LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

THIRD SEMESTER – **NOVEMBER 2024**

CH 3506 – ORGANIC FUNCTIONAL GROUPS - I

Date: 12-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

SECTION A

Answer ANY FOUR of the following **4 x 10 = 40 Marks**

1. Explain the preparation of alkyl halides from alcohols, alkenes and alkynes.
2. Describe the mechanism and stereochemistry of E2 reactions of alkyl halides. Give an evidence for the mechanism.
3. Discuss the esterification and acylation reaction mechanism of ethanol.
4. (a) Predict the mechanism for Riemer-Tiemann reaction of phenol. (6)
   (b) Describe the preparation of phenol from diazonium salts. (4)
5. (a) Explain the classification of ethers with an example for each type. (5)
   (b) Discuss the acid cleavage reactions of mixed ethers. (5)
6. Describe Norrish type I and type II reactions of carbonyl compounds.
7. How will you prepare acid chlorides? Describe the hydrolysis and aminolysis reactions of acid chloride.
8. Discuss the effect of substituents on the acidity of mono and di carboxylic acids.

SECTION B

Answer ANY THREE of the following **3 x 20 = 60 Marks**

9. (a) Discuss any three methods of preparation of aryl halides. (10)
   (b) Describe the S_N2 reaction mechanism with an example and explain any three factors affecting the rate of S_N^2 reaction. (10)
10. (a) How will you synthesize alcohols by hydration and hydroboration-oxidation reactions of alkenes? (10)
    (b) Describe the nitration and halogenation reactions of phenol. (10)
11. What are epoxides? How are they prepared? Explain acid and base catalysed ring opening reactions of epoxides.
12. Describe the mechanism for the following reactions with examples.
    (i) Wolff-Kishner reduction reaction (6)
    (ii) Cannizarro reaction (7)
    (iii) Knoevenagel reaction (7)
13. (a) Describe the haloform reaction of methyl ketones. (5)
    (b) How will you synthesize aldehyde by Rosenmund reduction reaction? (5)
    (c) Explain the action of heat on α-, β- and γ-hydroxyacids. (10)
14. Discuss any one preparation and any two properties of each of the following carboxylic acids: (i) Oxalic acid (ii) Succinic acid (iii) Crotonic acid (iv) Cinnamic acid.
