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GSM/D-20 **926**

ORGANIC CHEMISTRY

Paper - X-CH-203

Time allowed : 3 Hours *Maximum Marks : 32*

Note : Attempt any **five** questions, selecting at least two questions from each unit. Question No. **1** is compulsory.

Compulsory Questions

1. (i) Suggest a reagent to convert a carboxylic acid into the corresponding primary alcohol. 1

   (ii) Name the reagent which can be used to distinguish between 1,2-propanediol and 1,3-propanediol. 1

   (iii) Phenol has smaller dipole moment than methanol. Explain why? 2

   (iv) What happens when an organic compound is subjected to UV radiation? 2

   (v) Acetic acid in the vapour state has a molecular mass of 120. Explain. 1

(vi) How will you convert an acid chloride into anilide? 1

UNIT-I

2. (i) Why are alcohols weaker acids than water ? Explain. 2

(ii) Arrange 1-pentanol, 1-butanol, 2-butanol, 2-methyl-12-propanol and 2-methyl-l-propanol in decreasing order of boiling points and explain. 2

(iii) Compare the acidic character of primary, secondary and tertiary alcohols with suitable examples. 2

3. (i) Discuss the role of H-bonding on physical properties of alcohols. 2

(ii) How Lucas test is helpful in distinguishing between primary, secondary and tertiary alcohols. 2

(iii) What happens when phenol is trteated with phosphorus pentachloride. 2

4. Discuss the mechanism of the following :

(i) Kolbe's reaction 2

(ii) Claisen rearrangement 2

(iii) Reimer-Tiemann reaction. 2

5. What are epoxides? Discuss the methods of preparation with mechanism :

(i) Epoxidation of alkenes 3

(ii) From halohydrins. 3

UNIT-II

6. (i) What is a chromophore? Identify the chromophoric group in : 2½

(a) Cyclopentene

(b) Toluene

(c) Butanone.

(ii) Compounds A, B and C have the formula C_5H_8 and on hydrogenation yield n-pentane. The ultraviolet spectra show the absorption values of λ_{max} for A=176 nm, B=211 nm and C=215 nm. Assign the structures to A, B and C (1-pentene absorbs at λ_{max} 178 nm). 3½

7. (i) Give reasons for the following: 4

(a) Benzene shows an absorption band at λ_{max} 254nm (ε 230) while aniline absorbs at λ_{max} 280 nm (ε 1430).

(b) Aniline absorbs at λ_{max} 280 nm (ε 1430) in aqueous solution but at λ_{max} 254 nm (ε 230) in aqueous acidic solution.

(ii) How can the rate of reaction be measured using UV-VIS spectroscopy? 2

8. Write short notes on the following : 3+3

(ii) Effect of substituents on the acidic strength of carboxylic acids.

(ii) Physical Properties of carboxylic acids.

9. (i) Discuss the hydrolysis of esters with mechanism taking some suitable example. 3

(ii) Discuss relative stability of acyl derivatives. 3