

D 131270

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Name.....

Reg. No.....

**FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, NOVEMBER 2025**

(CBCSS)

Chemistry

CHE 1C 03—STRUCTURE AND REACTIVITY OF ORGANIC COMPOUNDS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

**Section A**

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

1. Explain LCAO with an example.
2. Depict the structure of the tautomer of benzophenone oxime.
3. Is pyrrole aromatic ? Justify your answer with suitable illustration.
4. Depict an example for a non-classical carbocation.
5. Depict the most stable conformer for cis-1-ethyl-2-methyl cyclohexane.
6. Draw the eclipsed conformer of ethane using sawhorse representation.
7. What is meant by Pitzer strain? Illustrate an example.
8. Draw the structure of (1R, 2R)-1-bromo-2-chlorocyclobutane.
9. Illustrate an enantiomeric pair of allenes and designate them.
10. Give an example for a stereoselective reaction.

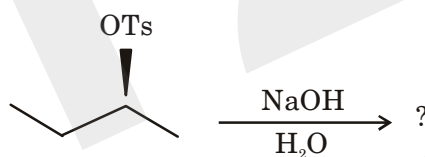
(8 × 1 = 8 weightage)

**Turn over**

**Section B**

Answer any **six** questions.  
Each question carries 2 weightage.

11. Explain Hammett equation taking the hydrolysis of ethyl benzoate as an example.
12. Illustrate the structure of the product formed from the following reaction :



13. Give examples for molecules containing enantiotopic and diastereotopic hydrogens.
14. N-ethyl-N-methyl nitrene undergoes Cope elimination to yield ethylene. Illustrate.
15. What product is formed by the action of acetate ion on trans-2-acetoxy cyclohexane tosylate and why ?
16. Using Cram's rule, illustrate the product formed when MeMgBr reacts with 2(R)-phenylpropionaldehyde.
17. Explain helical chirality with an example.
18. Diphenic acid ([1,1'-Biphenyl]-2,2'-dicarboxylic acid) is non-resolvable. Why ?

(6 × 2 = 12 weightage)

**Section C**

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

19. Trans-2-chlorocyclohexanol on treatment with base yields cyclohexane epoxide while the cis isomer yields cyclohexanone. Justify with illustration.
20. Predict the products formed by dihalo elimination of the meso- and dl forms of 2, 3-dibromobutane. What type of reaction is this an example of ?
21. Newman projection is helpful in explaining Hofmann elimination product. How ?
22. Explain Sharpless asymmetric dihydroxylation reaction with an example.

(2 × 5 = 10 weightage)