

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

P. Pages : 2

Time : Three Hours



**GUG/W/24/11574(S)**

Max. Marks : 50

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

1. a) What is nucleophilic substitution reaction? Explain  $SN^2$  reaction with mechanism. 5
- b) What are aryl halides? Explain nucleophilic substitution of bromobenzene by  $KNH_2$  in the presence of liquid  $NH_3$ . 5

**OR**

- c) Explain Sandmeyer's reaction with a suitable example. 2½
- d) Give the preparation chlorobenzene from phenol. 2½
- e) Differentiate between Elimination and substitution reaction. 2½
- f) Discuss Williamson's synthesis for ether. 2½
2. a) Discuss the reaction and mechanism of Pinacol-Pinacolone rearrangement. 5
- b) Write a note on 5
- i) Reimer-Tiemann reaction
- ii) Claisen rearrangement.

**OR**

- c) How will you prepare primary and secondary alcohols by using Grignard reagent? 2½
- d) Discuss the preparation of phenol from cumene hydroperoxide method. 2½
- e) Write a note on Fries Rearrangement. 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) Wittig reaction
- ii) Cannizzaro's reaction

**OR**

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|-----------|----------------------------------------------------------------------------------|----------|
| c)        | Write a short note on Friedel Craft's acylation.                                 | 2½       |
| d)        | What happens when alkyl nitrile react with Grignard reagent.                     | 2½       |
| e)        | Give the synthesis of Acetaldehyde and ketone by dehydrogenation of alcohols.    | 2½       |
| f)        | Explain Clemmensen reduction reaction.                                           | 2½       |
| <b>4.</b> | a) Write a short note on                                                         | <b>5</b> |
|           | i) Perkin condensation                                                           |          |
|           | ii) Hell-Volhard-Zelinsky reaction                                               |          |
|           | b) Define esterification? Explain the mechanism of alkaline hydrolysis of ester. | <b>5</b> |

**OR**

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|-----------|------------------------------------------------------------------------|---------------------|
| c)        | Explain the acidity of carboxylic acid due to substituents.            | 2½                  |
| d)        | Write a note on Reformatsky reaction.                                  | 2½                  |
| e)        | Discuss the action of heat on dicarboxylic acid with suitable example. | 2½                  |
| f)        | Give the preparation of acetyl chloride from acetic acid.              | 2½                  |
| <b>5.</b> | Attempt <b>any ten</b> questions.                                      | <b>1x10<br/>=10</b> |
|           | i) Draw the energy profile diagram of SN <sup>1</sup> reaction.        |                     |
|           | ii) What is E <sup>1</sup> reaction?                                   |                     |
|           | iii) How will you prepare chlorobenzene from benzene?                  |                     |
|           | iv) Draw the M. O. structure of phenol.                                |                     |
|           | v) What is Lucas test?                                                 |                     |
|           | vi) Write Houben-Hoesch condensation.                                  |                     |
|           | vii) What is Wolff-Kishner reduction?                                  |                     |
|           | viii) What is the action of HCN on formaldehyde?                       |                     |
|           | ix) What is Aldol condensation?                                        |                     |
|           | x) What happens when soda lime heated with carboxylic acid?            |                     |
|           | xi) What is the effect of heat on phthalic acid?                       |                     |
|           | xii) How will you prepare acetic acid from acetaldehyde?               |                     |

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