LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

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

FIFTH SEMESTER – **NOVEMBER 2024**

16/17/18UCH5MC03 – ORGANIC FUNCTIONAL GROUPS-II

Date: 14-11-2024 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. Write the mechanism of Norrish type-I and type-II reactions.
2. Discuss the effect of substituents on the acidity of aliphatic carboxylic acids with examples.
3. Illustrate the mechanism of Claisen and benzil-benzylic acid rearrangements.
4. Propose any one method of preparation for diethyl malonate. Describe any three of its synthetic uses.
5. How are the following organometallic compounds prepared? (3+3+4)
   (i) CH_3MgBr (ii) C_6H_5Li (iii) R_2CuLi
6. Give the mechanism of Cannizarro reaction and Wolf-Kishner reduction.
7. Differentiate maleic acid from fumaric acid using different methods.
8. Write the mechanism of Fries and photo Fries rearrangements.

SECTION B

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

9. (a) Compare the mechanisms of reduction by $LiAlH_4$, $NaBH_4$ and $Al(iPr)_3$ with examples. (15)
   (b) Write the mechanism of haloform reaction. (5)
10. Write any one method of preparation of the following compounds. (6+7+7)
    (i) Oxalic acid (ii) Crotonic acid (iii) Cinnamic acid
11. Explain the mechanism and salient features of the following rearrangements. (10+10)
    (i) Claisen and *para*-Claisen (ii) Hoffmann and Curtius
12. Discuss the preparation and any five synthetic applications of cyanoacetic ester.
13. Illustrate the synthetic applications of Gilman's reagent.
14. Discuss the metal ion extraction and catalytic properties of crown ethers.
