

QP CODE: 19002496



Reg No : .....

Name : .....

19

**M.Sc. DEGREE (C.S.S ) EXAMINATION, NOVEMBER 2019**

**First Semester**

Faculty of Science

CHEMISTRY

**Core - CH500102 - STRUCTURAL AND MOLECULAR ORGANIC CHEMISTRY**

(Common to all Branches of Chemistry)

2019 Admission Onwards

30FF6148

Time: 3 Hours

Maximum Weight :30

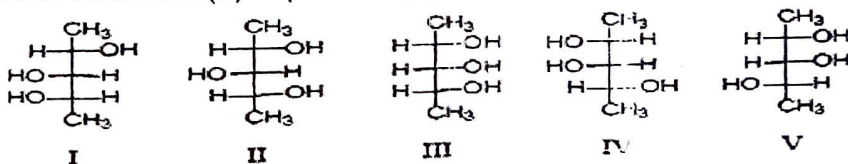
**Part A (Short Answer Questions)**

Answer any **eight** questions.

Weight **1** each.

1. What is electromeric effect?
2. Write a note on the aromaticity of carbon nanotubes.
3. How will you prove the alkyl – oxygen cleavage in AAL1 type of ester hydrolysis?
4. What is Norrish type I reaction?
5. Write the R and S configurations of a) glyceraldehyde b) alanine

Which structure(s) represent(s) diastereomer of 1?



7. How NMR can be used as a tool to distinguish enantiotopic molecules?
8. Discuss the ring flipping in cyclohexane.
9. SN1 pathway predominates in 2° and 3° alcohols. Explain.
10. Solvolysis of cis 4-t-butyl cyclohexyl tosylate is much faster than its trans isomer. Why?

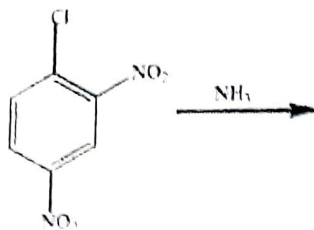
(8×1=8 weightage)

**Part B (Short Essay/Problems)**

Answer any **six** questions.

Weight **2** each.

11. Explain the MO picture of butadiene
12. Predict the product of the reaction and suggest a mechanism



13. Illustrate with an example, the use of primary isotope effect in the study of reaction mechanism.
14. Discuss Di- $\pi$ -methane rearrangement
15. Distinguish between Configurational and Conformational Stereoisomers.
16. Give an account of the optical activity of spiranes and alkylidene cyclo alkanes with suitable examples.
17. Write on the conformations of sucrose and lactose.
18. Show the stereochemical course of the debromination of threo and meso-1,2-dibromo-1,2-diphenyl ethane.

(6×2=12 weight)

### Part C (Essay Type Questions)

Answer any **two** questions.

Weight **5** each.

19. Explain Huckels Rule. Write a note on the aromaticity of annulenes
20. a) Describe the Hammett equation, the importance of Hammett parameters and explain why Hammett equation is a linear free energy relationship? b) Discuss in detail the power of Hammett plots in **deciphering mechanisms**.
21. a) Write a note on the important photochemical reactions of butadiene b) Describe the photochemistry of Vision.
22. Explain in detail about
- i. Carbon based chiral centers.    ii. N based chiral centers.    iii. S based chiral centers.

(2×5=10 weight)