Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

16th January 2025 to 31st May 2025	**[B.Sc. 2nd Semester Single Major (Chemistry)]**
Week 1 **30th January 1st February**	**Chemistry of Halogenated Hydrocarbons** **Alkyl Halides:** Methods of preparation and properties
2th February	**SUNDAY**
Week 2 **3th February – 8th February**	**Chemistry of Halogenated Hydrocarbons** **Alkyl Halides: N**nucleophilic substitution reactions SN1, SN2 and SNi mechanisms with stereochemical aspects and factors affecting the rate of SN reactions. Elimination reactions-E1, E2 and E1cB mechanism, nucleophilic substitution vs elimination.
9th February	**SUNDAY**
Week 3 **10th February – 15th February**	**Chemistry of Halogenated Hydrocarbons** **Aryl Halides:** Preparations (including preparation from diazonium salts) and properties, nucleophilic aromatic substitution, SNAr, benzyne mechanism. Relative reactivity of alkyl, allyl, benzyl, vinyl and aryl halides towards nucleophilic substitution reactions. Organometallic compounds of Mg (Grignard reagent)- use in synthesis of organic compounds.
16th February	**SUNDAY**
Week 4 **7th February–22nd February**	**Revision, Assignment and Test**
23rd February	**SUNDAY**
Week 5 **24th February–2nd March**	**Acids and Bases**: Arrhenius, Bronsted-Lowry, Lux-flood, solvent system and Lewis concept of acids and bases,
3rd March	**SUNDAY**
Week 6 **4th March–9th March**	**Acids and Bases**: Relative strength of acids and bases, levelling effect, classification of acids and bases as hard and soft. Pearson's HSAB concept, applications of HSAB principle (acid-base strength and hardness and softness). Symbiosis, theoretical basis of hardness and softness, electronegativity.
10th March	**SUNDAY**
Week 7 **11th March– 16th March**	**Non-Aqueous Solvents:** Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid HF, NH^3 and liquid SO^2.
17th March	**SUNDAY**
Week 8 **18th March – 23rd March**	**Revision, Assignment and Test**
24th March	**SUNDAY**
Week 9 **25th March – 30th March**	**Chemistry of p- Block Elements (groups 13-17)**: Inert pair effect, diagonal relationship, general characteristics of groups 13-17 elements.
31th March	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

Week 10 **1st April – 6th April**	**Chemistry of p- Block Elements (groups 13-17)**: Preparations, properties, structure and uses of compounds like oxides, oxy-acids (comparison of acidic strength) and halides of groups 13-17, hydrides of boron - diborane, borazine (preparation and uses), boric acids and borax.
7th April	**SUNDAY**
Week 11 **8th April – 13th April**	**Chemistry of p- Block Elements (groups 13-17)**: Chemistry of fullerenes, silicates and type of silicates on structural basis, silicones, phosphonitrilic halides {$(PNCl^2)n$ where n = 3 and 4}, basic properties of halogens, interhalogens, pseudohalogen and polyhalides.
14th April	**SUNDAY**
Week 12 **15th April – 20th April**	**Revision, Assignment and Test**
21st April	**SUNDAY**
Week 13 **22nd April – 27th April**	**Thermodynamics-II** **Second Law:** Concept of entropy, thermodynamic scale of temperature, statement of second law of thermodynamics. Carnot's cycles and its efficiency, Carnot's theorem, calculation of entropy change for reversible and irreversible processes.
28th April	**SUNDAY**
Week 14 **29th April – 4th May**	**Thermodynamics-II** **Third Law:** Statement of third law, concept of residual entropy, calculation of absolute entropy of molecules. Free Energy Functions: Gibbs and Helmholtz energy, variation of S, G, A with T, V, P, free energy change and spontaneity. Gibbs-Helmholtz equation, Maxwell relations, thermodynamic equation of state.
5th May	**SUNDAY**
Week 15 **6th May – 11th May**	**Revision, Assignment and Test**
21st April	**SUNDAY**
Week 16 **22nd May – 27th May**	**Revision, Assignment and Test**
28th April	**SUNDAY**
Week 17 **29th May – 4th May**	**Revision, Assignment and Test**
5th May	**SUNDAY**
Week 18 **6th May – 11th May**	**Revision, Assignment and Test**
12th May	**SUNDAY**
Week 19 **13th May – 18th May**	**Revision, Assignment and Test**
19th May	**SUNDAY**
Week 20 **20th May – 25th May**	**Revision, Assignment and Test**
26th May	**SUNDAY**
Week 21 **27th May – 31st May**	**Revision, Assignment and Test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

7th January 2025 to 11th May 2025	**[B.Sc. 4th Semester Chemistry Hons.]**
Week 1 **7th January – 11th January**	**Aldehydes and Ketones** Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate., * synthesis of aldehydes and ketones using 1,3-dithianes, *Gatterman aldehyde synthesis , *Gatterman Koch reaction, *synthesis of ketones from nitriles and from carboxylic acids.
12nd January	**SUNDAY**
Week 2 **13th January – 18th January**	**Aldehydes and Ketones** Physical properties. Comparison of reactivities of aldehydes and ketones. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives.
19th January	**SUNDAY**
Week 3 **20th January - 25th January**	**Aldehydes and Ketones** Wittig reaction. Mannich reaction, *Michael reaction. * Use of acetals as protecting group. Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reductions. * Halogenation of enolizable ketones. *An introduction to α, β-unsaturated aldehydes and ketones.
26th January	**SUNDAY**
Week 4 **27th January 1st February**	**Revision, Assignment and Test**
2th February	**SUNDAY**
Week 5 **3th February – 8th February**	**Amines** Structure and nomenclatu re of amines, physical properties. Stereochemistry of amines. Separation of a mixture of primary, secondary and tertiary amines. Structural featu res affecting basicity of amines. *Amine salts as phase-transfer catalysts.
9th February	**SUNDAY**
Week 6 **10th February – 15th February**	**Amines** Prepa ration of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction. Electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.
16th February	**SUNDAY**
Week 7 **7th February–22nd February**	**Nitro Compounds** Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium. *Picric acid. Halonitroarenes: reactivity
23rd February	**SUNDAY**
Week 8 **24th February–2nd March**	**Revision, Assignment and test** **Nitro Compounds** Preparation of nitro alkanes and nitro arenes

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

3rd March	**SUNDAY**
Week 9 **4th March–9th March**	**Nitro Compounds** chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium. *Picric acid. Halonitroarenes: reactivity
10th March	**SUNDAY**
Week 10 **11th March– 16th March**	**Diazonium Salts** Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO2 and CN groups, reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application. * Preparation and reactions of cyanides, and isocyanides, urea and diazomethane.
17th March	**SUNDAY**
Week 12 **18th March – 23rd March**	**Infrared (IR) absorption spectroscopy** Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands,
24th March	**SUNDAY**
Week 14 **25th March – 30th March**	**Infrared (IR) absorption spectroscopy** measurement of IR spectrum, fingerprint region,
31th March	**SUNDAY**
Week 15 **1st April – 6th April**	**Infrared (IR) absorption spectroscopy** characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.
7th April	**SUNDAY**
Week 16 **8th April – 13th April**	**Infrared (IR) absorption spectroscopy** *Hydrocarbons (saturated and unsaturated), hydroxy compounds, aldehydes, ketones, esters, anhydrides, amides, amines and nitrocompounds.
14th April	**SUNDAY**
Week 17 **15th April – 20th April**	**Infrared (IR) absorption spectroscopy** Applications of IR spectroscopy in structure elucidation of simple organic compounds.
21st April	**SUNDAY**
Week 18 **22nd April – 27th April**	**Revision, Assignment and test**
28th April	**SUNDAY**
Week 19 **29th April – 4th May**	**Revision, Assignment and test**
5th May	**SUNDAY**
Week 20 **6th May – 11th May**	**Revision, Assignment and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

7th January 2025 to 11th May 2025	**[B.Sc. 6th Semester Chemistry Hons.]**
Week 1 **7th January – 11th January**	**Topics in Biological Chemistry:** Introduction to enzymes, nomenclature, characteristics. Practicals:
12nd January	**SUNDAY**
Week 2 **13th January – 18th January**	**Topics in Biological Chemistry: G**eneral picture of mechanism of enzymes action, co-enzymes: co-enzymes derived from niacin and thiamine, lipoic acid, co-enzyme- A. Practicals:
19th January	**SUNDAY**
Week 3 **20th January - 25th January**	**Topics in Biological Chemistry: E**nergy production in biological system, glycolysis, tricarboxylic acid cycle Practicals:
26th January	**SUNDAY**
Week 4 **27th January 1st February**	**Revision, Assignment and test** Practicals:
2th February	**SUNDAY**
Week 5 **3th February – 8th February**	**Fermentation** Anaerobic and aerobic fermentation, production o f alcoho l, citric acid and lactic acid Practicals:
9th February	**SUNDAY**
Week 6 **10th February – 15th February**	**Fats, Oil and Detergents:** Occurrence, chemical composition and importance, hydrogenated oils, Rancidity, acid value, sponification and iodine numbers. Practicals:
16th February	**SUNDAY**
Week 7 **7th February–22nd February**	**Fats, Oil and Detergents:** Difference between toilet and washing soaps, comparison o f soap and detergents, classification and principle of cleansing action of detergents . Practicals:
23rd February	**SUNDAY**
Week 8 **24th February–2nd March**	**Revision, Assignment and test** Practicals:
3rd March	**SUNDAY**
Week 9 **4th March–9th March**	**Drugs-I** Introduction, relation of chemical structure and physiological activity with suitable examples. Practicals:
10th March	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

Week 10 **11th March– 16th March**	**Drugs-I** Mechanism of chemotherapeutic action. Nomenclature of organic chemical systems, stereochemical notations. General aspects, preparation and uses of the following drugs: (i) Analgesics and antipyretics : paracetamol, Aspirin (i) Anti-inflammatory : Ibuprofen (iii) Antiseptics and disinfectants Chloro cresol, povidone – Iodine Practicals:
17th March	**SUNDAY**
Week 12 **18th March – 23rd March**	**Drugs-II** General aspects, preparation and uses of the following drugs: (i) Sulpha : Sulphacetamide (ii) Local anaesthetics : Benzocaine Practicals:
24th March	**SUNDAY**
Week 14 **25th March – 30th March**	**Drugs-II** General aspects, preparation and uses of the following drugs: (iii) Anti amoebic : Metronidazole (iv) Antimalarials : Chloroquinine Practicals:
31th March	**SUNDAY**
Week 15 **1st April – 6th April**	**Revision, Assignment and test** Practicals:
7th April	**SUNDAY**
Week 16 **8th April – 13th April**	**Drugs-II** General aspects, preparation and uses of the following drugs: **(v)** Antihistamines : Chlorophenizamine Maleate (vi) Antifungal Undecylenic acid Practicals:
14th April	**SUNDAY**
Week 17 **15th April – 20th April**	**Drugs-II** General aspects, preparation and uses of the following drugs: (vii) Insect repellants : Dibutyl phthalate (viii) Antibiotics Chloroamphenicol Practicals:
21st April	**SUNDAY**
Week 18 **22nd April – 27th April**	**Revision, Assignment and test** Practicals:
28th April	**SUNDAY**
Week 19 **29th April – 4th May**	**Revision, Assignment and test** Practicals:
5th May	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2024-25 Semester: Even

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

Class: B.Sc. 2nd /4th /6th Semester (Chem. Hons.)

Name of Subject: General Chemistry (IV) / Organic Chemistry / Organic Chemistry

Week 20 **6th May – 11th May**	**Revision, Assignment and test** Practicals:

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Dr. Ruman Rani
& Kiran Bala
Class: B.Sc.4th sem (N.M, Med.) Sec A & B
Name of Subject: Physical Chemistry

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Thermodynamics-III Second law of thermodynamics, need for the law, different statements of the law ,Carnot's cycles and its efficiency, Carnot's theorm, Thermodynamics scale of temperature.
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	Concept of entropy – entropy as a state function, entropy as a function of V & T, entropy as a function of P & T, entropy change in physical change,
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases.
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Thermodynamics-IV Third law of thermodynamics: Nernst heat theorem,
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	statement of concept of residual entropy, evaluation of absolute entropy from heat capacity data.
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change. Variation of G and A with P, V and T.
23thFeb	**SUNDAY**
Week 9	Electrochemistry-III Electrolytic and Galvanic cells – reversible & Irreversible cells , conventional representation of electrochemical cells. EMF of cell and its measurement, Wes ton

24st–1stMarch	standard cell,
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	Activity and activity coefficients. Calculation of thermodynamic quantities of cell reaction (G, H & K).
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Types of reversible electrodes – metal- metal ion gas electrode, metal –insoluble salt- anion and redox electrodes. Electrode reactions
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	Nernst equations, derivation of cell EMF and single electrode potential.
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Standard Hydrogen electrode, reference electrodes, standard electrodes potential, sign conventions, electrochemical se ries and its applications.
6th April	**SUNDAY**
Week 15 **7th–12th April**	Electrochemistry-IV Concentration cells with and without transference, liquid junction potential, application of EMF measurement i.e. valency of ions, solubility product activity coefficient,
13th April	**SUNDAY**
Week 16 **14th-19th April**	potentiometric titration (acid- base and redox). Determination of pH using Hydrogen electrode, Quinhydrone electrode and glass electrode by potentiometric methods.
20th April	**SUNDAY**
Week 17 **21st–26th April**	Revision
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Revision

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Nidhi Mann, Anil & Rinku
Class: B.Sc.2nd sem (DSC- II) Sec A, B & C
Name of Subject: Chemistry

Week 1 **1st–8thFeb**	Unit–I Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, solvent system concept
9thFeb	**SUNDAY**
Week 2 **10st–15thFeb**	reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2. Hard and soft acids and bases (HSAB concept), applications of HSAB principle
16thFeb	**SUNDAY**
Week 3 **17st–22thFeb**	nature of bonding in noble gas compounds (valence bond treatment and MO treatment for XeF2 and XeF4), molecular shapes of noble gas compounds (VSEPR theory). Noble Gases Occurrence and uses
23thFeb	**SUNDAY**
Week 4 **24st–1stMarch**	, rationalization of inertness of noble gases, clathrates, preparation and properties, chemical properties of the noble gases, chemistry of xenon: structure and bonding in xenon fluorides, oxides and oxyfluorides (XeF2, XeF4, XeF6, XeO3, XeO4, XeOF2, XeO2F2, XeOF4, XeF5 + , XeF5 -)
2ndMarch	**SUNDAY**
Week 5 **3rd–8thMarch**	Unit-II Thermodynamics Brief discussion upto first law of thermodynamics, heat capacity, heat capacities at constant volume and pressure and their relationship.
Week 6 **9th-16th March**	**Holi Break**
Week 7 **17th–22thMarch**	Joule's law, Joule–Thomson coefficient for ideal gases and real gases and inversion temperature entropy as a function of V & T, entropy as a function of P & T, entropy as a function of P & V.
23thMarch	**SUNDAY**
Week 8 **24th–29thMarch**	calculation of work and heat, dU & dH for the expansion of ideal gases and real gases under isothermal and adiabatic conditions for reversible and irreversible processes, enthalpy and internal energy change at constant P, V &T, Kirchhoff's equation.
30thMarch	**SUNDAY**
Week 9 **31st–5th April**	Second law of thermodynamics and its limitations, different statements of the law, Carnot's cycle and its efficiency, Carnot's theorem, thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy change in ideal gases, , entropy as a criterion of spontaneity and equilibrium
6th April	**SUNDAY**

Week 10 **7th–12th April**	Unit–III Hydrocarbons Alkanes: Physical and chemical properties of alkanes, free radical substitutions, halogenation, concept of relative reactivity v/s selectivity. Alkenes: Structure and isomerism, general methods of preparation, physical and chemical properties. Saytzeff and Hoffmann elimination, reactions: acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, alkylation of terminal alkynes.
13th April	**SUNDAY**
Week 11 **14th-19th April**	Mechanism of E1, E2, E1cb reactions, electrophilic addition (mechanism with suitable examples), Markownikoff rule, syn and anti-addition, addition of H2, X2 oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, hydroxylation. Alkynes: General methods of preparation of alkynes
20th April	**SUNDAY**
Week 12 **21st–26th April**	Unit–IV Aromatic Hydrocarbons and Dienes Concept of aromaticity, Huckel's rule, aromatic character of arenes, cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples, ,
6th October	**SUNDAY**
Week 13 **1st–8thFeb**	electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/ acylation with their mechanism, directing effects of groups in electrophilic substitution
27th April	**SUNDAY**
Week 14 **28th–3rdMay**	nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, chemical reactions- 1, 2 and 1, 4 additions (electrophilic and free radical mechanism), Diels – Alder reaction.
4thMay	**SUNDAY**
Week 15 **5th–10thMay**	**Revision Unit-1 and test**
11thMay	**SUNDAY**
Week 16 **12th–17thMay**	**Revision Unit-2 and test**
18thMay	**SUNDAY**
Week 17 **19th–24thMay**	**Revision Unit-3 and test**
25thMay	**SUNDAY**
Week 18 **26th–31stMay**	**Revision Unit-4 and test**

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Praveen, Sandeep Kumar
Class: B.Sc.6th sem (N.M, Med.) Sec A & B
Name of Subject: Physical Chemistry

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Unit 1: Introduction to Electronic Spectra, electronic transitions and band spectra, potential energy curves and Frank-Condon Principle
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	Electronic spectrum of a diatomic molecule, selection rules for electronic transitions in molecules, molecular orbitals involved in electronic transitions.
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	Unit-2: Introduction to photochemistry, interaction of radiation with matter, differences between thermal and photochemical processes, laws of photochemistry: Grothus-Draper Law, Stark-Einstein Law
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Jablonski Diagram depicting various processes occurring in the excited state, qualitative description of Fluorescence, Phosphorescence, non-radiative processes (internal conversion, inter-system crossing)
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	Quantum yield, Quenching of fluorescence, Photosensitization, Photo-inhibitors, Photochemical Equilibrium
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Unit :- 3:Ideal and Non-ideal solutions, methods of expressing the concentration of solutions, activity and activity coefficient
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	Dilute solutions, colligative properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination
23thFeb	**SUNDAY**

Week 9 **24st–1stMarch**	Osmosis, law of osmotic pressure, measurement of osmotic pressure, determination of molecular weight from osmotic pressure
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	Elevation in Boiling Point, Depression in Freezing Point, Thermodynamic derivation of relationship between molecular weight and elevation in boiling point and depression in freezing point
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Experimental methods for determination of elevation in boiling point and depression in freezing point, abnormal molar masses, degree of dissociation and association of solutes.
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	Unit-4. Statement and meaning of the terms- phase, component and degree of freedom
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Thermodynamic derivation of Gibbs phase rule, phase equilibria of one- component system: Water system and Sulphur system.
6th April	**SUNDAY**
Week 15 **7th–12th April**	Phase equilibria of two component system, simple eutectic system: Pb-Ag system, desilverisation of lead
13th April	**SUNDAY**
Week 16 **14th-19th April**	Assignment 1,2,3 And Test
20th April	**SUNDAY**
Week 17 **21st–26th April**	Revision
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Revision

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Dr. Poonam,
Manoj
Class: B.Sc.4th sem (N.M, Med.) Sec A & B
Name of Subject: Organic Chemistry

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Molecular vibrations, Hooke's law, selection rules
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	intensity and position of IR bands, measurement of IR spectrum, Fingerprint region
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	Applications of IR spectroscopy in structure elucidation of simple Organic compounds
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines.
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	Structural features affecting basicity of amines. Prepa ration of alkyl and aryl amines (reduction of nitro compounds, nitriles)
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Preparation of alkyl and aryl amines (reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction.
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	Electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.
23thFeb	**SUNDAY**
Week 9	Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO2 and CN groups

24st–1stMarch	
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	Reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application.
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Preparation of nitro alkanes and nitro arenes and their chemical reactions.
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	March Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides
6th April	**SUNDAY**
Week 15 **7th–12th April**	Advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate., Physical properties. Comparison of reactivities of aldehydes and ketones
13th April	**SUNDAY**
Week 16 **14th-19th April**	Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives
20th April	**SUNDAY**
Week 17 **21st–26th April**	Wittig reaction. Mannich reaction.Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reductions
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Assignment Test

Lesson Plan

B.Sc. Non Medical 4th Semester

Name of Assistant Professor	**Dr. Jyoti, Lokesh kumar**
Class and Semester	**B. Sc. Non Medical & non med Sec A,B(Semester – 4)**
Subject	**Chemistry**
Paper	**Inorganic Chemistry**
Week - 1	lanthanide - Electronic structure, oxidation states
Week – 2	and ionic radii and lanthanide contraction,
Week - 3	complex formation, occurrence and isolation, lanthanide compounds.
Week - 4	Actinides General features and chemistry of actinides,
Week - 5	chemistry of separation of Np, Pu and Am from U,
Week - 6	- Comparison of properties of Lanthanides and Actinides and with transition elements .
Week - 7	Revision
Week - 8	Test of Actinides
Week - 9	Theory of Quali tative and Quanti tative Inorganic Analysis-I Chemistry of analysis of various acidic radicals,
Week - 10	Chemistry of identification of acid radicals in typical combinations,
Week - 11	Chemistry of interference of acid radicals including their removal in the analysis of basic radicals
Week – 12	Chemistry of interference of acid radicals including their removal in the analysis of basic radicals
Week – 13	Revision
Week – 14	Theory of Qualitative and Quantitative Inorganic Analysis-II Chemistry of analysis of various groups of basic radicals,
Week - 15	Theory of precipitation, co- precipitation,
Week –	Post- precipitation, purification of precipitate

16	
Week – 17	Revision

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Dr.Poonam Devi
Class: B.Sc.Chem(H) 6th sem
Name of Subject: Inorganic Chemistry-II

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Air Pollution: Primary and secondary pollutants, sources, pollution effects and control
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	pollution effects and control of the following: gaseous hydrocarbons, carbon monoxide
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	carbon dioxide, hydrogen sulphide, oxides of sulfur and nitrogen and ozone, mechanism of photochemical smog formation; Air purification by micro organisms, Acid rain.
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Water Pollution Types of water pollution, sources of water pollution, approaches to prevent and control water pollution.
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	Industrial Wastes and treatment processes: Introduction , characteristics of industrial wastes, types of industrial wastes,.
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	principles of industrial waste treatment and disposal of industrial wastes.
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	Nuclear and Radio- Chemistry Composition of Nuclei, structure of nucleus, forces operative within nucleus, nuclear stability and mass energy equivalence (binding energy).
23thFeb	**SUNDAY**
Week 9	Nuclear reactions: Types of nuclear reactions, the compound nucleus theories, thermonuclear reactions including fusion and fission reactions

24st–1stMarch	
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	radiation detection and measurement: gaseous ion collection methods (G.M., ionisation and proportional counters) scientillation counter, semi - conductors detectors
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Tracers in Chemistry Activation analysis, isotopic dilution analysis and radiometric titrations.
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	Crystal Structure: Structures of binary compounds such as zinc blende, wurtzite
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Crystal Structure: Structures of binary compounds such as NiAs, CsCl, CaF2,
6th April	**SUNDAY**
Week 15 **7th–12th April**	Crystal Structure: Structures of binary compounds such as rutile, β-Crystobalite, CdI2, BiI3
13th April	**SUNDAY**
Week 16 **14th-19th April**	Crystal Structure: Structures of binary compounds such as ReO3, corrundum and Mn2O3,
20th April	**SUNDAY**
Week 17 **21st–26th April**	factors affecting crystal structures., Revision
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Revision

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Dr.Poonam Devi
Class: B.Sc.physics (H) 2nd sem (Minor)
Name of Subject: Minor Chemistry

Week 1 **1st–8thFeb**	Unit–I Metal and Non-Metals Occurrence of elements in nature, physical and chemical properties of metals and non-metals, minerals and ores,
9thFeb	**SUNDAY**
Week 2 **10st–15thFeb**	metallurgical processes (benefaction, roasting, calcination and reduction of metal oxides processes), refining of metals, metallurgy of Fe, Zn, Al and Cu.
16thFeb	**SUNDAY**
Week 3 **17st–22thFeb**	Solution Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids,
23thFeb	**SUNDAY**
Week 4 **24st–1stMarch**	solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point,
2ndMarch	**SUNDAY**
Week 5 **3rd–8thMarch**	depression in freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor
Week 6 **9th-16th March**	**Holi Break**
Week 7 **17th–22thMarch**	Hydrocarbons Alkanes: General methods of preparation and Reactions: free radical substitution.
23thMarch	**SUNDAY**
Week 8 **24th–29thMarch**	Alkenes: General methods of preparation and Reactions: cis-addition (alk. $KMnO_4$) and trans-addition (bromine),
30thMarch	**SUNDAY**
Week 9 **31st–5th April**	addition of HX (Markownikoff's and anti-Markownikoff's addition), hydration, ozonolysis, oxymecuration-demercuration, hydroboration oxidation.
6th April	**SUNDAY**
Week 10	Alkynes: General methods of preparation and Reactions: formation of metal acetylides and acidity of alkynes, addition of bromine and alkaline $KMnO_4$, ozonolysis and oxidation with hot alk. $KMnO_4$,

7th–12th April	hydration to form carbonyl compounds.
13th April	**SUNDAY**
Week 11 **14th-19th April**	Aromatic Hydrocarbons Structure of benzene (Kekule, hybrid and resonance), preparation of benzene.
20th April	**SUNDAY**
Week 12 **21st–26th April**	preparation of benzene. Reactions: electrophilic substitution reactions in benzene citing examples of nitration,
6th October	**SUNDAY**
Week 13 **1st–8thFeb**	halogenation, sulphonation and Friedel-Craft's alkylation and acylation
27th April	**SUNDAY**
Week 14 **28th–3rdMay**	**acylation with special emphasis on carbocationic rearrangement, side chain oxidation of alkyl benzene.**
4thMay	**SUNDAY**
Week 15 **5th–10thMay**	**Revision Unit-1 and test**
11thMay	**SUNDAY**
Week 16 **12th–17thMay**	**Revision Unit-2 and test**
18thMay	**SUNDAY**
Week 17 **19th–24thMay**	**Revision Unit-3 and test**
25thMay	**SUNDAY**
Week 18 **26th–31stMay**	**Revision Unit-4 and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Nidhi Mann &
Pinki Rani
Class: B.Sc.2nd sem
Name of Subject: Chemistry SEC Paper-II

Week 1 **1st–8thFeb**	Unit–I Solid Fuels Coal - origin, chemical composition, carbonization of coal, manufacture and properties of metallurgical coke, recovery of by-products
9thFeb	**SUNDAY**
Week 2 **10st–15thFeb**	calorific value, classification, characteristics & distribution of Indian coals
16thFeb	**SUNDAY**
Week 3 **17st–22thFeb**	storage and spontaneous combustion of coal, coal washing and blending, petrographic constituents of coal
23thFeb	**SUNDAY**
Week 4 **24st–1stMarch**	Unit–II Liquid Fuels Origin and composition of crude oil kerosene and diesel oil
2ndMarch	**SUNDAY**
Week 5 **3rd–8thMarch**	crude oil distillation and its products with special reference to gasoline
Week 6 **9th-16th March**	**Holi Break**
Week 7 **17th–22thMarch**	cracking and reforming, coal tar distillation products, shale oil.
23thMarch	**SUNDAY**
Week 8 **24th–29thMarch**	Unit–III Gaseous Fuels Natural gas, coal gas, coke oven and blast furnace gas
30thMarch	**SUNDAY**
Week 9 **31st–5th April**	manufacture of water gas and producer gas
6th April	**SUNDAY**

Week 10 **7th–12th April**	carburetted water gas. Synthetic fuels: hydrogenation of coal, Fischer–Tropsch synthesis.
13th April	**SUNDAY**
Week 11 **14th-19th April**	Unit–IV Nuclear Fuels Introduction, nuclear fuels and nuclear reactors
20th April	**SUNDAY**
Week 12 **21st–26th April**	moderators and structural materials, introduction to renewable energy sources, Combustion: combustion of solids fuels
27th April	**SUNDAY**
Week 13 **28th–3rdMay**	calculation of volume and weight of air necessary for combustion of fuels, gas analysis.
4thMay	**SUNDAY**
Week 14 **5th–10thMay**	**Revision Unit-1 and test** .,
11thMay	**SUNDAY**
Week 15 **12th–17thMay**	**Revision Unit-2 and test**
18thMay	**SUNDAY**
Week 16 **19th–24thMay**	**Revision Unit-3 and test**
25thMay	**SUNDAY**
Week 17 **26th–31stMay**	**Revision Unit-4 and test**

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof:Abhishek Dahiya
Class: B.Sc.Chem(H) 4th sem
Name of Subject: Physical Chemistry

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Thermodynamics – II Second law of thermodynamics. Need of the law, different definitions of the law, Carnot Cycle and its efficiency. Carnot theorem. Thermodynamic scale of temperature.
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	Concept of entropy, entropy as a state function of V and T, entropy as a function of P and T. Entropy change in physical processes. Clausius inequility. Entropy as criteria of spontaneity and equilibrium
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	Entropy change in ideal gases and mixing of gases, work function, Gibb,s free energy function. Gibbs function (G) and Helmholtz function (A) as thermodynamic function.
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Criteria of spontaneity of reversible processes in terms of enthalpy change, entropy change, work function and free energy function. Variation of G and A with P,V and T
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	Gibb Helmholtz equation and its application ,clausius- clapeyron equation Nernst heat theorem. Third law of thermodynamics and its applications. Partial molar quantities. Chemical potential. Gibb's Duhem equation. Gibb,s adsorption equation and its application, variation of chemical potential with temperature and pressure.
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Redox reactions, electrolytic and galvanic cells. Reversible and irreversible cells reversible electrodes, types of reversible electrodes, metal electrodes, gas metal electrode, metal insoluble salt on ions and redox electrodes
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	electrode reactions, cell voltage ,function of salt bridge, electrode potential and its determination. Standard hydrogen electrode, reference electrode, standard cell, sign convention. Electrochemical series and its significance.
23thFeb	**SUNDAY**
Week 9 **24st–1stMarch**	Nernst equation for a reversible electrode and cell. Calculation of thermodynamic quantities of a cell reaction G, H and K

2nd March	**SUNDAY**
Week 10 **3rd–8th March**	Polarisation over potential and hydrogen over voltage
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22th March**	Experimental methods of chemical kinetics: conductometric , potentiometric , optical method ,polarimetery and spectrophotometer
23th March	**SUNDAY**
Week 13 **24th–29th March**	Theories of reaction rates, effect of temperature on rate of reaction. Simple collision theory based upon transition state, hard sphere model theory (equilibrium hypothesis)
30th March	**SUNDAY**
Week14 **31st–5th April**	Expression for the rate constants based on equilibrium constant their thermodynamic aspect
6th April	**SUNDAY**
Week 15 **7th–12th April**	Definition of pH. Determination of pH using hydrogen, quinhydron and glass electrode by potentiometric method.
13th April	**SUNDAY**
Week 16 **14th-19th April**	Buffers solution, Buffer action, Henderson - Hazel equation.
20th April	**SUNDAY**
Week 17 **21st–26th April**	Hydrolysis of salts, corrosion, types, theories and methods of controlling it.
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Revision.

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Dr.Poonam Devi
Class: B.Sc.physics (H) 2nd sem (Minor)
Name of Subject: Minor Chemistry

Week 1 **1st–8thFeb**	Unit–I Metal and Non-Metals Occurrence of elements in nature, physical and chemical properties of metals and non-metals, minerals and ores,
9thFeb	**SUNDAY**
Week 2 **10st–15thFeb**	metallurgical processes (benefaction, roasting, calcination and reduction of metal oxides processes), refining of metals, metallurgy of Fe, Zn, Al and Cu.
16thFeb	**SUNDAY**
Week 3 **17st–22thFeb**	Solution Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids,
23thFeb	**SUNDAY**
Week 4 **24st–1stMarch**	solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point,
2ndMarch	**SUNDAY**
Week 5 **3rd–8thMarch**	depression in freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor
Week 6 **9th-16th March**	**Holi Break**
Week 7 **17th–22thMarch**	Hydrocarbons Alkanes: General methods of preparation and Reactions: free radical substitution.
23thMarch	**SUNDAY**
Week 8 **24th–29thMarch**	Alkenes: General methods of preparation and Reactions: cis-addition (alk. KMnO4) and trans-addition (bromine),
30thMarch	**SUNDAY**
Week 9 **31st–5th April**	addition of HX (Markownikoff's and anti-Markownikoff's addition), hydration, ozonolysis, oxymecuration-demercuration, hydroboration oxidation.
6th April	**SUNDAY**
Week 10 **7th–12th April**	Alkynes: General methods of preparation and Reactions: formation of metal acetylides and acidity of alkynes, addition of bromine and alkaline KMnO4, ozonolysis and oxidation with hot alk. KMnO4, hydration to form carbonyl compounds.

13th April	**SUNDAY**
Week 11 **14th-19th April**	Aromatic Hydrocarbons Structure of benzene (Kekule, hybrid and resonance), preparation of benzene.
20th April	**SUNDAY**
Week 12 **21st–26th April**	preparation of benzene. Reactions: electrophilic substitution reactions in benzene citing examples of nitration,
6th October	**SUNDAY**
Week 13 **1st–8thFeb**	halogenation, sulphonation and Friedel-Craft's alkylation and acylation
27th April	**SUNDAY**
Week 14 **28th–3rdMay**	**acylation with special emphasis on carbocationic rearrangement, side chain oxidation of alkyl benzene.**
4thMay	**SUNDAY**
Week 15 **5th–10thMay**	**Revision Unit-1 and test**
11thMay	**SUNDAY**
Week 16 **12th–17thMay**	**Revision Unit-2 and test**
18thMay	**SUNDAY**
Week 17 **19th–24thMay**	**Revision Unit-3 and test**
25thMay	**SUNDAY**
Week 18 **26th–31stMay**	**Revision Unit-4 and test**

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Abhishek Dahiya
Class: B.Sc.Chem(H) 6th sem
Name of Subject: Physical Chemistry-II

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	Construction of molecular orbital by linear combination of atomic orbital ,-H2 ion
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Molecular orbitals theory-II Calculation of energy levels from wave function, physical picture of bonding and antibonding wave function.
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	.Concept of pie, pie* orbitals and their characteristics. Hybrid orbital (Sp. Sp2 and Sp3 .). Calculation of co-efficients of atomic orbitals used in these hybrid orbitals.
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Introduction of valence bond model of H2,comparison of molecular orbital. and valence bond. model
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	Catalysis Homogeneous and Heterogeneous catalysis, Enzyme catalysis.

23thFeb	**SUNDAY**
Week 9 **24st–1stMarch**	Theory of catalysis - Intermediate compound formation theory, adsorption theory
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	general characteristics of catalysis, positive catalysis, negative catalysis, autocatalysis, shape selective catalysis.
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Chromatography Classification of chromatographic methods
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	principle of differential migration, nature of differential migration
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Adsorption phenomenon, nature of adsorpent, solvent system. Rf- values
6th April	**SUNDAY**
Week 15 **7th–12th April**	application basic principle of partition, paper, column, thin layer liquid-liquid partition and high performance.
13th April	**SUNDAY**
Week 16 **14th-19th April**	Liquid chromatography, paper & column, thin layer liquid-liquid partition and high performance liquid chromatography
20th April	**SUNDAY**
Week 17 **21st–26th April**	Revision
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Revision

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Dr.Poonam Devi
Class: B.Sc.physics (H) 2nd sem (Minor)
Name of Subject: Minor Chemistry

Week 1 **1st–8thFeb**	Unit–I Metal and Non-Metals Occurrence of elements in nature, physical and chemical properties of metals and non-metals, minerals and ores,
9thFeb	**SUNDAY**
Week 2 **10st–15thFeb**	metallurgical processes (benefaction, roasting, calcination and reduction of metal oxides processes), refining of metals, metallurgy of Fe, Zn, Al and Cu.
16thFeb	**SUNDAY**
Week 3 **17st–22thFeb**	Solution Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids,
23thFeb	**SUNDAY**
Week 4 **24st–1stMarch**	solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point,
2ndMarch	**SUNDAY**
Week 5 **3rd–8thMarch**	depression in freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor
Week 6 **9th-16th March**	**Holi Break**
Week 7 **17th–22thMarch**	Hydrocarbons Alkanes: General methods of preparation and Reactions: free radical substitution.
23thMarch	**SUNDAY**
Week 8 **24th–29thMarch**	Alkenes: General methods of preparation and Reactions: cis-addition (alk. KMnO4) and trans-addition (bromine),
30thMarch	**SUNDAY**
Week 9 **31st–5th April**	addition of HX (Markownikoff's and anti-Markownikoff's addition), hydration, ozonolysis, oxymecuration-demercuration, hydroboration oxidation.
6th April	**SUNDAY**
Week 10 **7th–12th April**	Alkynes: General methods of preparation and Reactions: formation of metal acetylides and acidity of alkynes, addition of bromine and alkaline KMnO4, ozonolysis and oxidation with hot alk. KMnO4, hydration to form carbonyl compounds.

13th April	**SUNDAY**
Week 11 **14th-19th April**	Aromatic Hydrocarbons Structure of benzene (Kekule, hybrid and resonance), preparation of benzene.
20th April	**SUNDAY**
Week 12 **21st–26th April**	preparation of benzene. Reactions: electrophilic substitution reactions in benzene citing examples of nitration,
6th October	**SUNDAY**
Week 13 **1st–8thFeb**	halogenation, sulphonation and Friedel-Craft's alkylation and acylation
27th April	**SUNDAY**
Week 14 **28th–3rdMay**	**acylation with special emphasis on carbocationic rearrangement, side chain oxidation of alkyl benzene.**
4thMay	**SUNDAY**
Week 15 **5th–10thMay**	**Revision Unit-1 and test**
11thMay	**SUNDAY**
Week 16 **12th–17thMay**	**Revision Unit-2 and test**
18thMay	**SUNDAY**
Week 17 **19th–24thMay**	**Revision Unit-3 and test**
25thMay	**SUNDAY**
Week 18 **26th–31stMay**	**Revision Unit-4 and test**

Lesson Plan

B.Sc. (Hons) VI Semester

Name of Assistant Professor	**Dr. Rinki Malik**
Class and Semester	**B. Sc. (Hons).III Year VIth Semester**
Subject	**Chemistry**
Paper	**Paper- LVII (Theory) Organic Chemistry-II**

Week 1 **1st–6thJan**	Introduction, essential oils, classification of terpenes Isolation
Week 2 **7st–11thJan**	Isoprene rule, isolation, structure elucidation
Week 3 **13st–18thJan**	Synthesis of citral and geraniol.
Week 4 **20st–25thJan**	Introduction, classification, extraction, physiological action in alkaloids, general characteristics
Week 5 **27st–1thFeb**	General methods of determining structures, Hofman's exhaustive methylation, isolation, structure elucidation.
Week 6 **3rd–8thFeb**	Synthesis of nicotine, cocaine, coniine and piperine.
Week 7 **10st–15thFeb**	Classification, Natural pesticides: Nicotinides, Pyrethroids, Rotenoide, Sabodilia, Ryania.
Week 8 **17st–22thFeb**	Synthetic pesticides: Nitrophenols,Halogens derivatives of aromatic hydrocarbons and alicyclic hydrocarbons,
Week 9 **24st–1stMarch**	Organo phosphorus pesticides. Preparation, reactions And uses of DDT, BHC, Malathion and Parathion.
Week 10 **3rd–8thMarch**	Assignment -1 ,Test & Discussion unit 1

Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Introduction, classification, pro vitamins, occurrence .
Week 13 **24th–29thMarch**	Structure and deficiency diseases of vitamins A, B complex (B1 , B2 , B6 and B1 2), C, D, E, H and K
Week14 **31st–5th April**	Introduction, functions, difference between harmones and vitamins,
Week 15 **7th–12th April**	classification and study of Thyroxine, Adrenalin, Insulin,
Week 16 **14th-19th April**	Testosterone, Progesterone, Estrogens, Discussion & Revision Unit 2
Week 17 **21st–26th April**	Cortison (structure, secreting gland and functions) Discussion & Revision Unit 3
Week 18 **28th–3rd May**	Discussion & Revision Unit 4

Lesson Plan

B.Sc. 2nd Semester

Name of Assistant Professor	**Dr. Rinki Malik**
Class and Semester	**B.Sc. (Chemistry as Single Major)**
Subject	**Chemistry, SEC Paper – II** **Nomenclature :Fuel Chemistry**
Paper	**Course Code 24CHE402SE0**

Week 1 **1st–8thFeb**	Coal - origin, chemical composition, calorific value, classification, characteristics & distribution of Indian coals,
Week 2 **10st–15thFeb**	Storage and spontaneous combustion of coal, coal washing and blending, petrographic constituents of coal.
Week 3 **17st–22thFeb**	Carbonization of coal, manufacture and properties of metallurgical coke, recovery of by-products
Week 4 **24st–1stMarch**	Origin and composition of crude oil, crude oil distillation .
Week 5 **3rd–8thMarch**	Products with special reference to gasoline,kerosene and diesel oil,
Week 6 **9th-16th March**	Holi Break
Week 7 **17th–22thMarch**	Cracking and reforming, coal tar distillation products, shale oil.
Week 8 **24th–29thMarch**	Natural gas, coal gas, coke oven and blast furnace gas.
Week 9 **31st–5th April**	Manufacture of water gas and producer gas, carburetted water gas.
Week 10 **7th–12th April**	Synthetic fuels: hydrogenation of coal, Fischer–Tropsch synthesis.

Week 11 **14th-19th April**	Assignment-1 Test -1 , Discussion & Revision.
Week 12 **21st–26th April**	Introduction, nuclear fuels and nuclear reactors, moderators and structural materials.
Week 13 **28th–3rdMay**	Introduction to renewable energy sources.
Week 14 **5th–10thMay**	Combustion: combustion of solids fuels,
Week 15 **12th–17thMay**	Calculation of volume and weight of air necessary for combustion of fuels, Assignment-2 Test -2, Discussion & Revision
Week 16 **19th–24thMay**	Gas analysis study, Discussion & Revision Unit 2 and 3
Week 17 **26th–31stMay**	Discussion & Revision Unit 4

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Reena, Neeraj
Class: B.Sc.6th sem (N.M, Med.) Sec A & B
Name of Subject: Organic Chemistry

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine.
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution.
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	Mechanism of nucleophilic Substitution reactions in pyridine derivatives.
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	Comparison of basicity of pyridine, piperidine and pyrrole
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	Introduction to condensed five and six-membered heterocycles.
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	Skraup synthesis and Bischler-Napieralski synthesis.
23thFeb	**SUNDAY**
Week 9	Mechanism of electrophilic substitution reactions of quinoline and isoquinoline

24st–1stMarch	
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	Nomenclature, structural features, Methods of formation and Chemical reactions of thiols, thioethers, sulphonic acids,sulphonamides and sulphaguanidine.
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Synthetic detergents alkyl and aryl sulphonates.
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate.
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers
6th April	**SUNDAY**
Week 15 **7th–12th April**	Condensat ion or step growth polymerization. Polyeste rs ,polyamides, phenol formaldehyde resins, urea formaldehyde resins,epoxy resins and polyurethanes. Natural and synthetic rubbers
13th April	**SUNDAY**
Week 16 **14th-19th April**	Classification, of amino acids. Acid-base behavior, isoelectric point and electrophoresis. Preparation of amino acids.
20th April	**SUNDAY**
Week 17 **21st–26th April**	Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides.
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Assignment Test

Summary of Lesson Plan of College Faculty

Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Nidhi Mann, Anil & Rinku
Class: B.Sc.2nd sem (DSC- II) Sec A, B & C
Name of Subject: Chemistry

Week 1 **1st–8thFeb**	Unit–I Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, solvent system concept
9thFeb	**SUNDAY**
Week 2 **10st–15thFeb**	reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2. Hard and soft acids and bases (HSAB concept), applications of HSAB principle
16thFeb	**SUNDAY**
Week 3 **17st–22thFeb**	nature of bonding in noble gas compounds (valence bond treatment and MO treatment for XeF2 and XeF4), molecular shapes of noble gas compounds (VSEPR theory). Noble Gases Occurrence and uses
23thFeb	**SUNDAY**
Week 4 **24st–1stMarch**	, rationalization of inertness of noble gases, clathrates, preparation and properties, chemical properties of the noble gases, chemistry of xenon: structure and bonding in xenon fluorides, oxides and oxyfluorides (XeF2, XeF4, XeF6, XeO3, XeO4, XeOF2, XeO2F2, XeOF4, XeF5 + , XeF5 -)
2ndMarch	**SUNDAY**
Week 5 **3rd–8thMarch**	Unit-II Thermodynamics Brief discussion upto first law of thermodynamics, heat capacity, heat capacities at constant volume and pressure and their relationship.
Week 6 **9th-16th March**	**Holi Break**
Week 7 **17th–22thMarch**	Joule's law, Joule–Thomson coefficient for ideal gases and real gases and inversion temperature entropy as a function of V & T, entropy as a function of P & T, entropy as a function of P & V.
23thMarch	**SUNDAY**
Week 8 **24th–29thMarch**	calculation of work and heat, dU & dH for the expansion of ideal gases and real gases under isothermal and adiabatic conditions for reversible and irreversible processes, enthalpy and internal energy change at constant P, V &T, Kirchhoff's equation.
30thMarch	**SUNDAY**
Week 9 **31st–5th April**	Second law of thermodynamics and its limitations, different statements of the law, Carnot's cycle and its efficiency, Carnot's theorem, thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy change in ideal gases, , entropy as a criterion of spontaneity and equilibrium
6th April	**SUNDAY**

Week 10 **7th–12th April**	Unit–III Hydrocarbons Alkanes: Physical and chemical properties of alkanes, free radical substitutions, halogenation, concept of relative reactivity v/s selectivity. Alkenes: Structure and isomerism, general methods of preparation, physical and chemical properties. Saytzeff and Hoffmann elimination, reactions: acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, alkylation of terminal alkynes.
13th April	**SUNDAY**
Week 11 **14th-19th April**	Mechanism of E1, E2, E1cb reactions, electrophilic addition (mechanism with suitable examples), Markownikoff rule, syn and anti-addition, addition of H2, X2 oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, hydroxylation. Alkynes: General methods of preparation of alkynes
20th April	**SUNDAY**
Week 12 **21st–26th April**	Unit–IV Aromatic Hydrocarbons and Dienes Concept of aromaticity, Huckel's rule, aromatic character of arenes, cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples, ,
6th October	**SUNDAY**
Week 13 **1st–8thFeb**	electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/ acylation with their mechanism, directing effects of groups in electrophilic substitution
27th April	**SUNDAY**
Week 14 **28th–3rdMay**	nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, chemical reactions- 1, 2 and 1, 4 additions (electrophilic and free radical mechanism), Diels – Alder reaction.
4thMay	**SUNDAY**
Week 15 **5th–10thMay**	**Revision Unit-1 and test**
11thMay	**SUNDAY**
Week 16 **12th–17thMay**	**Revision Unit-2 and test**
18thMay	**SUNDAY**
Week 17 **19th–24thMay**	**Revision Unit-3 and test**
25thMay	**SUNDAY**
Week 18 **26th–31stMay**	**Revision Unit-4 and test**

Summary of Lesson Plan of College Faculty
Name of College: Pt. N.R.S. Government College, Rohtak
Academic Session:2024- 25 Semester: Even
Name of Asstt./Ass.Prof: Bhupender Singh,
Rekha Gautam
Class: B.Sc.6th sem (N.M, Med.) Sec A & B
Name of Subject: Inorganic Chemistry

Week 1 **1st–6thJan**	Winter Break
Week 2 **7st–11thJan**	Organometallic Chemistry Definition, nomenclature and classification of organometallic compounds. Preparation.
12th Jan	**SUNDAY**
Week 3 **13st–18thJan**	Properties, and bonding of alkyls of Li, Al, Hg, and Sn a brief account of metal-ethylenic complexes.
19th Jan	**SUNDAY**
Week 4 **20st–25thJan**	Mononuclear carbonyls.
26th Jan	**SUNDAY**
Week 5 **27st–1thFeb**	The nature of bonding in metal carbonyls.
2nd Feb	**SUNDAY**
Week 6 **3rd–8thFeb**	Acids and Bases, HSAB Concept Arrhenius, Bronsted – Lowry, the Lux – Flood, Solvent system.
9thFeb	**SUNDAY**
Week 7 **10st–15thFeb**	Lewis concepts of acids & bases, relative strength of acids & bases.
16thFeb	**SUNDAY**
Week 8 **17st–22thFeb**	Concept of Hard and Soft Acids & Bases.
23thFeb	**SUNDAY**

Week 9 **24st–1stMarch**	Bioinorganic Chemistry, Essential and trace elements in biological processes.
2ndMarch	**SUNDAY**
Week 10 **3rd–8thMarch**	Metalloporphyrins with special reference to haemoglobin and myoglobin.
Week 11 **9th-16th March**	**Holi Break**
Week 12 **17th–22thMarch**	Biological role of alkali and alkaline earth metal ions with special reference to Ca2+.
23thMarch	**SUNDAY**
Week 13 **24th–29thMarch**	Nitrogen fixation.
30thMarch	**SUNDAY**
Week14 **31st–5th April**	Sil icones and Phosphazenes Silicones and phosphazenes, their preparation.
6th April	**SUNDAY**
Week 15 **7th–12th April**	Structure and uses of Silicones and phosphazenes.
13th April	**SUNDAY**
Week 16 **14th-19th April**	Assignment 1,2,3 And Test
20th April	**SUNDAY**
Week 17 **21st–26th April**	Revision
27th April	**SUNDAY**
Week 18 **28th–3rd May**	Revision