



DELHI PUBLIC SCHOOL (JOKA) SOUTH KOLKATA
SYLLABUS - 2020-2021
CLASS XII
CHEMISTRY

PERIODIC TEST - I

- (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 mono substituted compounds only).
- (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. *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.

MIDTERM EXAMINATION

➤ **Theoretical Examination (Marks 70):**

- (i) **Aldehydes, Ketones and Carboxylic Acids:** *Aldehydes and Ketones*: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. *Carboxylic Acids*: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.
- (ii) **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.
- (iii) **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).

- (iv) **Solid State:** Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects.
- (v) **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 mono substituted compounds only).
- (vi) **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. *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.

➤ **Practical Examination (Marks 30):**

a. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (primary) groups.

b. Qualitative Analysis: Determination of one anion and cation in a given salt.

- Cations: Pb^{+2} , Cu^{+2} , Ca^{+2} , Sr^{+2} , Ba^{+2} , NH_4^+ .
- Anions: CO_3^{2-} , SO_3^{2-} , SO_4^{2-} , S^{2-} , Cl^- , Br^- , I^- .

c. Projects: (Anyone from the given)

The scientific investigations involving laboratory testing and collecting information from other sources. A few suggested Projects

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study of quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.

- Study of the effect of Potassium Bisulphate as food preservative under various conditions(temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature.
- Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

PERIODIC TEST - II

- (i) **Electrochemistry:** Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis.
- (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.

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

Deleted Parts (Given by CBSE):

➤ Theoretical Part:

S No	Unit	Deleted Topics
1	Solid State	Electrical and magnetic properties. Band theory of metals, conductors, semiconductors and insulators and n and p type semiconductors.
2	Solutions	Abnormal molecular mass, Van't Hoff factor
3	Electrochemistry	Lead accumulator, fuel cells, corrosion, law of electrolysis(elementary idea), dry cell-electrolytic cells and Galvanic cells,
4	Chemical Kinetics	Concept of collision theory (elementary idea, nomathematical treatment), activation energy, Arrhenius equation.
5	Surface Chemistry	Emulsion - types of emulsions, catalysis: homogenous and heterogeneous, activity and selectivity of solid catalysts; enzyme catalysis,
6	General Principles and Process of Isolation of Elements	Entire Unit
7	p-Block Elements	Preparation and properties of Phosphine, Sulphuric Acid: Industrial process of manufacture, Oxides of Nitrogen(Structure only); Phosphorus - allotropic forms, compounds of Phosphorus: Preparation and properties of Halides and Oxo acids (elementary idea only).
8	d- and f-Block Elements	Chemical reactivity of lanthanoids, Actinoids – Electronic configuration, oxidation states and comparison with lanthanoids. Preparation and properties of KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$
9	Coordination Compounds	Structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system)
10	Haloalkanes and Haloarenes	Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

11	Alcohols, Phenols, and Ethers,	Uses with special reference to methanol and ethanol.
12	Aldehydes, Ketones and Carboxylic Acids	-----
13	Amines	Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.
14	Biomolecules	Oligosaccharides (sucrose, lactose, maltose), polysaccharides(starch, cellulose, glycogen), importance of carbohydrates. Vitamins–classification and functions. Enzymes. Hormones -Elementary idea excluding structure.
15	Polymers	Entire Unit
16	Chemistry in Everyday life	Entire Unit

➤ **Practical Part:**

The following portions are deleted.

a. Surface Chemistry:

- Preparation of one lyophilic and one lyophobic sol Lyophilic sol - starch, egg albumin and gum Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.
- Dialysis of sol-prepared in above experiment.
- Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

b. Chemical Kinetics:

- Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.
- Study of reaction rates of any one of the following:
 - ❖ Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.
 - ❖ Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na_2SO_3) using starch solution as indicator (clock reaction).

c. Thermo chemistry Any one of the following experiments

- Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.
- Enthalpy of neutralization of strong acid (HCl) and strong base(NaOH).

- Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.
- d. Electrochemistry Variation of cell potential in $\text{Zn}/\text{Zn}^{2+}||\text{Cu}^{2+}/\text{Cu}$ with change in concentration of electrolytes (CuSO_4 or ZnSO_4) at room temperature.**
- e. Preparation of Organic Compounds Preparation of any one of the following compounds.**
- Acetanilide
 - Di-benzal Acetone
 - p-Nitroacetanilide
 - Aniline yellow or Naphthol Anilinedye

*****END OF THE CONTEXT*****