

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session2023- 2024) EVEN SEMESTER**

Name of Teacher: Mr. Gurdeep

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III Non. Medical, Medical Physical chemistry Semester-VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	Feb.	<p><b>Introduction to statistical mechanics</b>                      Need for statistical thermodynamics, thermodynamic probability, Maxwell Boltzmann distribution statistics, Born oppenheimer approximation, partition function and its physical significance. Factorization of partition function.</p> <p><b>Photochemistry</b>                      Interaction of radiation with matter, difference between thermal and photochemical processes</p>	
2	March	<p>Laws of photochemistry: Grotthus-Drapper law, Stark-Einstein law (law of photochemical equivalence), Jablonski diagram depicting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions-energy transfer processes (simple examples).</p>	
3	April	<p><b>Solutions, Dilute Solutions and Colligative Properties</b>                      Ideal and non-ideal solutions, methods of expressing concentrations of solutions, Dilute solutions, Raoult's law. Colligative properties: (i) relative lowering of vapour pressure (ii) Elevation in boiling point (iii) depression in freezing point (iv) osmotic pressure. Thermodynamic</p>	

		<p>derivation of relation between amount of solute and elevation in boiling point and depression in freezing point..</p> <p>Applications in calculating molar masses of normal, dissociated and associated solutes in solution.</p>	
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4	May	<p><b>Phase Equilibrium</b></p> <p>Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system –Example – water system.</p> <p>Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead</p> <p><b>Assignment ,Quiz and group Discussion.</b></p>	
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- Vacation as per university calendar
- 2 assignments and 01 unit test will be taken as per schedule.



## Lesson Plan

Name : Priya

Designation : Extension Lecturer

Class: B.Sc I N.M

Chemistry Lesson Plan: 16 Week (From February 2024 to May 2024)

<p>Week 1: 31/01/2024 to 04/02/2024</p> <p>Chapter 1: Covalent Bond</p> <ul style="list-style-type: none"><li>○ Valence bond theory approach, Shapes of simple inorganic molecules and ions based on valence shell electron pair repulsion (VSEPR) theory</li></ul>
<p>Week 2: 05/02/2024 to 10/02/2024</p> <ul style="list-style-type: none"><li>○ Hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements</li></ul>
<p>Week 3: 12/02/2024 to 17/02/2024</p> <ul style="list-style-type: none"><li>○ Molecular orbital theory of homonuclear (<math>N_2</math>, <math>O_2</math>) and heteronuclear (CO and NO) diatomic molecules, Dipole moment and percentage ionic character in covalent bond.</li></ul>
<p>Week 4: 19/02/2024 to 24/02/2024</p> <ul style="list-style-type: none"><li>○ Hydrogen Bonding – Definition, types, effects of hydrogen bonding on properties of substances, application</li><li>○ Brief discussion of various types of Van der Waals forces.</li><li>○</li></ul>
<p>Week 5: 26/02/2024 to 02/03/2024</p> <ul style="list-style-type: none"><li>○ Metallic bond – Qualitative idea of valence bond and Band theories of metallic bond (conductors, semiconductors, insulators).</li><li>○ Semiconductors – Introduction, types, and applications.</li><li>○</li></ul>
<p>Week 6: 04/03/2024 to 09/03/2024</p> <p>Ionic Solids</p> <ul style="list-style-type: none"><li>○ Ionic structures (<math>NaCl</math>, <math>CsCl</math>, <math>ZnS</math> (Zinc blende), <math>CaF_2</math>)</li><li>○ Size effects, radius ratio rule and its limitations</li></ul>
<p>Week 7: 11/03/2024 to 16/03/2024</p> <ul style="list-style-type: none"><li>○ Concept of Lattice energy,</li><li>○ Born- Haber cycle,</li><li>○ Solvation energy and its relationship with solubility of Ionic solids</li></ul>

<p>Week 8: 18/03/2024 to 22/03/2024</p> <ul style="list-style-type: none"> <li>○ Polarizing power and Polarisability of ions,</li> <li>○ Fajan's rule.</li> </ul>
<p>Week 9: 28/03/2024 to 30/03/2024</p> <p>Chemical Kinetics</p> <ul style="list-style-type: none"> <li>○ Concept of reaction rates,</li> <li>○ Rate equation, factors influencing the rate of reaction,</li> <li>○ Order and molecularity of a reaction</li> </ul>
<p>Week 10: 01/04/2024 to 06/04/2024</p> <ul style="list-style-type: none"> <li>○ Integrated rate expression for zero, first order Reaction</li> <li>○ Half-life period of a reaction,</li> <li>○ Arrhenius equation.</li> <li>○ Nernst distribution law – its thermodynamic derivation,</li> <li>○ Nernst distribution law after association of solute in one of the phases</li> </ul>
<p>Week 11: 08/04/2024 to 13/04/2024</p> <ul style="list-style-type: none"> <li>○ Nernst distribution law after dissociation of solute in one of the phases</li> <li>○ Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride</li> </ul> <p>Alkanes</p> <ul style="list-style-type: none"> <li>○ Nomenclature, classification of carbon atoms in alkanes and its structure, Isomerism in alkanes, sources</li> </ul>
<p>Week 12: 15/04/2024 to 20/04/2024</p> <ul style="list-style-type: none"> <li>○ Methods of formation-Wurtz reaction, Kolbe reaction, Corey- House Reaction and Decarboxylation of carboxylic acids</li> <li>○ Physical properties of Alkanes</li> <li>○ Mechanism of free radical halogenation of alkanes, Reactivity and selectivity</li> </ul>
<p>Week 13: 22/04/2024 to 27/04/2024</p> <ul style="list-style-type: none"> <li>○ Nomenclature of Cycloalkanes,</li> <li>○ Baeyer's strain theory</li> <li>○ Limitations of Baeyer's strain theory</li> <li>○ Theory of strain less rings.</li> </ul>
<p>Week 14: 29/04/2024 to 04/05/2024</p> <ul style="list-style-type: none"> <li>○ Nomenclature of alkenes and its structure</li> <li>○ Methods of formation: dehydration of alcohols, dehydrohalogenation of alkyl halide</li> <li>○ Hofmann elimination and their mechanism</li> <li>○ The Saytzeff rule and relative stabilities of alkenes</li> </ul>

Week 15 & 16: 06/05/2024 to 15/05/2024

- Chemical reactions: electrophilic and free radical additions
- Addition of halogens, halogen acids, hydroboration–oxidation
- Oxymercuration-reduction, Ozonolysis and hydration.
- Markownikoff's rule of addition.

## Lesson Plan

**Name : Priya**

**Designation : Extension Lecturer**

**Class: B.Sc I Medical**

**Chemistry Lesson Plan: 16 Week (From February 2024 to May 2024)**

<p>Week 1: 31/01/2024 to 04/02/2024</p> <p>Chapter 1: Covalent Bond</p> <ul style="list-style-type: none"><li>○ Valence bond theory approach, Shapes of simple inorganic molecules and ions based on valence shell electron pair repulsion (VSEPR) theory</li></ul>
<p>Week 2: 05/02/2024 to 10/02/2024</p> <ul style="list-style-type: none"><li>○ Hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements</li></ul>
<p>Week 3: 12/02/2024 to 17/02/2024</p> <ul style="list-style-type: none"><li>○ Molecular orbital theory of homonuclear (<math>N_2</math>, <math>O_2</math>) and heteronuclear (CO and NO) diatomic molecules, Dipole moment and percentage ionic character in covalent bond.</li></ul>
<p>Week 4: 19/02/2024 to 24/02/2024</p> <ul style="list-style-type: none"><li>○ Hydrogen Bonding – Definition, types, effects of hydrogen bonding on properties of substances, application</li><li>○ Brief discussion of various types of Van der Waals forces.</li><li>○</li></ul>
<p>Week 5: 26/02/2024 to 02/03/2024</p> <ul style="list-style-type: none"><li>○ Metallic bond – Qualitative idea of valence bond and Band theories of metallic bond (conductors, semiconductors, insulators).</li><li>○ Semiconductors – Introduction, types, and applications.</li><li>○</li></ul>
<p>Week 6: 04/03/2024 to 09/03/2024</p> <p>Ionic Solids</p> <ul style="list-style-type: none"><li>○ Ionic structures (<math>NaCl</math>, <math>CsCl</math>, <math>ZnS</math> (Zinc blende), <math>CaF_2</math>)</li><li>○ Size effects, radius ratio rule and its limitations</li></ul>
<p>Week 7: 11/03/2024 to 16/03/2024</p> <ul style="list-style-type: none"><li>○ Concept of Lattice energy,</li><li>○ Born- Haber cycle,</li><li>○ Solvation energy and its relationship with solubility of Ionic solids</li></ul>

<p>Week 8: 18/03/2024 to 22/03/2024</p> <ul style="list-style-type: none"> <li>○ Polarizing power and Polarisability of ions,</li> <li>○ Fajan's rule.</li> </ul>
<p>Week 9: 28/03/2024 to 30/03/2024</p> <p>Chemical Kinetics</p> <ul style="list-style-type: none"> <li>○ Concept of reaction rates,</li> <li>○ Rate equation, factors influencing the rate of reaction,</li> <li>○ Order and molecularity of a reaction</li> </ul>
<p>Week 10: 01/04/2024 to 06/04/2024</p> <ul style="list-style-type: none"> <li>○ Integrated rate expression for zero, first order Reaction</li> <li>○ Half-life period of a reaction,</li> <li>○ Arrhenius equation.</li> <li>○ Nernst distribution law – its thermodynamic derivation,</li> <li>○ Nernst distribution law after association of solute in one of the phases</li> </ul>
<p>Week 11: 08/04/2024 to 13/04/2024</p> <ul style="list-style-type: none"> <li>○ Nernst distribution law after dissociation of solute in one of the phases</li> <li>○ Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride</li> </ul> <p>Alkanes</p> <ul style="list-style-type: none"> <li>○ Nomenclature, classification of carbon atoms in alkanes and its structure, Isomerism in alkanes, sources</li> </ul>
<p>Week 12: 15/04/2024 to 20/04/2024</p> <ul style="list-style-type: none"> <li>○ Methods of formation-Wurtz reaction, Kolbe reaction, Corey- House Reaction and Decarboxylation of carboxylic acids</li> <li>○ Physical properties of Alkanes</li> <li>○ Mechanism of free radical halogenation of alkanes, Reactivity and selectivity</li> </ul>
<p>Week 13: 22/04/2024 to 27/04/2024</p> <ul style="list-style-type: none"> <li>○ Nomenclature of Cycloalkanes,</li> <li>○ Baeyer's strain theory</li> <li>○ Limitations of Baeyer's strain theory</li> <li>○ Theory of strain less rings.</li> </ul>
<p>Week 14: 29/04/2024 to 04/05/2024</p> <ul style="list-style-type: none"> <li>○ Nomenclature of alkenes and its structure</li> <li>○ Methods of formation: dehydration of alcohols, dehydrohalogenation of alkyl halide</li> <li>○ Hofmann elimination and their mechanism</li> <li>○ The Saytzeff rule and relative stabilities of alkenes</li> </ul>



Week 15 & 16: 06/05/2024 to 15/05/2024

- Chemical reactions: electrophilic and free radical additions
- Addition of halogens, halogen acids, hydroboration–oxidation
- Oxymercuration-reduction, Ozonolysis and hydration.
- Markownikoff's rule of addition.

## Lesson Plan

**Name : Priya**

**Designation : Extension Lecturer**

**Class: SEC**

**Chemistry Lesson Plan: 16 Week (From February 2024 to May 2024)**

Week 1: 31/01/2024 to 04/02/2024 <ul style="list-style-type: none"><li>○ Enzymes: a) Biocatalysts, enzyme specificity</li></ul>
Week 2: 05/02/2024 to 10/02/2024 <ul style="list-style-type: none"><li>○ Use of exogenous enzymes in foods – amylases, lipases, proteases</li></ul>
Week 3: 12/02/2024 to 17/02/2024 <ul style="list-style-type: none"><li>○ Endogenous enzymes – phenol oxidases, peroxidases</li></ul>
Week 4: 19/02/2024 to 24/02/2024 <ul style="list-style-type: none"><li>○ Endogenous enzymes – oxido- reductases, lipoxygenases</li></ul>
Week 5: 26/02/2024 to 02/03/2024 <ul style="list-style-type: none"><li>○ Factors affecting enzyme activity</li></ul>
Week 6: 04/03/2024 to 09/03/2024 Food Additives <ul style="list-style-type: none"><li>○ Additives: a) Buffer systems and salts, chelating agents b) Antioxidants</li></ul>
Week 7: 11/03/2024 to 16/03/2024 <ul style="list-style-type: none"><li>○ Antimicrobials</li><li>○ Fat replacers, sweeteners</li></ul>
Week 8: 18/03/2024 to 22/03/2024 <ul style="list-style-type: none"><li>○ Masticatory substances</li><li>○ Firming texturizers</li><li>○</li></ul>
Week 9: 28/03/2024 to 30/03/2024 <ul style="list-style-type: none"><li>○ Clarifying agents, bleaching agents</li><li>○ Flour improvers, anti-caking agents</li></ul>

Week 10: 01/04/2024 to 06/04/2024

- Gases and propellants.

Week 11: 08/04/2024 to 13/04/2024

- Color – Natural and synthetic food colors, their chemical structure

Week 12: 15/04/2024 to 20/04/2024

- shades imparted, stability, permitted list of colors, usage levels and food application

Week 13: 22/04/2024 to 27/04/2024

- Food colorants: sunset yellow, orange-B citrus red No2, yellow No5, green No3.

Week 14: 29/04/2024 to 04/05/2024

- Food colorants: citrus red No2, yellow No5, green No3

Week 15 & 16: 06/05/2024 to 15/05/2024

- Revision

## Lesson Plan

**Name : Priya**

**Designation : Extension Lecturer**

**Class: Minor Chemistry II**

**Chemistry Lesson Plan: 16 Week (From February 2024 to May 2024)**

Week 1: 31/01/2024 to 04/02/2024 <ul style="list-style-type: none"><li>○ Periodic table and atomic properties-</li><li>○ Atomic properties: atomic and ionic radii,</li></ul>
Week 2: 05/02/2024 to 10/02/2024 <ul style="list-style-type: none"><li>○ Ionisation energy,</li><li>○ electron affinity</li></ul>
Week 3: 12/02/2024 to 17/02/2024 <ul style="list-style-type: none"><li>○ Electronegativity definition,</li><li>○ Trends in periodic table</li></ul>
Week 4: 19/02/2024 to 24/02/2024 <ul style="list-style-type: none"><li>○ Effective nuclear charge, Slater's rules.</li></ul>
Week 5: 26/02/2024 to 02/03/2024 <ul style="list-style-type: none"><li>○ Ionic Solids: Stoichiometric and Non-stoichiometric defects in crystals</li></ul>
Week 6: 04/03/2024 to 09/03/2024 <ul style="list-style-type: none"><li>○ Lattice energy and Born- Haber cycle</li></ul>
Week 7: 11/03/2024 to 16/03/2024 <ul style="list-style-type: none"><li>○ Solvation energy and its relationship with solubility of Ionic solids</li></ul>
Week 8: 18/03/2024 to 22/03/2024 <ul style="list-style-type: none"><li>○ Polarizing power and Polarisability of ions, Fajan's rule.</li></ul>
Week 9: 28/03/2024 to 30/03/2024 <ul style="list-style-type: none"><li>○ Structure and Bonding in Organic Compounds</li><li>○ Localized and delocalized chemical bond, Van der Waal's interactions</li></ul>

Week 10: 01/04/2024 to 06/04/2024

- Resonance: conditions and resonance effect

Week 11: 08/04/2024 to 13/04/2024

- Hyperconjugation, inductive effect, Electromeric effect & their comparison.

Week 12: 15/04/2024 to 20/04/2024

- Gaseous State: Kinetic theory of gases

Week 13: 22/04/2024 to 27/04/2024

- Calculation of root mean square velocity, average velocity, and most probable velocity.

Week 14: 29/04/2024 to 04/05/2024

- Collision diameter, collision number, collision frequency and mean free path (derivations excluded).

Week 15 & 16: 06/05/2024 to 15/05/2024

- Revision

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2021-22) EVEN SEMESTER**

**Name of Teacher:** Poonam rani

**Designation:** Assistant professor

**Subject:** chemistry

**Class:** B.Sc-(N.M) -6<sup>th</sup> sem

<b>Subject/Paper: Sr. No.</b>	<b>Months</b>	<b>Topic to be covered</b>
1	February	Organometallic compound: nomenclature and definition, classification
2	march	Preparation and properties of alkyl of Li, Al, Hg Test and seminar
3	April	Preparation and properties of alkyl of Sn Metal – ethylenic complexes
4	may	Metal carbonyl and bonding in metal carbonyl

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2021-22) EVEN SEMESTER**

**Name of Teacher:** Poonam Rani

**Designation:** Assistant professor

**Subject:** Chemistry

**Class:** B.A-2<sup>nd</sup> sem(S.E.C)

<b>Subject/Paper: Sr. No.</b>	<b>Months</b>	<b>Topic to be covered</b>
1	February	Water: specific heat, latent heat, vapour pressure Boiling point, water as dispersing medium States of water
2	March	Water in food preparation and preservation Starch: Gelatinization, retrogradation, gums, pectic substance and test
3	April	Molecular mechanism of flavor perception Flavor from vegetables, pigments in animals Seminar and assignment
4	May	Synthetic food colors, plant tissue

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2021-22) EVEN SEMESTER**

**Name of Teacher:** Poonam Rani

**Designation:** Assistant professor

**Subject:** Chemistry

**Class:** B.A-2<sup>nd</sup> sem(M.D.C)

Subject/Paper: Sr. No.	Months	Topic to be covered
1	February	Periodic table classification of elements physical and chemical Aspects of metals and non metals ores and minerals of iron copper aluminium and alloys
2	March	classification of matter Ideal gas equation, real gas equation Important compounds: Baking soda, Washing soda, plaster of Paris, gypsum Test and seminar
3	April	Green revolution, soil and it's fertility Fertilizer, Acid rain, Biography of Har govind khurana Dr. P. C ray, sir C. V Raman
4	May	Biography of Dr. A. P. J Abdul kalam, C. N. R rao Dr. vikram sara bhai, Dr. Homi jahanghir bhabha, Dr. S. N bose



**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session2023- 2024) EVEN SEMESTER**

Name of Teacher: Mr. Ravi Kumar

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III Non. Medical Inorganic chemistry Semester-VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	Feb.	<b>Acids and Bases</b> Arrhenius, Bronsted-lowry, Lux-flood, solvent system and Lewis concept of acids and bases, relative strength of acids and bases, levelling solvents, hard and soft acids and bases(HSAB), Applications of HSAB principle.	
2	March	<b>Bio inorganic chemistry</b> Metal ions present in biological system, classification on the basis of action (essential, non essential, trace, toxic), Metalloporphyrins with special reference to haemoglobin and myoglobin	
3	April	, Bohr effect.and Nitrogen fixation. <b>Class test of this chapter.</b> <b>Silicones and Phosphazenes</b> Nomenclature, classification, prepration and uses of silicones, elastomers, polysiloxane copolymers, poly phosphazenes and bonding in triphosphazene.	

4	May	<p>poly phosphazenes and bonding in triphosphazene.</p> <p><b>Assignment ,Quiz and group Discussion.</b></p>	

- Vacation as per university calendar
- 2 assignments and 01 unit test will be taken as per schedule.

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2023-2024) EVEN SEMESTER**

Name of Teacher: Mr. Ravi Kumar

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III Medical +Non medical , Organic chemistry semester VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	Feb	<p><b>Heterocyclic Compounds</b> Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine</p>	
2	March	<p>, piperidine and pyrrole. Introduction to condensed five and six- membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline.</p> <p><b>Class test of this chapter.</b></p>	
3	April	<p><b>Amino Acids, Peptides &amp; Proteins</b> Classification, of amino acids. Acid-base behavior, isoelectric -amino acids. <math>\alpha</math>point and electrophoresis. Preparation of Structure and nomenclature of peptides and</p>	

		<p>proteins Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid- phase peptide synthesis. Structures of peptides and proteins: Primary &amp; Secondary structure.</p>	
4	May	<p><b>Synthetic Polymers</b> Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers. Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins. Natural and synthetic rubbers.</p> <p><b>Revision</b></p> <p><b>Unit test and assignment will be taken in June</b></p>	

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- 2 assignments and 01 unit test will be taken as per schedule.

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session2023- 2024) EVEN SEMESTER**

Name of Teacher: Mr. Ravi Kumar

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III Medical Inorganic chemistry Semester-VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	Feb.	<p><b>Acids and Bases</b> Arrhenius, Bronsted-lowry, Lux-flood, solvent system and Lewis concept of acids and bases, relative strength of acids and bases, levelling solvents, hard and soft acids and bases(HSAB), Applications of HSAB principle.</p>	
2	March	<p><b>Bio inorganic chemistry</b>  Metal ions present in biological system, classification on the basis of action (essential, non essential, trace, toxic), Metalloporphyrins with special reference to haemoglobin and myoglobin, Bohr effect.and Nitrogen fixation.</p> <p><b>Class test of this chapter.</b></p>	
3	April	<p><b>Silicones and Phosphazenes</b> Nomenclature, classification, preparation and uses of silicones, elastomers, polysiloxane copolymers, poly phosphazenes and bonding in triphosphazene. poly phosphazenes and</p>	

		bonding in triphosphazene.	
4	May	<p><b>Organometallic chemistry</b></p> <p>Definition, classification and nomenclature of organometallic compounds, preparation, properties and bonding of alkyls of Li, Al, Hg and Sn, concept of hapticity of organic ligand, Structure and bonding in metal-ethylenic complexes, Structure of Ferrocene, classification in metal carbonyls, preparation, properties and bonding in mononuclear carbonyls.</p> <p><b>Assignment ,Quiz and group Discussion.</b></p>	

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- 2 assignments and 01 unit test will be taken as per schedule

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2023-24) EVEN SEMESTER**

**Name of Teacher:** Suman Lata

**Designation:** Extension lecturer

**Subject:** chemistry(physical chemistry)

**Class:**BSc Non medical 2nd

Subject/Paper: Sr. No.	Months	Topic to be covered
1	February	Second law of thermodynamics, need for law, different statement of law, Carnot's cycles and its efficiency, Carnot's theorem, Thermodynamics scale of temperature. Concept of entropy- entropy as state function of P & T, entropy change in physical change, entropy as criteria if spontaneity and equilibriums.
2	March	Third law of thermodynamics: Nernst heat theorem, statement of concept of residual entropy, evolution of absolute from heat capacity data. Gibbs function and Helmholtz function as thermodynamics quantities, G as criteria for thermodynamics equilibrium and spontaneity, its advantage over entropy change. Variation of G with P, V and T. Test and Seminar.
3	April	Electrolytic and Galvanic cells- reversible & irreversible cells, conventional representation of electrochemical cells Calculations of thermodynamics quantities of cells reaction (G, H & K). Types of reversible electrodes- metal-metal ion, gas electrode, metal insoluble salt-anion and redox electrode. Electrode reactions, Nernst equations, derivation of cell EMF & single electrode potential, standard hydrogen electrode, reference electrodes, standard electrode potential, sign conventions. Assignment.
4	May	Concentration cells with or without transference, liquids junction potential and its measurement. Application of EMF measurement in solubility product and potentiometric titration using glass electrode. Revision.





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**LESSON-PLAN (Session 2023-24) EVEN SEMESTER**

**Name of Teacher:** Suman Lata

**Designation:** Extension lecturer

**Subject:** chemistry(physical chemistry)

**Class:**BSc medical 2nd

Subject/Paper: Sr. No.	Months	Topic to be covered
1	February	Second law of thermodynamics, need for law, different statement of law, Carnot's cycles and its efficiency, Carnot's theorem, Thermodynamics scale of temperature. Concept of entropy- entropy as state function of P & T, entropy change in physical change, entropy as criteria if spontaneity and equilibria.
2	March	Third law of thermodynamics: Nernst heat theorem, statement of concept of residual entropy, evolution of absolute from heat capacity data. Gibbs function and Helmholtz function as thermodynamics quantities, G as criteria for thermodynamics equilibrium and spontaneity, its advantage over entropy change. Variation of G with P, V and T. Test and Seminar.
3	April	Electrolytic and Galvanic cells- reversible & irreversible cells, conventional representation of electrochemical cells Calculations of thermodynamics quantities of cells reaction (G, H & K). Types of reversible electrodes- metal-metal ion, gas electrode, metal insoluble salt-anion and redox electrode. Electrode reactions, Nernst equations, derivation of cell EMF & single electrode potential, standard hydrogen electrode, reference electrodes, standard electrode potential, sign conventions. Assignment.
4	May	Concentration cells with or without transference, liquids junction potential and its measurement. Application of EMF measurement in solubility product and potentiometric titration using glass electrode. Revision.



**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2023-24) EVEN SEMESTER**

**Name of Teacher:** Suman Lata

**Designation:** Extension lecturer

**Subject:** chemistry(Inorganic chemistry)

**Class:**BSc medical 2nd

<b>Subject/Paper: Sr. No.</b>	<b>Months</b>	<b>Topic to be covered</b>
1	February	LANTHANIDES: Electronic structure, oxidation states magnetic properties, complex formation, colour, ionic radii and lanthanide contraction, occurrence, separation of lanthanide, lanthanide compounds
2	March	ACTINIDES: General characteristics of actnides, chemistry of separation of NP,Pu and Am from uranium, transuranic elements, comparision of properties of lanthanides and actnides with transition elements. Test and seminar.
3	April	Chemistry of analysis of various groups of basic and acidic radicals, chemistry of identification of acid radicals in typical combination, chemistry of interference of acid radicals including their removal in analysis of basics radicals. Assignment.
4	May	Common ion effect, solubility product, theory of precipitation, co- precipitation, post precipitation, purification of precipitates.

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2023-24) EVEN SEMESTER**

**Name of Teacher:** Suman Lata

**Designation:** Extension lecturer

**Subject:** chemistry(Inorganic chemistry)

**Class:**BSc Non medical 2nd

<b>Subject/Paper: Sr. No.</b>	<b>Months</b>	<b>Topic to be covered</b>
1	February	LANTHANIDES: Electronic structure, oxidation states magnetic properties, complex formation, colour, ionic radii and lanthanide contraction, occurrence, separation of lanthanide, lanthanide compounds
2	March	ACTINIDES: General characteristics of actnides, chemistry of separation of NP,Pu and Am from uranium, transuranic elements, comparision of properties of lanthanides and actnides with transition elements. Test and seminar.
3	April	Chemistry of analysis of various groups of basic and acidic radicals, chemistry of identification of acid radicals in typical combination, chemistry of interference of acid radicals including their removal in analysis of basics radicals. Assignment.
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**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2023-24) EVEN SEMESTER**

Name of Teacher: Mr.Surender kumar

Designation: Assistant professor

Subject: Chemistry (Organic Chemistry )

Class: B.Sc. II (Non-Medical }, semester-IV

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	February	<p><b>Aldehydes and Ketones</b></p> <p>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. Physical properties, Comparison of reactivities of aldehydes and ketones.</p>	
2	March	<p>Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction. Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, WolffKishner, LiAlH<sub>4</sub> and NaBH<sub>4</sub> reduction</p> <p><b>Class test of this chapter .</b></p> <p><b>Amines</b> Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines.</p>	
3	April	<p>Structural features affecting basicity of amines ,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 ac</p> <p><b>Diazonium Salts</b> Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO<sub>2</sub></p>	

		and CN groups, reduction of diazonium salts to hydrazines, coupling reaction and its synthetic applications.	
4	May	<p><b>Infrared spectroscopy</b></p> <p>Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region functional groups and interpretation of IR spectra characteristic absorptions of various parts of simple organic compounds. Applications of IR spectroscopy in structure elucidation of simple organic compounds,</p> <p><b>class test of this chapter and one assignment.</b></p> <p>Revision of syllabus.</p>	

- 2 assignments and 01 unit test will be taken as per schedule.

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND**  
**LESSON-PLAN (Session 2023-24) EVEN SEMESTER**

**Name of Teacher: Mr. Surender kumar**

**Designation: Assistant professor**

**Subject: Chemistry (Organic Chemistry )**

**Class: B.Sc. II (Non-Medical ), semester-IV**

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	February	<p><b>Aldehydes and Ketones</b></p> <p>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. Physical properties.</p>	

2	March	<p>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. Wittig reaction. Mannich reaction. Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, WolffKishner, LiAlH<sub>4</sub> and NaBH<sub>4</sub> reduction</p> <p><b>Class test of this chapter.</b></p>	
3	April	<p><b>Amines</b> Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines, 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.</p> <p><b>Diazonium Salts</b> Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO<sub>2</sub> and CN groups, reduction of diazonium salts to hydrazines, coupling reaction and its synthetic applications.</p>	
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- 2 assignments and 01 unit test will be taken as per schedule.

