



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – APRIL 2022

UCH 5501 – ORGANIC FUNCTIONAL GROUPS - II

Date: 15-06-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

Answer ALL the Questions:

(10 x 2 = 20)

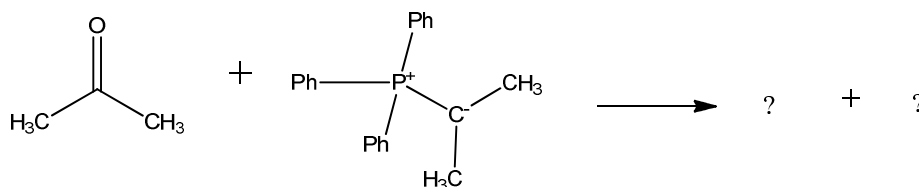
1. Why is carbonyl compound acidic nature?
2. Identify the product.
 $2C_6H_5CHO + KCN \longrightarrow$
3. Chloroacetic acid is stronger than the acetic acid. Justify.
4. How will you prepare acetyl chloride?
5. What is the significance of Hoffmann's rearrangement?
6. Mention any two properties of cyanoacetic ester.
7. Define keto-enol tautomerism.
8. How is CH_3MgBr prepared?
9. Write any two reactions of cyanoacetic ester.
10. What is a coupling reaction? Give an example.

PART – B

Answer Any EIGHT Questions

(8 x 5 = 40)

11. Predict the major products with mechanism.



12. What is the essential condition a carbonyl compound should satisfy to undergo aldol condensation reaction? Write the mechanism.
13. Discuss the Norrish type I and II reactions with examples.
14. Outline the synthesis methods of acetic acid and pyruvic acids.

15. Explain the effect of substituents on the acidity nature of carboxylic acids.
16. Describe the method of synthesis of oxalic and malonic acids.
17. Arrange the following carboxylic acids in the increasing order of acidity and give reason:
acetic acid, fluoroacetic acid, bromoacetic acid and chloroacetic acid.
18. Explain the pinacol-pinacolone rearrangement with mechanism.
19. Discuss in detail about the ring contraction and ring enlargement reactions with suitable examples.
20. Write any five synthetic uses of malonic ester.
21. Convert the following compounds by using suitable Grignard reagent (2.5 + 2.5)
 - (i) Acetone to tertiarybutyl alcohol
 - (ii) Formaldehyde to ethanol
22. Explain any two substitution reactions involving organometallic compounds.

PART – C

Answer Any FOUR Questions: (4 x 10 = 40)

23. (a) How will you synthesize cinnamic acid using Perkin's and Knoevenagel reactions? (5)
 - (b) Predict the mechanism for the following conversion. (5)
 - (i) Benzaldehyde to benzyl alcohol and benzoic acid.
24. (a) Write a note on hydrolysis of esters, transesterification. (5)
 - (b) How are adipic and pimelic acids prepared? (5)
25. a) Explain the action of heat on maleic and fumaric acids. (5)
 - b) Explain Cope and Oxycope rearrangements. (5)
26. Differentiate Fries and photo-Fries rearrangements? Explain its mechanism with example. (10)
27. a) How is malonic and acetoacetic acid prepared? Write its synthetic uses. (5)
 - b) Write the preparation, properties and synthetic applications of diazomethane. (5)
28. Predict the products of the following reactions: (10)
 - i) Acetamide + $P_2O_5 \rightarrow$
 - ii) Acetyl chloride + $H_2/Pd-BaSO_4 \rightarrow$
 - iii) Methyl acetate + Ethanol \rightarrow
 - iv) Adipic acid + $(CH_2)_6(NH_2)_2 \rightarrow$
 - v) Acetaldehyde + malonic ester \rightarrow

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