

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – NOVEMBER 2015

CH 3502 - ORGANIC FUNCTIONAL GROUPS - I

Date : 04/09/2015

Dept. No.

Max. : 100 Marks

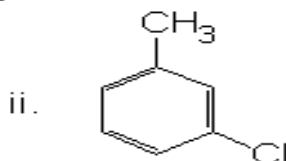
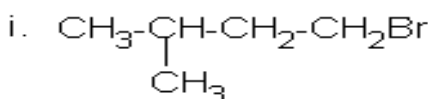
Time : 9:00 - 12:00

PART – A

Answer ALL the questions:

(10 x 2 = 20 marks)

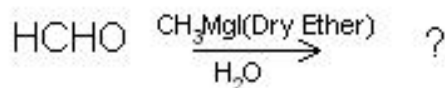
1. Give the IUPAC name of the following:



2. How will you convert nitro benzene into chloro benzene.

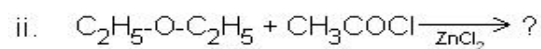
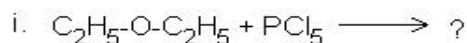
3. Why does phenol have higher boiling point than toluene?

4. Give the products of the following reaction.



5. How will you prepare phenyl methylether from phenol using Williamson's synthesis?

6. Give the products of the following reaction



7. How will you convert acetone into 2-Propanol.

8. Which type of aldehydes undergo cannizzaro reaction Give examples.

9. Arrange the following acids in terms of increasing acid strength and give reasons.

Propionic acid, 2-chloro propionic acid, 2-fluoro propionic acid.

10. Explain esterification reaction with a specific example.

PART – B

Answer any EIGHT questions:

(8 x 5 = 40 marks)

11. Explain the mechanisms of E2 and E1 reactions of alkyl halides.
12. Explain Saytzeff rule and Hofmann rule with an example.
13. What is Riemer – Tiemann reaction ? Explain its mechanism.
14. How is phenol prepared from cumene?
15. Although both phenol and alcohols contain hydroxyl group, Phenol is acidic whereas aliphatic alcohols are not acidic – Explain.
16. Give the mechanism of cleavage of ethers by HI.
17. What is Perkin's reaction? Explain its mechanism.
18. Illustrate Norrish type –I reaction with an example.
19. Give the products for the following reactions.
 - i. $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{H} + \text{HCN} \longrightarrow ?$
 - ii. $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{H} + \text{NH}_2-\text{NH}-\text{C}_6\text{H}_5 \longrightarrow ?$
20. What is Wittig reaction? Explain its mechanism.
21. Discuss the geometric isomerism of Mallic acid and fumaric acid.
22. Explain the mechanism of alkaline hydrolysis of esters.

PART – C

Answer any FOUR questions:

(4 x 10 = 40 marks)

23. i. Explain the mechanism of $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reaction. (6)
ii. Write in detail about the effect of "Structure of alkyl halide" and "Nature of leaving group" in aliphatic nucleophilic substitution. (4)
24. i. How will you convert phenol into
 - a. Salicylic acid.
 - b. Ethoxy benzene
 - c. Phenolphthalein. (6)
- ii. Write the mechanisms involved in the following reactions.
 - a. Nitration of phenol.
 - b. Sulphonation of phenol. (4)
25. i. How is acetic acid converted to ethyl acetoacetate. (4)

ii. How would you prepare the following compounds from acrylic acid.

a. Propionic acid.

b. Glyceric acid.

c. β - bromo propionic acid.

(6)

26. i. What is the action of heat on

a. Lactic acid

b. β -hydroxy butyric acid

c. γ -hydroxy butyric acid.

(6)

ii. Give the mechanism of Reformatsky reaction.

(4)

27.i. How will you prepare the following compounds?

a. Lactic acid from CH_3CHO

b. Acetic acid from CH_3CN .

ii. Discuss the mechanism of Michael addition reaction.

28.i. Give any two methods of preparation of Adipic acid.

ii. Write notes on Clemmensen reduction and Aldol condensation.

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