LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **APRIL 2023**

UCH 5501 – ORGANIC FUNCTIONAL GROUPS - II

Date: 29-04-2023 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

PART-A

Answer ALL questions. **(10 x 2 = 20 Marks)**

1. CH_2=$CHCOCH_3$ + $NaBH_4$ → ? - Predict the product.
2. Predict the product for the following:
   $C_6H_5CHO + CH_3COCH_3 + OH^- \rightarrow ?$
3. How would you differentiate maleic and fumaric acids?
4. What is the IUPAC nomenclature of a) $CH_2(Cl)CH_2CH_2COOH$
   b) CH_2=$CH(COOH)CH_2CH_3$?
5. What is a cationotropic rearrangement?
6. Explain migratory aptitude.
7. What is an active methylene group? Give an example.
8. Draw the tautomeric form of cyclopentanone.
9. What is an organometallic compound?
10. Cite an example for coupling reaction.

PART-B

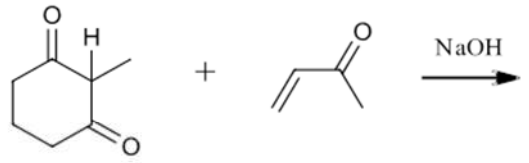
Answer any EIGHT questions. **(8 x 5 = 40 Marks)**

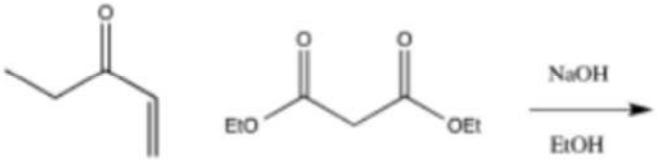
11. Differentiate between Aldol and Cannizaro reactions.
12. How do lactic and pyruvic acids prepared?
13. Analyze Norrish type I and Norrish type II reactions.
14. Ascertain the importance of trans - esterification.
15. Presence of substituents affect the acidity of carboxylic acids. Justify.
16. Explain the preparation of α, β-unsaturated acids from suitable starting materials.
17. Evaluate the stereochemical aspects of pinacol-pinacolone rearrangement.
18. Substantiate with your answer that Fries rearrangement can be both inter and intramolecular.
19. Explain the synthetic applications of malonic ester.
20. How is diazomethane prepared? What are its synthetic applications?
21. Grignard reagent is a versatile reagent in organic synthesis. Analyze.
22. Explain the preparation and synthetic importance of CH_3Li.

PART C

Answer any FOUR questions **(4x10=40 Marks)**

23. Predict the product with mechanism.

a) 

b) 

24. Explain acid and alkaline hydrolysis of esters with suitable mechanism.
25. Classify the molecular rearrangement reactions with suitable examples.
26. Evaluate the synthetic applications of a) acetoacetic ester b) cyanoacetic ester.
27. Evaluate the synthetic utility of organo Cu and Zn reagents.
28. a) What are Cope and Oxy -Cope reactions? How do they differ?
    b) Explain the action of diazo acetic ester with i) Zn dust ii) ethylene iii) acetylene.

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