Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Assistant Prof./Associate Prof./Professor: Dr. Ravinder Singh

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

Name of Subject: Physical Chemistry/Physical Chemistry/Organic Chemistry-I

16th January 2023 to 16th May 2023	**[B.Sc. 2nd Semester Chemistry Hons.] Physical Chemistry**
Week 1 **16th January – 20th January**	Chemical Kinetics Chemical kinetics and its scope, Rate of reaction, factors influencing the rate of reaction. Concentration, temperature, pressure, solvent, light, catalyst, concentration dependence of rates..
21st January	**SUNDAY**
Week 2 **22nd January – 27th January**	Chemical Kinetics Mathematical characteristics of simple chemical reactions, molecularity and order of reaction. Zero order ,Ist order Second order, third order reactions and their mathematical derivations for their rate constants.and their mathematical derivations or their rate constants.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Chemical Kinetics Half life period, average life period, determination of order reaction. Differential method, method of integration. Method of half life period and isolation method. Pseudo unimolecular reactions
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Chemical Kinetics **Revision, Assignment and Test**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Electrochemistry-I Electrical transport conduction in metal and in electrolyte solutions, specific conductance and equivalent conductance. Measurement of equivalent conductance. Variation of equivalent conductance and specfic conductance with dilution
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Electrochemistry-I migration of ions, Kohlrausch's law, Arhenious theory of electrolyte dissolution and its limitations. Weak and strong electrolytes.Ostwald's dilution law and its uses and limitation.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Electrochemistry-I **Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th**	Electrochemistry-II Debye-Huckel onsager equation for strong electrolytes (elementary treatment only), transport number and its determination by Hittorf method

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Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

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Name of Subject: Physical Chemistry/Physical Chemistry/Organic Chemistry-I

10th March	**SUNDAY**
Week 9 **11th March–16th March**	Electrochemistry-II Transport number and its determination by moving boundary method.Application of conductivity measurements, determination of solubility product of spraningly soluble salts.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Electrochemistry-II Determination of degree of dissolution ,Ka for weak acids.
24th March	**SUNDAY**
23rd March - 31st March	**Holidays**
31st March	**SUNDAY**
Week 12 **01st April – 06th April**	Electrochemistry-II **Revision, Assignment and Test**
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Theromchemistry and chemical energaties: Definition of important terms used in thermochemistry. Energy changes during chemical reactions.. Derivation of Ist law of thermodynamus.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Theromchemistry and chemical energaties: Heat of reaction, enthalpy and enthalpy change. Enthalpy of formation, combustion, neutralisation, solution, 16 vaporisation, sublimation hydration and fusion, calorfic value of foods. Bond energy and its calculation. Hess's law of heat summation and its application for the calculation of various enthalpies of reaction. Kirchhoff's equation,
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Theromchemistry and chemical energaties: Spontaneous processes. Criteria of spontaneity., entropy and free energy. Why crisis of energy if conserved in nature.
28th April	**SUNDAY**
Week 16 **29th April-30th April**	Theromchemistry and chemical energaties: **Revision, Assignment and Test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Assistant Prof./Associate Prof./Professor: Dr. Ravinder Singh

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

Name of Subject: Physical Chemistry/Physical Chemistry/Organic Chemistry-I

16th January 2023 to 16th May 2023 [B.Sc. 4th Semester Chemistry Hons.] Physical Chemistry	
Week 1 **16th January – 20th January**	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.
21st January	**SUNDAY**
Week 2 **22nd January – 27th January**	Thermodynamics – II 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. Entropy change in ideal gases and mixing of gases,
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Thermodynamics – II work function, Gibb,s free energy function. Gibbs function (G) and Helmholtz function (A) as thermodynamic function. Criteria of spontaneity of reversible processes in terms of enthalpy change, entropy change, work function and free energy function.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Thermodynamics – II **Revision, Assignment and Test**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Thermodynamics – III Variation of G and A with P,V and T.Gibb Helmholtz equation and its application ,clausius- clapeyron equation
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Thermodynamics – III Nernst heat theorem. Third law of thermodynamics and its applications.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Thermodynamics – III Partial molar quantities. Chemical potential. Gibb's Duhem equation. Gibb,s adsorption equation and its application, variation of chemical potential with temperature and pressure
03th March	**SUNDAY**
Week 8 **04th March–09th**	Thermodynamics – III **Revision, Assignment and test**
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Electrochemistry-II Redox reactions, electrolytic and galvanic cells. Reversible and

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Assistant Prof./Associate Prof./Professor: Dr. Ravinder Singh

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

Name of Subject: Physical Chemistry/Physical Chemistry/Organic Chemistry-I

	irreversible cells reversible electrodes, types of reversible electrodes, metal electrodes, gas metal electrode, metal insoluble salt on ions and redox electrodes, electrode reactions,
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Electrochemistry-II 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.
24th March	**SUNDAY**
23rd March - 31st March	Holidays
31st March	**SUNDAY**
Week 12 **01st April – 06th April**	Electrochemistry-II Nernst equation for a reversible electrode and cell. Calculation of thermodynamic quantities of a cell reaction ·G, ·H and K. Polarisation over potential and hydrogen over voltage
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Electrochemistry-III Definition of pH. Determination of pH using hydrogen, quinhydron and glass electrode by potentiometric method. Buffers solution, Buffer action, Henderson - Hazel equation. Hydrolysis of salts, corrosion, types, theories and methods of controlling it.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Chemical Kinetics Experimental methods of chemical kinetics: conductometric , potentiometric , optical method ,polarimetery and spectrophotometer.
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Chemical Kinetics Theories of reaction rates, effect of temperature on rate of reaction. Simple collision theory based upon transition state, hard sphere model theory (equilibrium hypothesis). Expression for the rate constants based on equilibrium constant their thermodynamic aspect
28th April	**SUNDAY**
Week 16 **29th April-30th April**	Chemical Kinetics **Revision, Assignment and test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Assistant Prof./Associate Prof./Professor: Dr. Ravinder Singh

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

Name of Subject: Physical Chemistry/Physical Chemistry/Organic Chemistry-I

16th January 2024 to 30th April 2024 [B.Sc. 6th Semester Chemistry Hons.] Organic Chemistry-I	
Week 1 **16th January – 20th January**	**Topics in Biological Chemistry:** Introduction to enzymes, nomenclature, characteristics. Practicals:
21st January	**SUNDAY**
Week 2 **22nd January – 27th 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:
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	**Topics in Biological Chemistry: E**nergy production in biological system, glycolysis, tricarboxylic acid cycle Practicals:
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and test** Practicals:
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	**Fermentation** Anaerobic and aerobic fermentation, production o f alcoho l, citric acid and lactic acid Practicals:
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Fats, Oil and Detergents:** Occurrence, chemical composition and importance, hydrogenated oils, Rancidity, acid value, sponification and iodine numbers. Practicals:
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**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:
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Revision, Assignment and test** Practicals:
10th March	**SUNDAY**
Week 9 **11th March–16th March**	**Drugs-I** Introduction, relation of chemical structure and physiological activity with suitable examples. Practicals:
17th March	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Assistant Prof./Associate Prof./Professor: Dr. Ravinder Singh

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

Name of Subject: Physical Chemistry/Physical Chemistry/Organic Chemistry-I

Week 10 **18th March– 22th 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:
24th March	**SUNDAY**
23rd March - 31st March	**Holidays**
31st March	**Sunday**
Week 12 **01st April – 06th April**	**Drugs-II** General aspects, preparation and uses of the following drugs: (i) Sulpha : Sulphacetamide (ii) Local anaesthetics : Benzocaine Practicals:
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	**Drugs-II** General aspects, preparation and uses of the following drugs: (iii) Anti amoebic : Metronidazole (iv) Antimalarials : Chloroquinine Practicals:
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	**Revision, Assignment and test** Practicals:
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Drugs-II** General aspects, preparation and uses of the following drugs: **(v)** Antihistamines : Chlorophenizamine Maleate (vi) Antifungal Undecylenic acid Practicals:
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Drugs-II** General aspects, preparation and uses of the following drugs: (vii) Insect repellants : Dibutyl phthalate (viii) Antibiotics Chloroamphenicol Practicals:

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24
Semester: Even
Name of Asstt./Ass. ProF. – Dr. Rinki
Class: B.Sc Chemistry Hons. 2nd SEM

Paper- XIV (Theory) Organic Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Alkenes Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalc of alkyl halides, Regioselectivity in alcohol dehydration. The Saytzeff rule, Hofma elimination, physical p roperties and relative stabilities of alkenes
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	**Alkenes** Chemical reactions of alkenes, mechanisms involved in hydrogenation, electrophilic free radical additions, Markownikoff's rule, hydroboration–oxidation, oxymercuratic reduction, Epoxidation, ozonolysis, hydration, hydroxylation and oxidation with KM polymerization of alkenes, substitution at the allylic and vinylic positions of alkenes. Industrial applications of ethylene and propene
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	**Coal, petroleum and petrochemicals:** Coal tar distillation and coal tar chemicals, petroleum origin, fractionation cracking, reforming and aromatisation, petrochemicals, synthetic fuels, octane and cetane numbers, antiknock additives
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Arenes and Aromaticity** Nomenclature of benzene derivatives. The Aryl group. Aromatic nucleus and side chain. Structure of benzene: molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, MO picture.

11th February	**SUNDAY**
Week 5 **12th February – 17th February**	**Arenes and Aromaticity** Aromaticity: the Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aro anti - aromatic and non – aromatic compounds. Aromatic electrophilic substitution pattern of the mechanism, role of sigma and pia-complexes, mechansim of nitratio halogenation, sulphonation, and Friedel-Crafts reaction. Energy profile diagrams.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Arenes and Aromaticity** Activating, deactivating subs tituents and orientation and *ortho/para ratio. *Side chain reactions of benzene derivatives, *Birch reduction. * Methods of formation and chemical reactions of alkylbenzenes, alkynylbenzenes and biphenyl
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Dienes and Alkynes** Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of Allenes and butadiene, Methods of formation, polymerization. Chemical reactions: 1,2 and 1,4 additions (Electrophilic & free radical mechanism), Diels-Alder reaction, Nomenclature, structure and bonding in alkynes. Methods of formation
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Dienes and Alkynes** Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes, metal-ammonia reductions, oxidation and polymerization. **Cycloalkenes:** Methods of formation, conformation and chemical reactions of cycloalkenes
10th March	**SUNDAY**

Week 9 **11th March–16th March**	**Poly Nuclear Hydrocarbons** Haworth synthesis of naphthalene and phenanthene, pschorr synthesis of phenanthrene, synthesis of anthracene involving Friedal crafts acylation of benzene with phthalic anhydride and Diels Alder reaction between 1,3-butadiene and 1,4-naphthaquinone, reaction of naphthalene, anthracene and phenanthrene, relative reactivities at different positions and mechanism of electrophilic substitution reactions in naphthalene, anthracene, and phenanthrene.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides,
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	**Alkyl and Aryl Halides** Methods of formation, Reactions of aryl halides
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	**Alkyl and Aryl Halides** SN2 and SN1 reactions with energy profile diagrams. Study of elimination reactions in alkyl halides, E1. And E2 mechanism, substitution vs. elimination, factors affecting substitution/elimination.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	The addition elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Polyhalogen compounds**: chloroform, carbon tetrachloride. Synthesis and uses of DDT and BHC
28th April	**SUNDAY**

Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Name of College: Pt. Neki Ram Sharma Government College, Rohtak **Academic Session 2023-24** **Name of Asstt./Ass. Prof. –** Dr. ANJU SIWACH **Class: B.Sc. (Hons.) Chemistry 2nd SEMESTER** **Name of Subject:** INORGANIC CHEMISTRY	
1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot **s-Block Elements**: Comparative study, diagonal relationships, salient features of hydrides,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	solvation and complexation tendencies including their function in biosystems, an introduction to alkyls and aryls.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Theory of Precipitation: theory, purification of precipitates, co-precipitation and post-precipitation
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Theory of Qualitative and Quantitative Inorganic Analysis**:
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Chemistry of analysis of various groups of basic and acidic radicals,
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	chemistry of identification of acid radicals in typical combinations.

25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Chemistry of interferences of acid radicals including their removal in the analysis of basic radicals.
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Revision, Assignment and Test**
10th March	**SUNDAY**
Week 9 **11th March–16th March**	**p-Block Elements - I** Comparative study (including diagonal relationship) of groups 13-17 elements, compounds like hydrides, oxides of groups 13-16
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	oxyacids and halides of groups 13-16, hydrides of boron - diborane and higher boranes, borazine, borohydrides. **(Unit Test)**
24 March **Week 11**	**SUNDAY** **23-31 March Holi Break**
Week 12 **01st April – 06th April**	**p-Block Elements - II** Chemistry of fullerenes, carbides, fluorocarbons, silicates (structural principle) tetrasulphur tetranitride, Basic properties of halogens, interhalogens and polyhalides. **Chemistry of Noble Gases**: Chemical properties of the noble gases,
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Chemistry of xenon, structure and bonding in xenon compounds. (**Unit Test**)
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Assignment+Viva Revision
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Brief Section A, B, C, D Queries/ Doubts**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Name of College: Pt. Neki Ram Sharma Government College, Rohtak
Academic Session 2023-24

Name of Asstt./Ass. Prof. – Dr. ANJU SIWACH

Class: B.Sc. (Hons.) Chemistry 4nd SEMESTER

Name of Subject: INORGANIC CHEMISTRY

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot **Chemistry of Elements of Second and Third Transition Series** General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	oxidation states, magnetic behaviour, spectral properties and stereochemistry.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Chemistry of Mo and W in different oxidation states **(Unit Test)**
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Isopolyacids of Mo and W:** aqueous chemistry of Mo and W(VI),
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	isopolymolybedates and isopolytungustates
18th February	**SUNDAY**
Week 6 **19th February –**	

24th February	**Acids and Bases:**
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Arrhenius, Bronsted- Lowry, the Lux- Flood, solvent system and Lewis concepts of acids and bases
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Revision, Assignment and Test**
10th March	**SUNDAY**
Week 9 **11th March–16th March**	**General Principles of Metallurgy:** General principles of metallurgy, occurrence of metals with special emphasis on mineral wealth of India, calcination roasting, smelting, bessemerization,
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	various methods of concentration, purification and refining (such as parting process, zone refining, oxidation refining, electrolytic refining and solvent extraction
24 March **Week 11**	**SUNDAY** **23-31 March Holi Break**
Week 12 **01st April – 06th April**	metallurgy of important metals like Ag, Au, Zn, Cu, Ni. **(Unit Test)**
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	**Chemistry of Lanthanide Elements:** Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	**Chemistry of Actinides:** General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, similarities between the later actinides and the later lanthanides. **(Unit Test)**
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Brief Section A, B, C, D Queries/ Doubts**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even **Name of Asstt./Ass. Prof. – Dr. Suman Bhatti** **Class: B.Sc Chemistry Hons. 4th SEM**	
Name of Subject: Organic Chemistry	
1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot **Infrared (IR) absorption spectroscopy** Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds. *Hydrocarbons (saturated and unsaturated), hydroxy compounds, aldehydes, ketones, esters, anhydrides, amides, amines and nitrocompounds.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Applications of IR spectroscopy in structure elucidation of simple organic compounds.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**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,
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	*Gatterman aldehyde synthesis, *Gatterman Koch reaction, *synthesis of ketones from nitriles and from carboxylic acids. Physical properties. Comparison of reactivities of aldehydes and ketones.
18th February	**SUNDAY**
Week 6 **19th February –**	Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol,

24th February	Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	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.
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Revision, Assignment and Test**
10th March	**SUNDAY**
Week 9 **11th March–16th March**	**Amines** Structure and nomenclature of amines, physical properties. Stereochemistry of amines. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. *Amine salts as phase-transfer catalysts.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Preparation 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.
24 March **Week 11**	**SUNDAY** **23-31 March Holi Break**
Week 12 **01st April – 06th April**	**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.
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	**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, Preparation of nitro alkanes and nitro arenes
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium. *Picric acid. Halonitroarenes: reactivity
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Brief Section A, B, C, D Queries/ Doubts**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Name of the Assistant/Associate Professor: Anita Amani **Class and Section: B.Sc. Chemistry Hons. (VI semester)** **Subject: Chemistry** **Paper: Inorganic Chemistry Paper-2**	
1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Overview of syllabus, General Introduction Primary and secondary pollutants, sources, pollution effects
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	***AIR POLLUTION*** control of the following. Gaseous hydrocarbons, carbon monoxide, carbon dioxide, hydrogen sulfide.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	***AIR PURIFICATION*** Air purification by microorganisms, Acid rain, Mechanism of photochemical smog formation. oxides of sulfur and nitrogen and ozone.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	***INDUSTRIAL WASTE & TREATMENT PROCESS*** Introduction , characteristics of industrial wastes, types of industrial wastes, principles of industrial waste treatment and disposal of industrial wastes.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	***NUCLEAR & RADIOCHEMISTRY*** Composition of Nuclei, structure of nucleus, forces operative within nucleus, nuclear stability and mass energy equivalence (binding energy).

18t^{h} February	**SUNDAY**
Week 6 **19th February – 24th February**	***TYPES OF NUCLEAR REACTIONS*** The compound nucleus theories, thermonuclear reactions including fusion and fission reactions
25th February	**SUNDAY**
Week 7 **26t^{h}February–02nd March**	***RADIATION DETECTION & MEASUREMENT*** Gascous ion collection Methods (G.M., ionization and proportional counters) scintillation counter, semiconductors detectors
03th March	**SUNDAY**
Week 8 **04th March–09th**	***TRACERS IN CHEMISTRY*** Activation analysis, isotope dilution analysis and radiometric titrations.
10th March	**SUNDAY**
Week 9 **11th March–16th March**	***WATER POLLUTION*** Types of water pollution, sources of water pollution, approaches to prevent and control water pollution
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	***CRYSTAL STRUCTURE*** Structures of binary compounds such as zinc blende, wurtzite, NiAs, CsCl, CaF2, rutile,
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Revision
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Revision
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Revision
21stApril	**SUNDAY**

Week 15 **22nd April – 27 April**	Revision
Week 16 **29th April-30th April**	Revision

Summary of Lesson Plan of College Faculty
Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24
Semester: Even
Name of Asstt./Ass. ProF. – Abhishek Dahiya
Class: B.Sc Chemistry Hons. 6th SEM

Paper- -LII Inorganic Chemistry (Theory)

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Overview of syllabus, General Introduction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Criteria for choice of organic reagents, use of following reagents in inorganic analysis
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	DMG, cupferron, 8-hydroxyquinoline, Nitroso □- naphthol
04th February	**SUNDAY**
Week 4 **05th February 10th February**	EDTA, Acetylacetone, dithiozone, dithiocarbamate. Advantages and disadvantages of organic reagents in inorganic analysis
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Analytical Chemistry: Sources of errors in chemical analysis, classification of errors
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	precision, accuracy, statistical evaluation and interpretation of results in analytical chemistry (with numericals).
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Inorganic Polymers: Definition, classification, polymers based on hetroatomic structure

03th March	**SUNDAY**
Week 8 **04th March–09th**	PON polymer, polythiazyl, synthetic inorganic fibres Co-ordination polymers.
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Solvent Extraction: Basic principles of solvent extraction, classification and mechanism of extraction
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	extraction equilibria, techniques of extraction and applications in analytical chemistry.
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Ion - Exchange: Characteristics of ion-exchangers, mechanism of ion-exchange, ion-exchange equilibra
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	plate theory for ion-exchange, techniques of ion-exchange and applications of ion exchange for separations., **(Assignment 2)**
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Chromatography: Classification of chromatographic methods, chromatographic terminology - Rf value, partition co-efficient
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	dyanmics of chromatography, basic principles of adsorption and partition chromatography, applications
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Paper- LV (Theory) Physical Chemistry -II

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Asstt./Ass. ProF. – Abhishek Dahiya

Class: B.Sc Chemistry Hons. 6th SEM

Name of Subject: Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Overview of syllabus, General Introduction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Planck's law, heat capacity of solids
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Bohr's model of hydrogen atom (derivation excluded) and its defects.**)**
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Compton effect, molecular orbital theory, basic idea. Compton effect, molecular orbital theory, basic idea.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Construction of molecular orbital by linear combination of atomic orbital ,-H2 ion.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Calculation of energy levels from wave function, physical picture of bonding and antibonding wave function.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd**	Concept of pie, pie* orbitals and their characteristics. Hybrid orbital (Sp. Sp2 and Sp3.)

March	
03th March	**SUNDAY**
Week 8 **04th March–09th**	Calculation of co-efficients of atomic orbitals used in these hybrid orbitals. Introduction of valence bond model of H2,comparison of molecular orbital. and valence bond. model
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Homogeneous and Heterogeneous catalysis, Enzyme catalysis. Theory of catalysis - Intermediate compound formation theory, adsorption theory
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	General characteristics of catalysis, positive catalysis, negative catalysis, autocatalysis, shape selective catalysis.
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Classification of chromatographic methods, principle of differential migration, nature of differential migration
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Adsorption phenomenon, nature of adsorpent, solvent system. Rf- values, **(Assignment 2)**
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	application basic principle of partition, paper, column, thin layer liquid-liquid partition and high performance.
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Liquid chromatography, paper & column, thin layer liquid-liquid partition and high performance liquid chromatography **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24

Semester: Even

Name of Asstt./Ass. ProF. –Dr. Rinki

Class: B.Sc Chemistry Hons. 6th SEM Paper- LVII (Theory) Organic Chemistry -II

1st January – 15th January	Practical Slot
Week 1 **16 January - 20 January**	Overview of syllabus, General Reactions Introduction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Introduction, essential oils, classification of terpenes, Isoprene rule, isolation
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	General structure elucidation, Structure elucidation and synthesis of citral and geraniol. **(Test)**
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Introduction, classification, extraction, Physiological action in alkaloids, general characteristics, general methods of determining structures
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Hofmann's exhaustive methylation, isolation, structure elucidation and synthesis of nicotine
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Structure elucidation and synthesis of cocaine, coniine and Piperine (**Assignment 1)**
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Classification, Natural pesticides: Nicotinides, Pyrethroids, Rotenoide
03th March	**SUNDAY**
Week 8 **04th March–09th**	Sabodilia, Ryania, Synthetic pesticides: Nitrophenols, Halogens derivatives of aromatic hydrocarbons and alicyclic hydrocarbon
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Organo phosphorus pesticides. Preparation, reactions and uses of DDT, BHC, Malathion and Parathion (**Test)**
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Introduction, classification, pro vitamins, occurrence, structure
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Deficiency diseases of vitamins A, B complex (B 1 ,B2 , B6 and B1 2), C, D, E, H and K
07th April	**SUNDAY**

Week 13 **8th April – 13th April**	Introduction, functions, difference between hormones and vitamins, classification and study of Thyroxine **(Assignment 2)**
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Adrenalin, Insulin,Testosterone, Progesterone (structure, secreting gland and functions)
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Estrogens, Cortison hormone (structure, secreting gland and functions) **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Name of College: Pt. Neki Ram Sharma Government College, Rohtak **Academic Session 2023-24** **Semester: Even**
Name of Asstt./Ass. Prof. – Dr. Suman Bhatti
Class: B.Sc Chemistry Hons. 6th SEM

Name of Subject: Physical Chemistry I

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot **Vibrational Spectroscopy:** Infrared spectrum: energy levels of simple harmonic oscillator. Selection rule. Pure vibration spectrum. Rotational - vibration spectrum. Calculation of energy of levels and selection rule
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	**Vibrational Spectroscopy:** Intensity determination of force constant and qualitative relation of force constant and bond energies. Effect of anharmonic motions and isotope on the spectrum.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	**Vibrational Spectroscopy:** Idea of vibrational frequencies of different functional group. Rotational - vibration spectrum. Calculation of energy of levels and selection rule.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Quantum Mechanics:** Dual nature of matter and light. Photoelectric effect , De-Broglie equation. Heirsenberg's uncertainty principle, Schrodinger wave equation and its significance.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	**Quantum Mechanics:** Physical interpretation of the wave function. Postulates of quantum mechanics.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Quantum Mechanics:** Particle in one dimensional box, Particle in three dimensional box and concept of degenracy
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Raman Spectroscopy:** Quantum theory of Raman effect. Classical theory of Raman effect. Pure rotational Raman spectra, Raman activity of vibration.
10th March	**SUNDAY**

Week 9 **11th March–16th March**	**Raman Spectroscopy:** Vibration Raman spectra. Rotation - vibration Raman spectrum. Polarisation of light and Raman effect. Experimental technique. Application of Raman effect.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Elementary idea of NMR , Coupling Constant, Chemical Shift
24 March **Week 11**	**SUNDAY** **23-31 March Holi Break**
Week 12 **01st April – 06th April**	**Electronic Spectra:** Concepts of potential energy curves for bonding and antibonding molecular orbitals. Qualitative description of selection rule. Franck-condon principle.
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	**Electronic Spectra:** Qualitative description of , PIE and DELTA orbitals and their energy level and their respective transition.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Elementary ideas of Electron Spin Resonance Spectroscopy. Application ESR spectroscopy
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Revision, Assignment and Test**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Revision, Assignment and Test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-2024

Semester: Even

Name of Asstt./Ass. ProF. – Anil, Lokesh Kumar

Class: B.Sc. Non Medical Sec A,B,C 2nd Sem.

Name of Subject: Inorganic Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Hydrogen Bonding & Vander Waals Forces Hydrogen Bonding – Definition, Types, effects of hydrogen bonding on properties of substances
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	application Brief discussion of various types of Vander Waals Forces
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Metallic Bond and Semiconductors Metallic Bond- Brief introduction to metallic bond,
04th February	**SUNDAY**
Week 4 **05th February 10th February**	band theory of metallic bond Semiconductors- Introduction, types and applications.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	. s-Block Elements Comparative study of the elements including , diagonal relationships,
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	salient features of hydride, solvation and complexation tendencies including their function in biosystems.
25th February	**SUNDAY**

Week 7 **26t^{h}February–02nd March**	Chemistry of Noble Gases Chemical properties of the noble gases with emphasis on their low chemical reactivity, chemistry of xenon, structure and bonding of fluorides, oxides & oxyfluorides of xenon
03th March	**SUNDAY**
Week 8 **04th March–09th**	Boron family (13th gp):- Diborane – properties and structure (as an example of electron – deficient compound and multicentre bonding), Borazene – chemical properties and structure Trihalides of Boron – Trends in fewis acid character structure of aluminium (III) chloride
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Carbon Family (14th group) Catenation, p π– d π bonding (an idea), carbides, fluorocarbons, silicates structural aspects), silicons – general methods of preparations, properties and uses
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nitrogen Family (15th group) Oxides – structures of oxides of N,P. test
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	oxyacids – structure and relative acid strengths of oxyacids of Nitrogen and phosphorus. Structure of white, yellow and red phosphorus..
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Oxygen Family (16th group) Oxyacids of sulphur – structures
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	acidic strength H2O2 –structure, properties and uses.
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Halogen Family (17th group) Basic properties of halogen, interhalogens types properties
28th April	**SUNDAY**
Week 16 **29th April-30th April**	oxyacids of chlorine – structure and comparison of acid strength

Summary of Lesson Plan of College Faculty
Name of College: Pt. Neki Ram Sharma Government College, Rohtak
Academic Session 2023-24 Semester: Even
Name of Asstt./Ass. ProF. – Praveen & Ruman Rani
Class: B.Sc. Medical & N.M Sec A,B,C 2nd Sem.

Week-1,2 (1Jan-15Jan)	**Practical schedule**
Week-3 (16Jan-20Jan)	Chemical kinetics and its scope, Rate of reaction, factors influencing the rate of reaction. Concentration, temperature, pressure, solvent, light, catalyst, concentration dependence of rates. Mathematical characteristics of simple chemical reactions
Week-4 (22Jan-27Jan)	Molecularity and order of reaction. Zero order ,Ist order ,second order, third order reactions and their mathematical derivations for their rate constants.
28Jan	**SUNDAY**
Week 5 (29Jan-3Feb)	Half life period, average life period, determination of order reaction.
4 Feb	**SUNDAY**
Week 2 (5Feb-10Feb)	Differential method, method of integration. Method of half-life period and isolation method. Pseudo uni molecular reactions
Week 2 (5Feb-10Feb)	Effect of temperature of rate of raction-Arrhenius equation
11 Feb	**SUNDAY**
Week 3 (12 Feb-17Feb)	Theories of reaction rates
18th Feb	**SUNDAY**
Week 4 (19 Feb-24Feb)	Electrochemistry-I Electrical transport conduction in metal and in electrolyte solutions, specific conductance and equivalent conductance. Measurement of equivalent conductance.
Week 5 (26 Feb-2March)	Variation of equivalent conductance and specific conductance with dilution, migration of ions
3 March	**SUNDAY**

Week 2 **4 March-9 March**	Kohlrausch's law, Arhenious theory of electrolyte dissolution and its limitations.
10March	**SUNDAY**
Week 3 **(11March-16March)**	Weak and strong electrolytes. Ostwald's dilution law and its uses and limitation
17 March	**SUNDAY**
Week 4 **18March- 22March**	Electrochemistry-II Debye-Huckel onsager equation for strong electrolytes (elementary treatment only),transport number
23March-31March	**Holi -Break (Holiday)**
Week 1 **1April-6 April**	Hittorf and moving boundary method. Application of conductivity measurements
7 April	**SUNDAY**
Week 2 **8April-13 April**	Determination of solubility product of sparingly soluble salts. Determination of degree of dissolution ,Ka for weak acids
14 April	**SUNDAY**
Week 3 **15April-20 April**	Buffer solutions ,buffer actions
21 April	**SUNDAY**
Week 4 **22April-27 April**	Henderson.Hazel, buffer mechanism of buffer action
28 April	**SUNDAY**
Week 4 **29April-30 April**	**Test**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak
Academic Session 2023-24
Semester: Even
Name of Asstt./Ass. Prof. – Nidhi Mann & Jyoti Dalal
Class: B.Sc Pass 2nd SEM [Med & Non Med] **Subject- organic Chemistry**

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Nomenclature of alkenes, , mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides,. The Saytzeff rule, Hofmann elimination, physical p roperties and relative stabilities of alkenes
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	s. Chemical reactions of alkenes mechanisms involved in hydrogenation, electrophilic and free radical additions,
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Markownikoff's rule, hydroboration-oxidation, oxymercurationreduction, ozonolysis, hydration, hydroxylation and oxidation with KMnO4,
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Chemical reactions of alkenes mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration–oxidation, oxymercurationreduction, ozonolysis, hydration, hydroxylation and oxidation with KMnO4
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Nomenclature of benzene derivatives:. Aromatic nucleus and side chain. Aromaticity: the Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aromatic, anti-aromatic and non-aromatic compounds.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Aromatic electrophilic substitution general pattern of the mechanism, mechansim of nitration, halogenation, sulphonation, and Friedel-Crafts reaction. Energy profile diagrams. Activating , deactivating subs tituents and orientation.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene,. Chemical reactions 1,2 and 1,4 additions (Electrophilic & free radical mechanism), Diels-Alder reaction
03th March	**SUNDAY**
Week 8 **04th March–09th**	Revision and Test of unit I and unit II
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration- oxidation of alkynes
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nomenclatu re and classes of alkyl halides, methods of formation, chemical reactions

24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides , S_N2 and $S_N1$reactions with energy profile diagrams.Methods of formation and reactions of aryl halides
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	The additionelimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Revision of unit III
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Revision of unit IV
28th April	**SUNDAY**
Week 16 **29th April-30th April**	Test of unit III and unit IV

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24

Semester: Even

Name of Asstt./Ass. Prof. – KIRAN, POONAM, NIDHI MANN

Class: B.Sc Pass 4th SEM [Non Med and Med.] Subject- Inorganic Chemistry

1st January – 15th January	Practical Slot
Week 1 **16 January - 20 January**	Lanthanides Electronic structure, oxidation states and ionic radii and lanthanide contraction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	lanthanide contraction, complex formation, lanthanide compounds.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	**occurrence and isolation** **(TEST)**
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Actinides General features and chemistry of actinides
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	chemistry of separation of Np, Pu and Am from U
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Comparison of properties of Lanthanides and Actinides and with transition elements
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	. (ASSIGNMENT-1), TEST Submission of assignments and Queries will be taken.
03th March	**SUNDAY**
Week 8 **04th March–09th**	Theory of Quali tative and Quanti tative Inorganic Analysis-I Chemistry of analysis of various acidic radicals
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Chemistry of identification of acid radicals in typical combinations,
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Chemistry of interference of acid radicals including their removal in the analys is of basic radicals. (TEST)
24 March	**SUNDAY Week 11 23-31 March Holi Break**

Week 12 **01st April – 06th April**	Theory of Quali tative and Quanti tative Inorganic Analysis-II Chemistry of analysis of various groups of basic radicals,
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Theory of precipitation, co- precipitation,
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Post- precipitation
21stApril	**SUNDAY** **purification of precipitates**
Week 15 **22nd April – 27 April**	. **(ASSIGNMENT-2)** **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24

Semester: Even

Name of Asstt./Ass. Prof. – [A] KIRAN [B] ANIL[C] RINKU

Class: B.Sc Pass 4th SEM [Non Med and Med.] Subject-Physical Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Thermodynamics-III Second law of thermodynamics, need for the law, different statements of the law, Carnot's cycles and its efficiency, Carnot's theorm,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Thermodynamics scale of temperature. Concept of entropy – entropy as a state function, entropy as a function of V & T, entropy as a function of P & T.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	entropy change in physical change, entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases **(TEST)**
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Thermodynamics-IV Third law of thermodynamics: Nernst heat theorem, statement of concept of residual entropy,
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change. Variation of G and A with P, V and T
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	. (ASSIGNMENT-1), TEST Submission of assignments and Queries will be taken.
03th March	**SUNDAY**
Week 8 **04th March–09th**	Electrochemistry-III Electrolytic and Galvanic cells – reversible & Irreversible cells , conventional representation of electrochemical cells. .
10th March	**SUNDAY**
Week 9 **11th March–16th March**	EMF of cell and its measurement, Wes ton standard cell, activity and activity coefficients
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	. Calculation of thermodynamic quantities of cell reaction (G, H & K). Types of reversible electrodes – metal- metal ion gas electrode, metal –insoluble salt- anion and redox electrodes. Electrode reactions

24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	, Nernst equations, derivation of cell EMF and single electrode potential. Standard Hydrogen electrode, reference electrodes, standard electrodes potential, sign conventions, electrochemical se ries and its applications
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Concentration cells with and without transference, liquid junction potential, application of EMF measurement i.e. valency of ions, solubility product activity 20
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	coefficient, potentiometric titration (acid- base and redox). Determination of pH using Hydrogen electrode
21stApril	**SUNDAY** , Quinhydrone electrode and glass electrode by potentiometric methods.
Week 15 **22nd April – 27 April**	. **(ASSIGNMENT-2)** **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24

Semester: Even

Name of Asstt./Ass. Prof. – [A] Poonam [B] Reena

Class: B.Sc Pass 4th SEM [Non Med and Med.] Subject- Organic Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Overview of syllabus, General Reactions Introduction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Infrared (IR) absorption spectroscopy Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands,
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Applications of IR spectroscopy in structure elucidation of simple organic compounds. (TEST)
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Amines Structure and nomenclatu re of amines, phys ical properties. Separation of a mixture of primary, secondary and tertiary amines.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Structural featu res affecting basicity of amines. Prepa ration of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Gabrielphthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid. (ASSIGNMENT-1) (TEST)
03th March	**SUNDAY**
Week 8 **04th March–09th**	Gabrielphthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid. (ASSIGNMENT-1) (TEST)
10th March	**SUNDAY**
Week 9 **11th March–16th March**	reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application. (TEST)
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nitro Compounds Preparation of nitro alkanes and nitro arenes and their chemical reactions.
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.(TEST)
07th April	**SUNDAY**

Week 13 **8th April – 13th April**	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.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	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. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations.
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction.Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, $LiAlH_4$and $NaBH_4$reductions **(ASSIGNMENT-2)** **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak

Academic Session 2023-24

Semester: Even

Name of Asstt./Ass. ProF. –Rekha Gautam, Rinku Lathwal

Class: B.Sc Pass 6th SEM (Non. Med & Med)

Name of Subject: Inorganic Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Overview of syllabus, General Reactions Introduction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	**Organometallic Chemistry-** Definition, nomenclature and classification of organometallic compounds.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Preparation, properties, and bonding of alkyls of Li, Al, Hg, and Sn a brief account of metal-ethylenic complexes.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Mononuclear carbonyls and the nature of bonding in metal carbonyls. (TEST)
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	**Bioinorganic Chemistry-** Essential and trace elements in biological processes
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Metalloporphyrins with special reference to haemoglobin and myoglobin.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Biological role of alkali and alkaline earth metal ions with special reference to Ca2+
03th March	**SUNDAY**
Week 8 **04th March–09th**	Nitrogen fixation. . **(ASSIGNMENT-1)**
10th March	**SUNDAY**
Week 9 **11th March–16th March**	**Silicones-** Introduction, preparation, properties,structure and uses.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Phosphazenes-** Introduction, preparation, properties,structure and uses. (TEST)
24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	**Acids and Bases, HSAB Concept-** Arrhenius, Bronsted – Lowry, the Lux – Flood.
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Solvent system and Lewis concepts of acids & bases.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Relative strength of acids & bases, Concept of Hard and Soft Acids & Bases
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Symbiosis, electronegativity and hardness and softness. **(ASSIGNMENT-2)** **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**

Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak

Academic Session 2023-24

Semester: Even

Name of Asstt./Ass. Prof. – [A] Neeraj [B] Reena

Class: B.Sc Pass 6th SEM [Non Med and Med.]

Paper- XXIII (Theory) Organic Chemistry

1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot Overview of syllabus, General Reactions Introduction
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Heterocyclic Compounds-I Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole. (TEST)
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Heterocyclic Compounds-II Introduction to condensed five and six- membered heterocycles. Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Skraup synthesis and Bischler-Napieralski synthesis , Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline (TEST)
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	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. **(ASSIGNMENT-1)**
03th March	**SUNDAY**
Week 8 **04th March–09th**	Organic Synthesis via Enolates, Acidity of -hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate.
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Synthetic Polymers, Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Condensat ion or step growth polymerization. Polyeste rs ,polyamides, phenol formaldehyde resins, urea formaldehyde resins, epoxy re sins and polyurethanes. Natural and synthetic rubbers. (TEST)

24 March	**SUNDAY Week 11 23-31 March Holi Break**
Week 12 **01st April – 06th April**	Amino Acids, Peptides& Proteins Classification, of amino acids. Acid-base behavior, isoelectric point and electrophoresis. Preparation of -amino acids.
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Structure and nomenclature of peptides and proteins. Classification of proteins.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Peptide structure determination, end group analysis, selective hydrolysis of peptides
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	Classical peptide synthesis, solid– phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure. **(ASSIGNMENT-2)** **Submission of assignments and Queries will be taken.**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even **Name of Asstt./Ass. Prof. – [A] Bhupender Singh [B] Sandeep** **Class: B.Sc III 6th SEM [Non Med and Med.]**	
Name of Subject: Physical Chemistry	
1st January – 15th January **Week 1** **16 January - 20 January**	Practical Slot **Electronic Spectrum** Concept of potential energy curves for bonding and antibonding molecular orbitals,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Qualitative description of selection rules and Franck- Condon principle. Qualitative description of sigma and pie and n molecular orbital (MO) their energy level and respective transitions.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	**Photochemistry** Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry: Grotthus-Drapper law, Stark- Einstein law (law of photochemical equivalence)
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Jablonski diagram depiciting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing).
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Quantum yield, photosensitized reactions-energy transfer processes (simple examples).
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Solutions:** Dilute Solutions and Colligative Properties. Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Dilute solution,Colligative properties, Raolut's law, relative lowering of vapour pressure, molelcular weight determination, Osmosis law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure.
03th March	**SUNDAY**
Week 8 **04th March–09th**	**Revision, Assignment and Test**
10th March	**SUNDAY**

Week 9 **11th March–16th March**	Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes.
24 March **Week 11**	**SUNDAY** **23-31 March Holi Break**
Week 12 **01st April – 06th April**	**Phase Equilibrium** Statement and meaning of the terms – phase component and degree of freedom, thermodynamic derivation of Gibbs phase rule.
07th April	**SUNDAY**
Week 13 **8th April – 13th April**	Phase equilibria of one component system –Example – water and Sulphur systems.
14th April	**SUNDAY**
Week 14 **15th April – 20thApril**	Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead.
21stApril	**SUNDAY**
Week 15 **22nd April – 27 April**	**Brief Section A, B, C, D Queries/ Doubts**
28th April	**SUNDAY**
Week 16 **29th April-30th April**	**Brief Section A, B, C, D Queries/ Doubts**