



DELHI PUBLIC SCHOOL, (JOKA) SOUTH KOLKATA
Department of Chemistry

Class: XII (Science)

Subject: Chemistry

Syllabus 2022-23

A. Periodic Assessment 1 (Marks 30):

- (i) **Haloalkanes and Haloarenes:** Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions. Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.
- (ii) **Alcohols, Phenols and Ethers:** Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol. Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, Electrophillic substitution reactions, uses of phenols. Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses

B. Periodic Assessment 2 (Theory (Marks 30):

- (i) **Solutions:** Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.
- (ii) **Coordination Compounds:** Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

C. Mid-Term Examination (Theory (Marks 70)):

- (i) **Solutions:** Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.
- (ii) **Chemical Kinetics:** Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.
- (iii) **Coordination Compounds:** Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).
- (iv) **Haloalkanes and Haloarenes:** Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions. Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.
- (v) **Alcohols, Phenols and Ethers:** Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol. Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols. Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.
- (vi) **Biomolecules: Carbohydrates** - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates. **Proteins** - Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. **Hormones** - Elementary idea excluding structure. **Vitamins** - Classification and functions. **Nucleic Acids:** DNA and RNA

PRACTICAL EXAMINATION

A. Practical Examination for Midterm (Marks 30):

- a. **Tests for the functional groups present in organic compounds:**
Aliphatic alcohol, phenolic, aldehydic, ketonic, carboxylic groups.
- b. **Qualitative Analysis: Determination of one anion and cation in a given salt.**
- Cations: NH_4^+ , Pb^{2+} , Cu^{2+} , Fe^{3+} , Al^{3+} .
 - Anions: CO_3^{2-} , SO_4^{2-} , S^{2-} , Cl^- , NO_3^- .
- c. **Determination of concentration/ molarity of KMnO_4 solution by titrating it against a standard solution of:** (Students will be required to prepare standard solutions by weighing themselves).
- i) Oxalic acid,
 - ii) Ferrous Ammonium Sulphate

**** IN PRACTICE EXAMINATIONS AND IN CBSE CLASS - XII FINAL EXAMINATION THE ENTIRE YEAR'S SYLLABUS WILL BE ASSESSED.**