

B.Sc.- I (CBCS Pattern) Semester-II  
**USCCHT03 - Chemistry Paper-I - Organic Chemistry**

P. Pages : 2

Time : Three Hours



**GUG/S/25/11574**

Max. Marks : 50

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- Notes : 1. All **five** questions are compulsory and carry equal marks.  
2. Write chemical equations and draw diagrams whenever necessary.

1. a) Discuss the reaction and mechanism of  $\text{SN}^1$  reaction with energy profile diagram. 5
- b) What are aryl halides? Explain nucleophilic substitution of bromobenzene by  $\text{KNH}_2$  in the presence of liquid  $\text{NH}_3$ . 5

**OR**

- c) Explain Sandmeyer's reaction with a suitable example. 2½
- d) Compare the reactivity of alkyl halide and aryl halide. 2½
- e) Discuss the reaction and mechanism of  $\text{E}^1$  reaction. 2½
- f) Give preparation of ethyl bromide from- 2½  
i) Ethylene ii) Ethyl alcohol
2. a) Discuss the Pinacol-Pinacolone rearrangement reaction with mechanism. 5
- b) Write a note on- 5  
i) Reimer-Tiemann reaction ii) Chaisen rearrangement

**OR**

- c) Write a note on Fries Rearrangement reaction. 2½
- d) Discuss the preparation of phenol from cumene. 2½
- e) Explain the relative reactivity of alcohols and ethers. 2½
- f) What is the action of HI on diethyl ether in cold condition? 2½
3. a) Explain the structure and reactivity of carbonyl group. 5
- b) Write a short note on- 5  
i) Witting reaction ii) Rosenmund reduction reaction

**OR**

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|-------|---|----|
| c)    | Write a short note on Friedel Craft's acylation reaction.   | 2½ |
| d)    | What happens when alkyl nitrile react with Grignard reagent.  | 2½ |
| e)    | Give the synthesis of acetaldehyde from ethyl alcohol.  | 2½ |
| f)    | Write a note on Meerwein-Pondorff-Verley (MPV) reduction.   | 2½ |
| 4. a) | What is acidity of carboxylic acid? Discuss the effect of substituents on acidity of carboxylic acid. | 5  |
| b)    | Define esterification? Explain the mechanism of alkaline hydrolysis of ester.                         | 5  |

**OR**

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|-------|---|----|
| c)    | Explain Hell-Volhard-Zelinsky reaction.                   | 2½ |
| d)    | Write note on Reformat sky reaction.                      | 2½ |
| e)    | Give action of heat on phthalic acid.                     | 2½ |
| f)    | Give the preparation of acetyl chloride from acetic acid. | 2½ |
| 5.    | Attempt <b>any ten</b> questions.                         |    |
| i)    | Draw the energy profile diagram of $SN^2$ reaction.       | 1  |
| ii)   | Define elimination reaction.                              | 1  |
| iii)  | How will you prepare chlorobenzene from benzene?          | 1  |
| iv)   | Draw the M.O. structure of phenol.                        | 1  |
| v)    | What is Lucas test?                                       | 1  |
| vi)   | Give the method of synthesis of diethyl ether.            | 1  |
| vii)  | What is Wolff-Kishner reduction?                          | 1  |
| viii) | What is the action of HCN on formaldehyde?                | 1  |
| ix)   | What is Aldol condensation?                               | 1  |
| x)    | Give the structure of succinic anhydride.                 | 1  |
| xi)   | What happens when soda lime heated with carboxylic acid?  | 1  |
| xii)  | Write the IUPAC name of $CH_3 - CH_2 - CH_2 - COOH$       | 1  |

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