

22P112

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Name:

Reg.No:

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2022

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE1 C03 - 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. With appropriate examples explain what is meant by hyperconjugation.
2. Write resonance structures of azulene.
3. Drawing the erythro and threo isomers of chlorohydrins comment on their stability.
4. Draw and explain the most stable conformation of cis-1-tert-butyl-4-methylcyclohexane.
5. Among Cis & Trans ethyl-4-tert-butylcyclohexane carboxylates, Which one is more easily saponified and why?
6. Explain Bredt's rule with suitable example
7. Define specific rotation.
8. Discuss the stereochemistry of biphenyls.
9. Illustrate the use of Evans oxazolidinone as chiral auxiliary in alkylation reaction.
10. What do you mean by double diastereoselection?
11. Write a short note on conformations of norbornanes.
12. What is meant by resonance energy?

(8 × 1 = 8 Weightage)

Section B

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

13. (a) Explain why first ionisation constant (K_{a1}) of maleic acid is higher than that of fumaric acid whereas for second ionisation constant (K_{a2}), the opposite trend is observed.
(b) Why hydrate of chloral and glyoxal is stable?
13. What is Marcus theory? What is its significance?

14. Discuss the meaning and significance of σ & ρ in quantitative correlation on reactivity.
15. Identify and sketch the Re-and Si- faces of 2- butanone and acetaldehyde.
16. Write a brief note stereoisomerism of aldoxime and ketoxime.
17. What is chiral pool? Illustrate with a suitable example. What is its significance in relation to asymmetric synthesis?
18. Write notes on (i) BINAL-H (ii) CBS catalyst.

(4 × 3 = 12 Weightage)

Section C

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

19. Discuss in detail Neighbouring group participation of (i) carboxylate ion (ii) pi -bond (iii) hydroxyl group (iv) acetoxy group (v) phenyl group.
20. (a) Discuss the conformation of 2- bromo cyclohexanone
(b) Explain 3 alkyl ketone effect and 2 alkyl ketone effects with suitable examples.
21. Explain E1 and E2 eliminations illustrated by the following compounds. (i) 4-t-butyl cyclohexyltosylate
(ii) 2-phenyl cyclohexanol (iii) Benzene Hexachloride
22. (a) Using Cram's rule predict the major product NaBH₄ reduction of (i) (S)-2-phenyl propanaldehyde
and (ii) (S)-2-methoxy propanaldehyde.
(b) Illustrate Zimmermann-Traxler model for aldol reaction.

(2 × 5 = 10 Weightage)
