



Federal Board HSSC-II Examination  
Chemistry Model Question Paper

Time allowed: 2.40 hours

Total Marks: 68

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Note: Sections 'B' and 'C' comprise pages 1-4 and questions therein are to be answered on the separately provided answer book. Answer all the questions from section 'B' and section 'C'. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

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**SECTION – B**

(42 marks)

Note: Attempt **ALL** the questions. The answer to each question should not exceed 5 to 6 lines.

- Q.2 Potassium super oxide ( $\text{KO}_2$ ) is used in breathing equipment for mountaineers and in space craft.
- What characteristic of  $\text{KO}_2$  makes it useful for this purpose? (2)
  - Write the equation that shows the characteristic you have suggested above. (1)
- Q.3 Phosphorous exists in various allotropic forms (3)
- What is the name of the most reactive form of phosphorous?
  - Write the molecular formula of the answer to part a.
  - Draw the structure of any other allotropic form of phosphorous.
- Q.4 A galvanized iron sheet (with Zn) is damaged, and a galvanic cell is established in the presence of moisture.
- What is the name of the metal that acts as the cathode? (1)
  - Write half cell reaction, and complete the redox reaction. (2)
- Q.5 Partial hydrogenation of 2-Butyne forms two geometrical isomers. Write the equation and the condition necessary to obtain these isomers. (3)
- Q.6  $-\text{COOH}$  and  $-\text{CN}$  groups deactivate the benzene ring.
- Which property of these groups causes this deactivation? (1)

- b. Giving a suitable example compare the directive influence of  $-\text{NO}_2$  and  $-\text{Cl}$  group, when attached with benzene. (2)

**(OR)**

Benzene is a highly unsaturated compound, but it does not give addition reaction with bromine even in the presence of Lewis acid. Name and explain the process which gives this extra stability to benzene. (3)

- Q.7. a. In the preparation of alkyl halides from alcohols  $\text{SOCl}_2$  is the best reagent. Which solvent is required to complete the reaction? (1)  
b. Why is  $\text{SN}_2$  mechanism chosen rather than  $\text{SN}_1$  in the preparation of primary alkyl halides? (2)

- Q.8 Aldehydes and small methyl ketones form addition product with  $\text{NaHSO}_3$ :  
a. Write the equation for such reaction. (1)  
b. What is the importance of this reaction? (2)

- Q.9 Define an oxidizing smog. Write down its properties. (3)

- Q.10 Borax is a white crystalline solid, sparingly soluble in water but more soluble in hot water:  
a. What special characteristic makes it useful for the borax bead test? (2)  
b. What is the nature of aqueous solution of borax? (1)

- Q.11 Sulphuric acid is prepared by contact process:  
a. Why is  $\text{SO}_3$  produced during the process not dissolved directly in the water? (1½)  
b. Give a reaction that shows the dehydrating nature of sulphuric acid. (1½)

- Q.12  $-\text{OH}$  group is a characteristic functional group of ethanol and phenol.  
a. Explain why phenol acidic and ethanol are neutral? (2)  
b. Which of the following will react with sodium carbonate? (1)  
i. Phenol    ii. Ethanoic acid    iii. Ethanol

**(OR)**

- a. It has been observed that melting and boiling points of carboxylic acids are relatively higher than the corresponding hydrocarbons. Suggest the reason. (1½)  
b. Lower members of carboxylic acids are soluble in water but solubility decreases with the increase in molecular mass. Comment. (1½)

- Q.13 Amino acids are the organic compounds containing both amino and carboxyl group. They are the building blocks of proteins.
- What is meant by 'Zwitter ion'? (1)
  - Explain the acidic as well as the basic behaviour of amino acids. (1+1)
- Q.14 Fats and oils come from a variety of natural sources like animals, plants and marine organism.
- Margarine can be prepared from oil. Give the reaction for the process. (1)
  - Explain the term saponification with its chemical reaction. (1+1)
- Q.15 Manufacturing of steel is done by open hearth process. (3)
- At which temperature are impurities removed?
  - Mention through balanced equations the impurities which form silicates.

**SECTION – C**

(Marks: 26)

Note: Attempt **ALL** the questions.

- Q.16 During electrolysis of fused and aqueous sodium chloride different products are formed
- Name the cells used for electrolysis of fused NaCl and brine. ( $\frac{1}{2}+\frac{1}{2}$ )
  - Write the reactions occurring at different electrodes. (2+2)
  - Give reasons for the different products obtained. (2)
  - Draw labeled diagrams of both cells. (3+3)

**(OR)**

What are the methods in practice nowadays for the management of solid waste?

- Which one do you think is the worst method of all? (2)
- Which method of solid waste management do you think is the most suitable one? Why do you think so? (1+4)
- What is meant by incineration? How is it used for the disposal of industrial wastes? (3)
- Do you think water purification through chlorination is fatal for human beings? Elaborate your answer. (3)

Q.17 Kolbe's electrolytic method is used to prepare alkanes, alkenes and alkynes from suitable starting compounds.

- a. After selecting suitable starting compounds describe preparation of  
i. 2-butene and ii. 2-butyne  
by above mentioned method. (3+3)
- b. Distinguish 1-butyne from 2-butyne by giving two chemical tests. (2+2)
- c. How will you convert 2-butene into ethanal? (3)

**(OR)**

Depending upon the number and nature of monomers used for polymerization, polymers are classified into different types.

- a. Give the names and examples of these types. (1×3)
- b. What are biopolymers? Name the major classes of these polymers. (1+½×4)
- c. What is meant by a peptide linkage? How are proteins and polypeptides differentiated from one another? (3+1)
- d. Discuss the importance of proteins for living objects. (2)
- e. How are proteins denatured? (1)