**	**Fundamentals of Organic Chemistry**: Electronic displacements: Inductive effect, Electromeric effect
5 October	SUNDAY
Week 13 **6October-** **11October-2025**	Resonance, Hyperconjugation. Cleavage of bonds: Homolysis and Heterolysis

12October **(14-22October)**	SUNDAY Diwali Break
Week 14 **23 October-** **25 october 2025**	Reaction intermediates: Carbocations, Carbanions
26 0ctober	SUNDAY
Week 15 **27 0ctober –** **1 November-2025**	Reaction intermediates: Free radicals and carbenes. Electrophiles and Nucleophiles
2 November 2025	SUNDAY
Week 16 **3 November-** **8 November-2025**	Aromaticity: Benzenoids and Huckel's rule
9 November 2025	SUNDAY
Week 17 **10 November-** **15 November-2025**	Revison and Test
16 November	SUNDAY
Week 18 **17 November-**	Test Discussion

18 November-2025	
EXAMINATION	19 NOVEMBER 2025 ONWARDS

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2025-26
Semester: Odd
Name of Asstt./Ass. Prof. – ANIL,RINKU
Class: B.Sc Physical Science, B.Sc Life Science (Minor chemistry) 1ST SEM

Code: 24CHE401MI01

PaperNomenclature: Basic concepts of chemistry

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