

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – APRIL 2010

CH 5505 - ORGANIC FUNCTIONAL GROUPS - II

Date & Time: 24/04/2010 / 1:00 - 4:00

Dept. No.

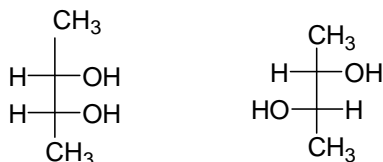
Max. : 100 Marks

PART - A

Answer **ALL** the questions

(10 X 2 = 20marks)

01. Draw the structures of (a) 2-Nitropropane and (b) 2-Nitro-3-methylbutane.
02. Why ammonolysis of alkylhalide is not the best method for the synthesis of amines.
03. Define the term optical activity.
04. Draw the sawhorse projection for the following compounds



05. Mention the various methods of resolution of racemic mixtures.
06. Draw the structure of diethyl malonate and label the active methylene group in it.
07. Mention the difference between inter and intra molecular rearrangement.
08. Draw the structures of piperine and α -pinene.
09. Define isoprene rule.
10. Why electrophilic substitutions in thiophene preferentially takes place at C-2.

PART - B

Answer any **Eight** questions

(8 X 5 = 40marks)

11. Discuss the Gabriel synthesis for the preparation of aliphatic amines. Explain why it is not suitable for preparing aromatic amines.
12. Arrange the following in the increasing order of their base strength and explain the predicted order.
(a) Aniline (b) 4-Methoxyaniline (c) 4-Nitroaniline & (d) 2,4,6 – Trinitroaniline.
13. Write one method of preparation of the following compounds:
(a) m-Dinitrobenzene (b) o-Dinitrobenzene & (c) p-Dinitrobenzene. (1+2+2)
14. List out the sequence rules of Cahn-Ingold-Prelog system for determining configuration of chiral carbon's in organic compounds.

(P.T.O.)

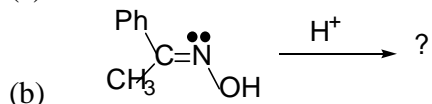
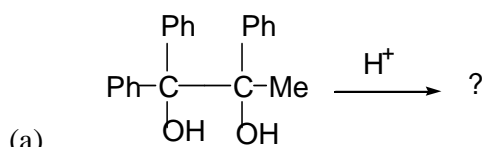
15. Discuss the methods of racemization of organic compounds.
16. Effect the following conversions:
- (a) Acetoacetic ester \longrightarrow Adipic acid
- (b) Acetoacetic ester \longrightarrow 4-Methyluracil
17. Describe the structure of diazomethane.
18. Discuss the mechanism of Hoffmann rearrangement.
19. Furnish an evidence to illustrate the intramolecular nature of Claisen rearrangement.
20. Explain the Skarup synthesis of Quinoline.
21. Discuss the classification and isolation of Terpenes.
22. How are the following compounds prepared?
- (a) Furan (b) Pyrrole & (c) Isoquinoline

PART - C

Answer any **Four** questions

(4X 10 = 40 marks)

23. Discuss the reduction of nitrobenzene under the following conditions:
- (a) Acid medium (b) Alkaline medium (c) Electrolytic medium. (3+3+4)
24. (i) Effect the following conversions:
- (a) Aniline \longrightarrow Bromobenzene
- (b) Aniline \longrightarrow p-Hydroxyazobenzene (2+3)
- (ii) Discuss the utility of Hinsberg test. (5)
25. Discuss the optical activity of biphenyls and allenes.
26. Predict the product and draw the mechanism for the following:



27. Discuss the general methods of determination of chemical constitution of the alkaloids.
28. Electrophilic and nucleophilic substitution of pyridine take place at C-3 and C-2 respectively. Explain.

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