

Government College Nalwa, Hisar
Lesson Plan Session 2023-24, Even Semester

| | Dr. Rajni Mohil Assistant Professor Subject: Chemistry Class: BSc-III 6TH Semester Paper: CCL-604(i) Discipline Specific Course-IV(i) POLYNUCLEAR HYDROCARBONS AND UV, IR SPECTROSCOPY | | | |
|---------|--|--------|---|-----------------|
| SR. NO. | | WEEK | TOPICS TO BE COVERED | REMARKS IF ANY |
| 1. | January | Week 1 | UNIT 1: Polynuclear and heteronuclear aromatic compounds: Properties of the following compounds with reference to electrophilic and nucleophilic substitution: Naphthalene, Anthracene | ASSIGNMENT 1 |
| | | Week 2 | Properties of the following compounds with reference to electrophilic and nucleophilic substitution: Furan, Pyrrole | |
| | | Week 3 | Properties of the following compounds with reference to electrophilic and nucleophilic substitution Thiophene, and Pyridine. | |
| | | Week 4 | UNIT 2: Active methylene compounds: <i>Preparation:</i> Claisen ester condensation. Keto-enol tautomerism. | |
| | | Week 5 | <i>Preparation:</i> Claisen ester condensation. Keto-enol tautomerism. | |
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| 2. | February | Week 1 | <i>Reactions:</i> Synthetic uses of ethyl acetoacetate (preparation of non-hetero molecules having upto 6 carbon). | ASSIGNMENT 2 |
| | | Week 2 | <i>Reactions:</i> Synthetic uses of ethyl acetoacetate (preparation of non-hetero molecules having upto 6 carbon). | |
| | | Week 3 | UNIT 3: Application of Spectroscopy to Simple Organic Molecules Application of visible, ultraviolet and infrared spectroscopy in organic molecules. Electromagnetic radiations, electronic transitions, λ_{max} & ϵ_{max} , | |
| | | Week 4 | Chromophore, auxochrome, bathochromic and hypsochromic shifts. | |

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| | | Week 5 | Application of electronic spectroscopy and Woodward rules for calculating λ_{\max} of conjugated dienes and α, β -unsaturated compounds. | |
| 3. | March | Week 1 | UNIT 4: IR Spectroscopy: Introduction | TEST |
| | | Week 2 | Infrared radiation and types of molecular vibrations, functional group and fingerprint region. | |
| | | Week 3 | IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding) | |
| | | Week 4 | Holi vacation 23.03.24 to 31.03.24 | |
| | April | Week 1 | IR spectra of aldehydes & ketones | |
| | | Week 2 | IR spectra of carboxylic acids and their derivatives (effect of substitution on $>C=O$ stretching absorptions). | |
| | | Week 3 | REVISION | |
| | | Week 4 | REVISION | |
| | | Examination | | |

Signature

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Dr. Rajni Mohil
 Assistant Professor
 Subject: Chemistry
 Class: BSc-III 6TH Semester
 Paper: CCL-603(i) Discipline Specific Course-III(i)
ORGANOMETALLICS AND BIOINORGANIC CHEMISTRY

| SR. NO. | | WEEK | TOPICS TO BE COVERED | REMARKS IF ANY |
|---------|----------|--------|--|-----------------|
| 1. | January | Week 1 | ----- | ASSIGNMENT 1 |
| | | Week 2 | UNIT-I Chemistry of 3d metals Oxidation states displayed by Cr, Fe, Co, Ni and Co | |
| | | Week 3 | A study of the following compounds (including preparation and important properties); Peroxo compounds of Cr, K ₂ Cr ₂ O ₇ , KMnO ₄ . | |
| | | Week 4 | A study of the following compounds (including preparation and important properties: K ₄ [Fe(CN) ₆], sodium nitroprusside, [Co(NH ₃) ₆]Cl ₃ , Na ₃ [Co(NO ₂) ₆]. | |
| | | Week 5 | UNIT-II Organometallic Compounds: Introduction | |
| 2. | February | Week 1 | Organometallic Compounds Definition and Classification with appropriate examples based on nature of metalcarbon bond (ionic, s, p and multicentre bonds). | ASSIGNMENT 2 |
| | | Week 2 | Structures of methyl lithium, Zeiss salt and ferrocene. EAN rule as applied to carbonyls. | |
| | | Week 3 | . UNIT-III Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals | |
| | | Week 4 | p-Acceptor behaviour of carbon monoxide. | |
| | | Week 5 | Synergic effects (VB approach)-(MO diagram of CO can be referred to for synergic effect to IR frequencies). | |
| 3. | | Week 1 | UNIT-IV Bio-Inorganic Chemistry A brief introduction to bio-inorganic chemistry. | |

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| | March | Week 2 | Role of metal ions present in biological systems with special reference to Na ⁺ , K ⁺ and Mg ²⁺ ions: Na/K pump; | TEST |
| | | Week 3 | Role of Mg ²⁺ ions in energy production and chlorophyll. | |
| | | Week 4 | Holi vacation 23.03.24 to 31.03.24 | |
| | April | Week 1 | Role of Ca ²⁺ in blood clotting, stabilization of protein structures and structural role (bones) | |
| | | Week 2 | Role of Ca ²⁺ in blood clotting, stabilization of protein structures and structural role (bones) | |
| | | Week 3 | REVISION | |
| | | Week 4 | REVISION | |
| | | Examination | | |

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