

**A-0981**

Total Pages : 3

Roll No. ....

**MSCCH-502**

**M.Sc. Chemistry (MSCCH)**

**Organic Chemistry-I**

Examination February, 2026

Time : 2:00 Hrs.

Max. Marks : 70

*Note :-* This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**Long Answer Type Questions** (2×19=38)

*Note :-* Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

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( 1 )

P.T.O.

1. Describe in detail the stereochemistry and configuration of spirane.
2. Discuss in detail the principles and applications of Cram's rule and Prelog's rule in stereoselective synthesis.
3. Discuss the structure and stability of carbon radicals. What factors influence their relative stability ?
4. Explain Hammond's postulate and discuss its significance in understanding reaction mechanisms and transition states.
5. Define benzenoid aromatic compounds and discuss their structural characteristics and aromaticity criteria.

### **Section-B**

#### **Short Answer Type Questions** (4×8=32)

**Note** :- Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Explain the concept of homoaromaticity and distinguish it from aromaticity.
2. Explain the concept of isotope effects in chemical reaction.

3. Explain the difference between inductive and field effects in molecules. How do they influence the reactivity of functional groups ?
4. How the absolute configuration of a chiral center is determined using the Cahn-Ingold-Prelog priority rules ?
5. Give an example of a reaction that is stereoselective and briefly explain why it is classified as such ?
6. Which conformation of disubstituted cyclohexane is the most stable and why ?
7. Explain why [10] annulene is not fully aromatic despite having 10  $\pi$ -electrons.
8. What is the key difference between enantiomers and diastereomers ?

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