

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – APRIL 2010

CH 3502/4500 - ORGANIC FUNCTIONAL GROUPS - I

Date & Time: 23/04/2010 / 1:00 - 4:00

Dept. No.

Max. : 100 Marks

PART – A

Answer **ALL** Questions

(10 x 2 = 20 marks)

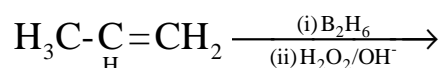
1. What is ion-dipole interaction in an aliphatic nucleophilic substitution reaction?
2. Which is a better nucleophile? tert-butoxide ion or ethoxide ion, why?
3. Differentiate between intermolecular and intramolecular hydrogen bonding.
4. 'Phenols are more acidic than alcohols'. Why?
5. What are epoxides? Give one example.
6. Predict the product of the reaction of Methyl ethyl ether with HI.
7. Give a method to prepare aliphatic aldehyde.
8. Arrange the following the increasing order of reactivity of carbonyl compounds towards nucleophiles – esters, aldehydes, acylhalides, ketones.
9. Which of the two is more acidic? why? Chloroacetic acid or acetic acid.
10. Predict the product obtained on heating oxalic acid.

PART – B

Answer any **EIGHT** Questions

(8 x 5 = 40 marks)

11. Predict the mechanism and stereochemistry of the S_N1 reaction of (S) – 2 – bromobutane in H₂O.
12. Explain the chlorination of methane.
13. Complete the following reaction and explain



14. Name the reaction and predict the product for the following:

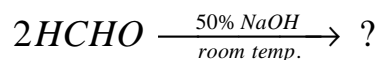
(P.T.O.)

15. Explain Friedel-Craft's acylation reaction with two examples.

16. Predict the product with mechanism for the following reaction

17. Write a note on Williamson's ether synthesis.

18. Name the reaction and predict the product in the following reaction



19. Give the products for the reaction of acetaldehyde with HCN, and NaHSO₃?

20. What is aldol condensation reaction? Give suitable example.

21. How would you differentiate between maleic and fumaric acids?

22. Explain transamination reaction using suitable example.

PART – C

Answer any **FOUR** Questions

(4 x 10 = 40 marks)

23. a) Explain S_NAr mechanism with a suitable example.

b) Give the mechanism of E2 elimination reaction of 2-chloropentane in the presence of a base.

24. a) Explain the nitration reaction of phenols.

b) Write a note on Reimer-Tiemann reaction.

25. a) Explain alkoxymercuration and demercuration reaction with a suitable example.

b) Predict the product in acid catalysed cleavage of epoxides.

26. a) Write a note on Norrish type I reaction with example.

b) Give mechanism of Michael addition reaction.

27. a) Give the mechanism of Reformatsky reaction.

b) How is crotonic acid prepared by Knoevenagel reaction?

28. a) Explain base-catalysed hydrolysis of esters.

b) How is adipic acid synthesized from phenol?

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