

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

(c) Write a note on Aldol condensation and its biological application.

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) Reformatsky Reaction

(b) Hell-Volhard Zelinsky reaction

(c) Perkin condensation

(d) Haloform reaction (5,5,5)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4654

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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) / B.Sc. Prog.**

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. Write the four isomeric alcohols of molecular formula $C_4H_{10}O$. Which of these alcohols is Indicated by the following experimental observations.

Compound A($C_4H_{10}O$) on oxidation with acidic potassium di chromate gives compound B ($C_4H_8O_2$), a

carboxylic acid. Treatment of compound A with hot concentrated sulphuric acid brings about dehydration & yields compound C (C_4H_8). Treatment of compound C with warm aq.sulphuric acid gives D($C_4H_{10}O$), a new alcohol, isomeric with compound A. Compound D is resistant to oxidation. Identify compounds A, B, C & D consistent with these observations. Give mechanism of step A to C. (15)

2. (a) (i) Which one is more acidic Phenol or Benzoic acid. Explain
 (ii) Arrange the following in increasing order of acidity with explanation.
 Phenol, 4-nitro phenol, 2,4,6-tri nitro phenol
 - (b) (i) Explain Gattermann Koch reaction.
 (ii) What is the directive influence of $-OH$ group in phenol towards electrophilic substitution Reaction?
 - (c) (i) Carry out the following conversions
 Phenol to 2,4-dinitro chlorobenzene
 Propanoic acid to propanal (5,5,5)
3. Predict the product formed when
 (i) Ethyl methyl ketone is treated with iodine in sodium hydroxide solution.

- (ii) Acetaldehyde is treated with benzaldehyde in dilute sodium hydroxide solution.
- (iii) Ethyl acetate (2 mole) is treated with sodium ethoxide in ethanol Name the above reactions and write their mechanisms. (5,5,5)

4. (a) Giving suitable explanation, arrange the acid derivatives (acid chlorides, esters, amides) in increasing order of reactivity towards nucleophilic substitution reaction.
 (b) Give the mechanism of alkaline hydrolysis of Esters.
 (c) How will you distinguish between the following compounds
 (i) CH_3CHO and CH_3COCH_3
 (ii) Phenol and Benzyl alcohol (5,5,5)
5. (a) What is Lucas reagent, how it is used to distinguish between primary, secondary and tertiary Alcohol. Explain with examples.
 (b) Explain the following :
 (i) Neopentyl alcohol on reaction with HCl forms tert.pentyl chloride not neopentyl chloride