



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc. DEGREE EXAMINATION - CHEMISTRY**

FIFTH SEMESTER – NOVEMBER 2015

**CH 5510 - ORGANO-NITROGEN COMPOUNDS & STEREOCHEMISTRY**

Date : 03/11/2015

Dept. No.

Max. : 100 Marks

Time : 09:00-12:00

**PART- A**

Answer **ALL** the questions:

(10 × 2= 20 marks)

1. Why is dimethylamine more basic than methylamine and trimethylamine?
2. What is TNT? How will you prepare it?
3. How will you prepare thiophene from mucic acid?
4. What are isoprene and special isoprene rules?
5. Write E and Z isomers of  $\text{CBrI}=\text{CClF}$ .
6. What do you mean by torsional strain?
7. Define chirality.
8. What are erythro and threo isomers? Give an example.
9. What is Fries rearrangement?
10. How does cationotropic rearrangement take place?

**PART-B**

Answer any **EIGHT** questions:

(8 × 5 = 40 marks)

11. Enumerate the reduction of nitrobenzene under different conditions.
12. Write notes on (i) Sandmeyer reaction  
(ii) Hoffmann degradation  
(iii) Diazotization (1½ + 2 + 1½)
13. "Electrophilic substitution of pyridine occurs at C-3, whereas nucleophilic substitution at C-2".  
Justify.
14. How will you prepare Quinoline by Skraup synthesis?
15. Discuss the extraction of alkaloids from plants.
16. Explain 1,3- interaction using dimethyl cyclohexane.
17. Explain conformational analysis of ethane molecule.
18. Enumerate the optical activity of biphenyls.
19. Describe chemical and bio-methods for the resolution of racemic mixture. (2½ + 2½)
20. What is Beckmann rearrangement? Explain its mechanism. (2+3)
21. Discuss the classification of molecular rearrangements?
22. Explain D and L notation of optical isomers.

**PART-C**

Answer any **FOUR** questions:

(4 × 10 = 40 marks)

23. (i) Explain the effect of substituents on the basicity of aniline. (5+5)  
(ii) "Nitromethane shows acidic character". Why?
24. Elucidate the structure of piperine.
25. (i) Starting from pyrrole how will you prepare? (2+2+2+2)  
a. Pyrrole-2-carboxylic acid  
b. 2- formyl pyrrole  
c. Pyridine  
d. 2-nitro pyrrole  
(ii) How will you prepare ethylamine by Gabriel phthalimide synthesis? (2)
26. Describe various methods of distinguishing geometrical isomers.
27. Write notes on (i) Asymmetric synthesis. (5+5)  
(ii) Walden inversion.
28. Explain with mechanism: (5+5)  
(i) Pinacol-Pinacolone rearrangement  
(ii) Claisen rearrangement.

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