

**BOARD OF INTERMEDIATE EDUCATION, KARACHI**  
**MODEL QUESTIN PAPER FOR ANNUAL EXAMIANTIONS 2023**

**Chemistry – II**

**SECTION – A (Multiple Choice Questions)**

**Note: This section consists of 17 part questions and all are to be answered. Each question carries one mark. (17 Marks)**

**Q.1**

- (i) Gallium belongs to group IIIA and 4<sup>th</sup> period, its atomic number is:  
(a) 30 (b) 31  
(c) 32 (d) 33
- (ii) Which of the following set consists of all coinage metals:  
(a) Cu, Hg, Au (b) Cu, Ag, Au  
(c) Ag, Au, Hg (d) Cu, Fe, Au
- (iii) Borderline hydrides have intermediate character between:  
(a) Ionic and covalent hydrides (b) Metallic and polymeric hydrides  
(c) Metallic and covalent hydrides (d) Ionic and Metallic hydrides
- (iv) Deuterium isotope of hydrogen consists of:  
(a) 1p and 1n (b) 1p and 1e  
(c) 1p and 2n (d) 2p and 1n
- (v) Potassium combines with oxygen to form:  
(a) Normal oxide (b) Peroxide  
(c) Super oxide (d) Sub oxide
- (vi) Alkali metals cannot be used in voltaic cell because:  
(a) They are soft (b) They possess low m.p  
(c) They rapidly oxidize (d) They have low I.P
- (vii) If Bauxite ore of Aluminum contains SiO<sub>2</sub> as an excess impurity, the method used for its purification is:  
(a) Hall process (b) Baeyer's process  
(c) Serpek's process (d) Hoope's process
- (viii) Lead sesqui oxide is commonly known as:  
(a) Suhaga (b) Sandhur  
(c) Tincal (d) Kieserite
- (ix) Yellow colour of potassium chromate changes into red by adding:  
(a) KOH (b) H<sub>2</sub>SO<sub>4</sub>  
(c) H<sub>2</sub>O (d) NaCl
- (x) Condensation polymer in the following:  
(a) Polyethylene (b) Poly propylene  
(c) PVC (d) Bakelite
- (xi) Acrylonitrile is produced when HCN is catalytically heated with:  
(a) Ethane (b) Ethene  
(c) Ethyne (d) Ethanol
- (xii) The final product formed when benzene reacts with ozone and zinc dust is:  
(a) Cresol (b) Glyoxal  
(c) Glycol (d) Phenol

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- (xiii) Only one of the compounds given below obeys Markownikoff's rule on reaction with HCl:
- (a)  $\text{CH}_3 - \text{CH} = \text{CH}_2$  (b)  $\text{CH}_2 = \text{CH}_2$   
(c)  $\text{CH} \equiv \text{CH}$  (d)  $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
- (xiv) Alkyl halide is converted into an alcohol by:
- (a) Substitution (b) Addition  
(c) Elimination (d) Condensation
- (xv) Ethyl chloride when heated with dry silver oxide, gives:
- (a) An aldehyde (b) An ether  
(c) An alcohol (d) An alkene
- (xvi) The deficiency of this vitamin leads to inflammation of mouth and tongue:
- (a) A (b)  $\text{B}_1$   
(c)  $\text{B}_2$  (d) C
- (xvii) Perspex is a transparent plastic, its monomer is:
- (a) Vinyl acetate (b) Styrene  
(c) Vinyl chloride (d) Methyl metha acrylate



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**Chemistry – II**

**SECTION – B (36 Marks)**

**(Short Answered Questions)**

**Note: Attempt total nine (09) parts questions from this section. At least four (04) questions from organic chemistry and four (04) questions from inorganic chemistry. Each question carries 04 marks. and 1 part questions from any one.**

**INORGANIC CHEMISTRY**

**Q.2**

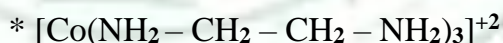
- (i) State modern periodic law and mention two discrepancies in the Mendeleev periodic system of elements.
- (ii) Write down four similarities of hydrogen with each alkali metals and halogens.
- (iii) Draw a labeled diagram of Down cell. What is the function of gauze diaphragm in this cell? Write the cell reactions taking place on cathode and anode.
- (iv) Write the name and formula of three oxy acids of Boron and show the effect of heat on them.
- (v) Complete and balance the following chemical reactions.  
\* Slaked lime is reacted with chlorine  
\* Chrom yellow pigment is digested with NaOH  
\* Colemanite is boiled with conc.  $\text{Na}_2\text{CO}_3$  solution  
\* Blue vitriol is mixed with excess of ammonia.

**OR**

Explain the following properties of graphite.

- \* Electric conduction                      \* Lubricant nature

- (vi) Write IUPAC naming of the following complexes.



- (vii) What is corrosion? Mention two methods of perversion of a metal against corrosion. **OR**

Explain the following properties of transition elements.

- \* Colour formation                      \* Variable oxidation state

**ORGANIC CHEMISTRY**

- (viii) What is meant by homologous series? Give three properties of a homologous series.
- (ix) Write the equations for the preparation of following hydrocarbons.  
(i) Ethane from methyl iodide.      (ii) Ethene from ethyl alcohol  
(iii) Ethyne from ethyl chloride.      (iv) Benzene from n-hexane
- (x) Define aromaticity why does benzene show stability towards addition reaction?
- (xi) What are organo metallic compound? How are the following substances prepared from methyl magnesium iodide.  
\* Acetic acid                      \* Ethane                      \* 1°-alcohol.

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- (xii) Bring about the following conversions  
(i) Acetic acid to acetone                      (ii) Formaldehyde to an oxime  
(iii) Phenol to picric acid                      (iv) Acetone to iodoform
- (xiii) Write the IUPAC naming of the following organic compounds.  
$$\begin{array}{c} \text{O} \\ || \\ * (\text{CH}_3)_2 \text{CH} - \text{C} - \text{CH} (\text{C}_2\text{H}_5)_2 \end{array}$$
                      \*  $\text{CH}_3 - \text{CH}_2 - \text{COO} - \text{C} (\text{CH}_3)_3$   
\*  $\text{CH}_2 = \text{CH} - \text{C} \equiv \text{C} - \text{CH} = \text{CH}_2$                       \*  $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_2 - \text{COOH}$
- (xiv) What are Detergents? Explain the cleaning action of detergent.

**SECTION – C (32 Marks)**

**(Detailed Answer Questions)**

**Note: Answer any two questions. One from Inorganic chemistry and one from Organic chemistry. Each question carries 16 marks.**

**INORGANIC CHEMISTRY**

- Q.3 (a) Describe various steps involved in the industrial preparation of sulphuric acid by contact process.  
(b) Explain with the help of equations that  
\*  $\text{H}_2\text{SO}_4$  is a dehydrating agent  
\*  $\text{HNO}_3$  is an oxidizing agent  
\*  $\text{H}_2\text{S}$  is a reducing agent  
\*  $\text{Cl}_2$  is an auto oxidizing reducing agent.
- Q.4 (a) Starting from Roasted pyrite ore describe how is 99.99% copper is obtained.  
(b) Explain the group trend of alkali metals of the following properties in the long form of periodic table.  
\* Ionization enthalpy \* Hydration enthalpy \* Melting point \* Hardness

**ORGANIC CHEMISTRY**

- Q.5 (a) Why does Benzene undergo electrophillic substitution reaction? Give the mechanism of nitration and acylation of benzene.  
(b) What is meant by fermentation? Explain how ethyl alcohol is obtained by the fermentation of (i) Molasses (ii) Starch. How is ethyl alcohol denatured?
- Q.6 (a) What are Lipids? Explain Fat, Waxes and Steroids. What is meant by saponification and rancidification of fat.  
(b) What are  $\beta$ -elimination reaction. Explain  $\text{E}_1$  and  $\text{E}_2$  reactions with respect to  
(i) Mechanism                      (ii) Kinetics

**OR**

Explain how the following pairs of compounds distinguished by simple chemical tests.

- \* Ethane and Ethene                      \* Ethene and Ethyne  
\* Aldehyde and Ketone                      \* n-hexane and Benzene

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