



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIFTH SEMESTER – NOVEMBER 2018

CH 5505 – ORGANIC FUNCTIONAL GROUPS - II

Date: 27-10-2018
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART-A

ANSWER ALL QUESTIONS

(10 × 2 = 20)

1. Arrange the following in the increasing order of their basicity: Pyridine, pyrrole, & piperidine.
2. What is Sand Meyer reaction?
3. Why is pyridine more basic than pyrrole?
4. Give the structure of coniine and nicotine.
5. What are active methylene compounds? Give two examples.
6. Write the reaction of phenoxide ion with diazomethane.
7. Differentiate asymmetric and dissymmetric molecules.
8. Define Walden inversion.
9. What is Cope rearrangement?
10. Write a reaction mechanism for benzyl-benzilic acid rearrangement.

PART-B

ANSWER ANY EIGHT QUESTIONS

(8 × 5 = 40)

11. Explain the electrolytic reduction reaction of nitrobenzene.
12. Distinguish different orders of amines by Hinsberg test.
13. Write any one method to prepare pyrrole, furan and thiophene.
14. Why does pyridine undergo electrophilic substitution at C-3 whereas nucleophilic substitution at C-2 position? Explain.
15. How does Hoffman degradation method help to elucidate the structure of an alkaloid?
16. Write any two methods of synthesis of diazomethane.
17. Explain the synthesis of the following from diethyl malonate.
(a) cinnamic acid (b) ethyl acetoacetate
18. Explain the following with suitable examples.
(a) plane of symmetry (b) centre of symmetry
19. Explain asymmetric synthesis with suitable examples.
20. Draw the structure for the following:
(i) 2(R), 3(R)-2,3-dihydroxybutanal (ii) (R)-1-bromo-1-chloroethane
21. Explain the mechanism of Beckmann rearrangement.

22. Discuss the salient features of Claisen and *para*-Claisen rearrangement with mechanism.

PART-C

ANSWER ANY FOUR QUESTIONS

(4 × 10 = 40)

23. (a) Give the synthesis of the following compounds from nitrobenzene:

(i) Benzene (ii) *m*-nitroaniline

(b) Write the preparation of the following compounds:

(i) *o*-dinitro benzene (ii) *p*-nitro aniline (2 × 2.5)

24. (a) Discuss the basicity of amines in both aqueous and gas phases.

(b) Give the synthesis of the following compounds from aniline: (5+5)

(i) phenol (ii) fluorobenzene

25. (a) Explain the Skraup synthesis of quinoline.

(b) Write a note on classification of terpenoids with examples. (5+5)

26. Explain the synthesis of the following from ethylacetoacetate:

(a) butanoic acid (b) acetyl acetone (c) glutaric acid (3+3+4)

27. (a) Discuss any two methods of resolution of racemic mixtures.

(b) Write a short note on the optical isomerism of allenes and biphenyls. (5+5)

28. Explain the mechanism of the following rearrangement reactions.

(i) Pinacol-pinacolone (ii) Fries (5+5)

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