[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5715 **L**

Unique Paper Code : 2174001204

Name of the Paper : GE: Chemistry of Oxygen-containing Functional Groups and their Applications to Biology

Name of the Course : **B.Sc. (H)**

Semester : II/IV/VI

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer **four** questions in all.
3. Each questions carries **15** marks.

1) a) An organic compound A C_7H_6O reacts with methyl magnesium bromide followed by treatment with mineral acid to form compound B $C_8H_{10}O$ which on oxidation gives compound C C_8H_8O.Compound C gives iodoform test to give sodium benzoate. Identify A,B,C and give the sequence of reactions.

b) Explain the following

i) 2,2-Dimethylpropanal gives Cannizaro reaction while 2-methylpropanal does not.

ii) Carboxylic acid does not form oxime though they have carbonyl group in their structure.

c) Mention a reagent to which acetaldehyde and benzaldehyde react similarly and another reagent to which they react differently. Write the reactions involved. 5,5,5

2) a)Write one test with reaction involved to distinguish the following pairs of compounds

i) n-Propyl alcohol and Isopropyl alcohol

ii) Acetone and Acetaldehyde

b) Explain Reformatsky reaction with mechanism .

c) Write a note on oxidation in alcohols. 5,5,5

P.T.O.

3)a) Arrange the following compounds in increasing order of their acidity. Give reasons for your answer

ICH_2COOH, $BrCH_2COOH$, FCH_2COOH, $ClCH_2COOH$

b) Giving suitable explanation, arrange the acid derivatives(acid chlorides, esters, amides) in increasing order of reactivity towards nucleophilic substitution reaction.

c) Name and explain the reaction with mechanism when benzaldehyde is refluxed with aqueous ethanolic potassium cyanide. 5,5,5

4) Predict the product formed when

i) Phenol is heated with chloroform in the presence of sodium hydroxide followed by Acidification.

ii) Formaldehyde (2moles) is treated with concentrated sodium hydroxide solution.

iii) Ethyl acetate (2moles) is treated with sodium ethoxide in ethanol.

Name the above reactions and write their mechanism. 5,5,5

5) a) What is Meerwein-Pondorff Verley Reduction . Explain with mechanism.

b) Explain the following

i) Neopentyl alcohol on reaction with HCl forms tert-pentyl chloride not neopentyl chloride

ii) Trifluoro acetic acid is stronger than Trichloro acetic acid.

c) Compare the solubility, volatility &acidity of o-nitro phenol and p-nitro phenol 5,5,5

6) Write note on any three of the following with emphasis to

i) functional group that undergoes these reactions ii) products formed

iii) reaction conditions iv) mechanism

a) Haloform reaction

b) Addition of Ammonia derivatives to carbonyl compounds

c) Reimer-Tiemann reaction

d) Claisen condensation and its biological applications. 5,5,5