

**A-058**

Total Pages : 4

Roll No. ....

**MSCCH-502**

**M.Sc. CHEMISTRY (MSCCH)**

**(Organic Chemistry-I)**

1st Semester Examination, 2024 (June)

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.

**A-058/MSCCH-502 ( 1 )**

P.T.O.

1. (a) Write note on stereo chemistry and configurations of adamantane and biphenyles.  
(b) Demonstrate that the faces of formaldehyde are homotopic.
2. (a) What are non-classical carbocations ? Discuss the stability of non-classical carbo cations.  
(b) Sketch the structures and decide whether the following compounds are enantiomers or distereomers :
  - (i) (E)-1, 2-dichloroethane and (Z)-1, 2-dichloroethane
  - (ii) (+) Tartaric acid and mesotartaric acid
3. (a) Derive hammett equation to correlate the substituent and reaction constant. Also mention the role of Hammett ( $\rho$ ) value.  
(b) write note on carbenes and nitrenes.
4. (a) What are crown ethers ? Give method of preparation of crown ether. Give some applications of crown ether.

- (b) What is hyperconjugation ? How this effect is useful to explain dipole moment.
5. (a) Discuss the conformations and stability of cyclohexane.
- (b) Discuss the aromaticity in annulenes.

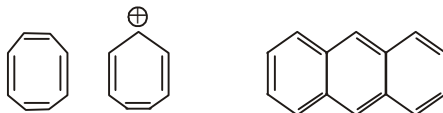
### Section-B

(Short Answer Type Questions)  $4 \times 8 = 32$

**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 Prostereo isomerism with example.
2. Discuss the isotope effect with suitable example.
3. Give a general definition of chirality and support it with example.
4. Write short note on E and Z nomenclature.
5. Write note on stereochemistry of spiranes.
6. Differentiate between stereospecific and stereoselective reactions.

7. Identify aromatic and antiaromatic compounds in the following



8. Discuss with example the cross-conjugation bonding in organic compounds.

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