23P112 (Pages: 2) Name: .....

Reg.No: .....

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2023

(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. Using curved arrows show all possible resonance structures for para and meta nitroaniline. Which has more resonance and why?
2. Why hydrates of glyoxal and ninhydrin are stable whereas hydrate of acetaldehyde is not stable?
3. Explain 3-alkyl ketone effect with suitable example.
4. State and explain Hamonds Postulate.
5. Among 2-phenethyl acetate and propyl acetate, which will readily undergo solvolysis? Why?
6. Explain Bredt's rule with suitable example.
7. What is meant by prochiral carbon? Give an example for a molecule with such carbon.
8. Discuss the sterochemistry in Aldoximes.
9. Write a note on Sharpless dihydroxylation.
10. What do you mean by double diastereoselection?
11. Discuss the role of BINAL-H as chiral reagent.
12. Define resonance energy. How it is calculated experimentally for benzene?

(8 × 1 = 8 Weightage)

Section B

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

13. Expain aromaticity in fulvenes and fulvalenes.
14. Explain the different conformations of tartaric acid.
15. Explain Taft equation and its advantages over Hammett equation.

16. Explain the eliminations of cis and trans isomers of 4-t-butylcyclohexyl tosylate and Phenylcyclohexanol.

17. Write the Fisher, Sawhorse and Newman projection formula of D-erythrose.

18. Draw two example each showing nitrogen and sulphur compounds showing optical isomerism.

19. Discuss the Felkin-Ahn model of Cram's rule in predicting the stereoselctive course of the reaction of Grignard reagents with chiral aldehyde.

(4 × 3 = 12 Weightage)

Section C

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

20. Write a note on (i) Transition state theory (ii) Curtin- Hammet principle (iii) Neighbouring group Participation of pi-bonds and carboxylate ions

21. (a) Draw the PE diagram for the different conformations of Cyclohexane.
    (b) Write a short note on optical activity of substituted cyclohexane.

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

23. (a) Design a strategy to synthesis the beetle pheromone (S)-(–)-ipsenol.
    (b) Illustrate Zimmermann-Traxler model for aldol reaction.

(2 × 5 = 10 Weightage)

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