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Name: .....

Reg.No: .....

**FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2024**

(CBCSS - PG)

(Regular/Supplementary/Improvement)

**CC19P CHE1 C03 - STRUCTURE AND REACTIVITY OF ORGANIC COMPOUNDS**

(Chemistry)

(2019 Admissions)

Time : 3 Hours

Maximum : 30 Weightage

**Section A**

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

1. Why does cyclopentadiene shows unexpected acidic property?
2. Write a note on transition state theory.
3. Discuss the conformation of Dimethyl cyclohexanone.
4. What is primary kinetic isotope effect?
5. The bridgehead adamantyl tosylate does undergo  $SN^1$  reaction extremely slowly and it does not undergo  $SN^2$  reaction. Validate the statement.
6. Among Cis & Trans ethyl-4-tert-butylcyclohexanol, which one is more easily oxidised using Chromic acid and why?
7. Write the Fischer projection formulae of L-glyceraldehyde and D-erythrose.
8. Distinguish between homotopic and enantiotopic hydrogens.
9. Illustrate the use of Evans oxazolidinone as chiral auxiliary in alkylation reaction.
10. Discuss the role of BINAL-H as chiral reagent.
11. Write a note on Sharpless Epoxidation.
12. Explain Bredt's rule with suitable example.

**(8 × 1 = 8 Weightage)**

**Section B**

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

13. Explain with suitable examples,  $\pi$ - $\pi$  interactions and  $p\pi$ - $d\pi$  bonding.
14. Discuss the stereoisomerism of cis and trans 1-tert-butyl -2-methylcyclohexane.
15. Explain Marcus theory and its significance.
16. Explain the effect of conformation in the Pyrolytic elimination of esters.
17. Discuss optical activity in allenes & biphenyls.

18. Discuss the Geometrical isomerism exhibited by Cyclic and acyclic systems using E or Z notation.
19. Discuss the Felkin-Ahn model of Cram's rule in predicting the stereoselective 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) Discuss the conformation of alkene dihalides, ethylene glycol and chlorohydrins.  
b) Write a short note on Anchoring group and conformationally biased molecules.
22. Explain E1 and E2 eliminations illustrated by the following compounds.  
(i) 4-t-butyl cyclohexyltosylate (ii) 2-phenyl cyclohexanol (iii) Benzene Hexachloride
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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