

- (d) Why is benzoin condensation catalyzed by cyanide ion, not by hydroxide ion?
- (e) Write the reaction for nucleophilic addition of HCN, ROH to ketones. (3×5)
5. (a) Why are phenols acidic? And write the factors that affect their acidity.
- (b) Distinguish between aldol condensation and Cannizaro reaction.
- (c) Arrange the following in decreasing order of their acidity and justify your answer.  
 $\text{CH}_3\text{COOH}$ ,  $\text{CCl}_3\text{COOH}$ ,  $\text{Cl}_2\text{CHCOOH}$
- (d) Briefly discuss about Gattermann Koch reaction.
- (e) What is the difference between Clemmenson and Wolf-Kishner reaction? (3×5)
6. Write short notes on the following :
- (a) Schotten-Baumann reaction
- (b) Meerwein-Ponndorf-Verley reduction
- (c) Reformatsky reaction
- (d) Benzoin condensation
- (e) Addition of ammonia derivatives to carbonyl compounds (3×5)

(100)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5049

J

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. Programme

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 question carries **15** marks.

1. Give a reason for the following :

(a) Relative reactivity of carboxylic acid derivatives towards nucleophilic attack is

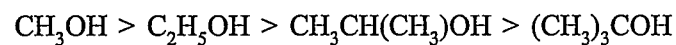
acid halides > acid anhydrides > amides

P.T.O.

(b) Cyclohexanal gives an aldol product while benzaldehyde does not.

(c) Phenol is a weaker acid than *p*-nitrophenol.

(d) Acidity order:



(e) *p*-Chlorobenzoic acid is more acidic than benzoic acid. (3×5)

2. (a) Write the reaction mechanism of Riemer-Tiemann reaction.

(b) Explain Claisen condensation and its biological application.

(c) 2, 2-dimethylpropanal gives the Cannizaro reaction. Explain.

(d) Discuss the mechanism for the nitration of phenol.

(e) 2, 4, 6-trinitrophenol gives effervescence with sodium bicarbonate while phenol does not. Explain. (3×5)

3. (a) Why do methanal and propanal not undergo the iodoform test?

(b) Explain effect of oxidising agent on primary, secondary, and tertiary alcohols.

(c) Discuss Hauben-Hoesch condensation reaction.

(d) Mention a reagent to which benzaldehyde and Acetophenone react similarly and another reagent to which they react differently.

(e) Write the reaction conditions with reagents required for the following reactions:

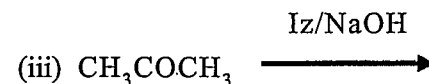
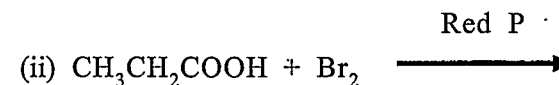
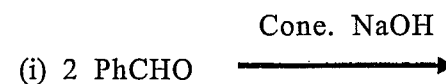
(i) Hell-Volhard-Zelinsky reaction

(ii) Oppenauer oxidation

(iii) Iodoform reaction (3×5)

4. (a) Carboxylic acids do not form oxime, though they have a carbonyl group (C=O) in their structures. Explain

(b) Complete the following reaction :



(c) Discuss the mechanism of Perkin condensation reaction.