

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – NOVEMBER 2022

UCH 5501 – ORGANIC FUNCTIONAL GROUPS - II

Date: 23-11-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART-A

Answer ALL the questions.

(10 x 2 =20 marks)

1. Among NaBH_4 and LiAlH_4 , which one is a powerful reducing agent? Justify.
2. Suggest a method to convert carbonyl compound to alkene.
3. What is meant by trans esterification?
4. Give a method to prepare lactic acid.
5. Write the mechanism of cope rearrangement.
6. Give a method of intra molecular rearrangement reaction.
7. Write the synthesis of diazomethane.
8. What is an active methylene group? Mention its significance.
9. Classify organo-metallic compounds.
10. What is meant by coupling reaction? Give an example.

PART-B

Answer EIGHT questions

(8 x 5 =40 marks)

11. Write the structural formulas and give IUPAC's names for all aldehydes and ketones with the molecular formula, $\text{C}_5\text{H}_{10}\text{O}$.
12. Explain Norrish type I and Norrish type II reactions.
13. Arrange the following compounds in the order of increasing acidity and explain your answer.
 CH_3COOH , $(\text{CH}_3)_2\text{CHCOOH}$, $(\text{CH}_3)_3\text{CCOOH}$.
14. Explain (i) the action of heat and (ii) stereospecific addition reaction of maleic and fumaric acids.
15. Describe the mechanism of ring contraction and ring expansion (enlargement) reactions.
16. Describe the mechanism of the following rearrangement reactions: (i) Para-Claisen (ii) photo Fries.
17. Describe the synthetic uses of diethyl malonic acid.
18. Write any three synthetic applications of cyanoacetic ester.
19. Describe the uses of alkylating organo metallic compounds with suitable examples.
20. Discuss the properties of Mg containing organo metallic compounds.
21. Explain the mechanism of Schmidt rearrangement.
22. Write the reaction and mechanism of Knoevenagel reaction.

PART-C

Answer any FOUR questions.

(4 x 10 =40 marks)

23. Discuss the mechanism of the following condensation reactions:

(i) aldol (ii) benzoin (5+5)

24. Discuss the preparation, reactions and applications of acid anhydrides.

25. Explain the reactions and mechanisms of the following: (2x5)

(i) Pinacol-pinacolone (ii) Hoffmann.

26. How will you synthesize the following from ethylacetoacetate? (4x2.5)

(i) butanoic acid (ii) succinic acid (iii) crotonic acid (iv) 4-methyl uracil.

27. Discuss the preparation and properties of organo metallic compounds of zinc metal.

28. Write notes on the following: (4+3+3)

(i) hydrolysis of esters (ii) Fischer esterification (iii) reduction of esters

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