

## ORGANIC CHEMISTRY - II

(Common with B.Sc. B.Sc. Bio-tech. B.Sc. Industrial Microbiology - Part - II)

Time : Three Hours

[Maximum Marks : 75]

Note : Attempt *one* question each from Sections A, B, C, and D carrying 15 marks each, and the entire Section E consisting of *ten* short answer type questions carrying 3 marks each. Maximum questions to be attempted *five*.

### Section : A

1. (a) Give the conditions under which dehydration of alcohols leads to the formation of alkenes. Explain the reasons for the formation of more than one or unexpected products during dehydration of substituted alcohols.  
(b) How can glycerol be prepared from (i) Propylene, and (ii) Fats?  
(c) (i) Discuss about Triphenylmethane dyes.  
(ii) How is Alazarin dye prepared? (5,5,5)
2. (a) Give mechanism of (i) Reimer-Tiemann reaction, and  
(ii) Gattermann synthesis.  
(b) What is Claisen rearrangement? Give mechanisms of both ortho and para rearrangement.  
(c) What is the effect of substituents on acidic strengths of phenols? (5,5,5)

### Section : B

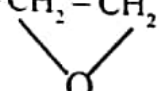
3. (a) What are special oxidising agents which are used for preparation of aldehydes from primary alcohols? What are their advantages?  
(b) How ketones are prepared using 1, 3-dithianes?  
(c) Give the reaction of ammonia derivatives with aldehydes and ketones. What is the role of pH during these reactions? (5,5,5)
4. (a) Give mechanism of the following :  
(i) Reformatsky reaction. (ii) Aldol condensation reaction.  
(b) Name the reaction which converts ketones into esters. Give detail of this reaction along with the mechanisms.  
(c) How will you distinguish between the following :  
(i) Aldehydes and Ketones.  
(ii) Acetaldehyde and Benzaldehyde.
5. (a) What is Hell-Vöhlard-Zelinsky reaction? Give its detail along with the mechanism. (5,5,5)  
(b) What is the effect of various substituents on the acidic strength of aromatic acids?  
(c) What is the action of heat on various types of dicarboxylic acids? (5,5,5)

### Section : C

6. (a) How do Alkyl and Acyl substitution differ from each other?  
(b) What are Synthetic detergents? What are their advantages over soaps?  
(c) What are the different products formed when unsymmetrical ethers reacts with HI? (5,5,5)
7. (a) What is the relative order of reactivity of various acid derivatives? Explain in detail with reason.  
(b) (i) What products are formed upon electrolytic reduction of nitrobenzene in weakly acidic and also in strongly acidic medium?  
(ii) How can you do selective reduction in case of nitro compounds containing more than one nitro group?  
(c) Give the reactions of nitro alkanes with nitro acid.
8. (a) Explain Gabriel Phthalimide reaction of formation of primary amines along with its mechanism. (5,5,5)  
(b) Discuss Hofmann's Bromamide reaction of formation of amines along with its mechanism.  
(c) Discuss relative basic strengths of different alkyl amines along with rearrangement. (5,5,5)

### Section : D

#### (Compulsory Questions)

9. Explain in brief :  
(a) Phenols and picric acid, both are acidic. Give one test which differentiates between their acidic strength.  
(b) B. Pt. or o-nitrophenol is less than that of p-nitrophenol. Explain.  
(c)  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 + \text{HCl} \longrightarrow$   


(d) How can you explain that toluene is more easily nitrated than benzene ?

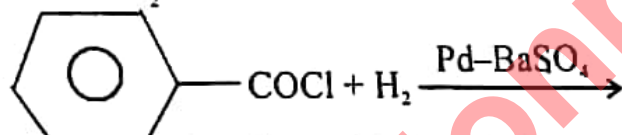
(e) How is unsaturation of oils determined ?

(f) Glycerol  $\xrightarrow[\Delta]{\text{KHSO}_4}$  ?

(g) Give the structural formula of citric acid. What are its uses ?

(h) Chloroacetic acid is stronger acid than acetic acid. Explain why ?

(i)  $\text{COCl} + \text{H}_2 \xrightarrow{\text{Pd-BaSO}_4}$



(j) What is a Diazonium salt ? How is it prepared ?