



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION - CHEMISTRY

THIRD SEMESTER – NOVEMBER 2015

CH 3506/CH 3502/CH 4500 - ORGANIC FUNCTIONAL GROUPS - I

Date : 04/11/2015

Dept. No.

Max. : 100 Marks

Time : 09:00-12:00

PART-A

ANSWER ALL QUESTIONS:

(10 x 2 = 20 marks)

1. How is 2-chloropropane prepared from 2-propanol?
2. Eventhough neopentyl bromide is a primary halide, it doesn't undergo substitution. Why?
3. How is methanol prepared from methyl magnesium bromide?
4. Write the preparation of salicylic acid from phenol.
5. How is ethylene oxide synthesized from ethylene?
6. Effect the conversion of ethanol to diethyl ether.
7. Arrange the increasing order of reactivity of the following carbonyl groups towards nucleophilic addition: acetone, acetaldehyde, formaldehyde.
8. What is the product obtained when benzaldehyde and acetaldehyde react in the presence of NaOH? What is the name of the reaction?
9. Complete the following reactions: (a) Acetic acid + $\text{LiAlH}_4 \longrightarrow ?$
(b) Acetic acid + $\text{NH}_3 \longrightarrow ?$
10. Write the product obtained when succinic acid is heated with ammonia?

PART-B

ANSWER ANY EIGHT QUESTIONS:

(8 x 5 = 40 marks)

11. Explain the effect of nucleophiles and polar solvents on $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions.
12. Explain, based on Saytzeff's rule, the major products obtained in the dehydrobromination of 2-bromobutane.
13. Discuss hydroboration-oxidation of isobutene explaining anti-Markovnikoff's rule.
14. Explain Reimer-Tiemann reaction with mechanism.
15. Why is phenol acidic in nature?
16. Discuss the mechanism of acid catalyzed cleavage of epoxides.
17. What are the products obtained from diethyl ether by the action of (i) HI (ii) PCl_5 (iii) air?
18. Explain knovenegal reaction with suitable mechanism.
19. How is propionaldehyde obtained by (i) Rosenmund's reduction and (ii) Ozonolysis?

20. What are the possible photochemical products of 2-pentanone?
21. Explain the base catalyzed hydrolysis of ester.
22. When $\text{CH}_3\text{CH}(\text{Br})\text{CH}_2\text{COOH}$ reacts with KOH gives product A which on treatment with alcoholic KOH yields product B. Identify the compounds A and B.

PART-C

ANSWER ANY **FOUR** QUESTIONS:

(4 x 10 = 40 marks)

23. (a) Explain the mechanism and evidences of $\text{S}_{\text{N}}2$ reaction
(b) Explain Hoffmann's rule with suitable example.
24. (a) Aniline on treatment with NaNO_2/HCl yields product A and A on further treatment with water produces product B. Identify A and B.
(b) Explain the sulphonation of phenol with suitable mechanism.
25. (a) Discuss Williamsons's synthesis with suitable example.
(b) Explain the halogenation reactions of diethyl ether.
26. (a) Discuss the mechanism involved in Michael addition with suitable example.
(b) How is an alkene converted into a carbonyl compound?
27. (a) Compare the acidity of acetic acid, monochloro acetic acid, dichloro acetic acid.
(b) Explain stereospecific addition of Br_2 to maleic acid and fumaric acid.
28. (a) Predict the product and mechanism of the reaction between CH_3CHO and CH_3COCH_3 in the presence of NaOH.
(b) How is cinnamic acid obtained from benzaldehyde?

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