25P112 (Pages: 2) Name: .....

Reg.No: .....

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19PCHE1C03 - STRUCTURE AND REACTIVITY OF ORGANIC COMPOUNDS

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours Maximum : 30 Weightage

Section A

Answer any ***eight*** questions. Each question carries 1 weightage.

1. Explain hyproconjugation with suitable example.
2. Give four important rules for resonance.
3. What are cyclodextrins?
4. Draw the different conformations of 1,2-difloroethane and find the most stable conformer among them.
5. Discuss the conformation of 2- bromo 4- dimethyl cyclohexanone'.
6. Among 2-phenethyl acetate and propyl acetate, which will readily undergo solvolysis? Why?
7. Write a short note on conformations of decalins.
8. Write the Fischer projection formulae of L-glyceraldehyde and D-erythrose.
9. Discuss the stereochemistry of biphenyls.
10. What was Anh’s revision to Felkin model of 1,2-asymetric induction?
11. Write a note on Sharpless Epoxidation.
12. What are chiral auxiliaries? Give any two examples.

(8 × 1 = 8 Weightage)

Section B

Answer any ***four*** questions. Each question carries 3 weightage.

13. Explain the phenomenon of homoaromaticity with a suitable example.
14. Discuss the stereoisomerism of cis and trans l-tert-butyl -2-methylcyclohexane.
15. What are linear free energy relationships? Derive Hammett linear free energy relationship.

16. Give an account of the effect of conformation of dl and meso dibromo stillbene by KI and alco. KOH.

17. Distinguish between homototopic, enantiotopic and diastereotopic hydrogens giving example for each.

18. Show how chiral allenes be assigned the stereo descriptors R and S based on CIP rules.

19. Illustrate the use of Oxazolidones as chiral auxiliary in (i) alkylation and (ii) Diels-Alder reactions.

(4 × 3 = 12 Weightage)

Section C

Answer any ***two*** questions. Each question carries 5 weightage.

20. Discuss in detail neighbouring group participation of (i) carboxylate ion (ii) pi-bond (iii) hydroxyl group (iv) acetoxy group (v) phenyl group.

21. Write notes on (i) Marcus equation (ii) Hammet acidity function (iii) Curtin Hammet Principle (iv) Hammond Postulate.

22. (a) Explain the oxidation of the conformers of cyclohexanols by chromic acid.
    (b) Discuss the effect of conformations on pyrolytic elimination.

23. (a) Discuss the Asymmetric aldol reaction using Zimmermann-Traxler model.
    (b) Discuss the double diastereoselection through matched and mismatched aldols.

(2 × 5 = 10 Weightage)

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