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4. (a) Assign **Re** and **Si** faces of acetaldehyde and explain how a nucleophile attacks each face.
- (b) Are all chiral centres stereogenic centres? Is the reverse true? Explain with suitable examples. (8,7)
5. (a) Explain Cram's rule with its limitations, with suitable two examples.
- (b) Explain the application of CD in stereochemistry. (8,7)
6. (a) Explain the following terms with examples :
- (i) Prochirality
- (ii) Atropoisomerism
- (b) Explain the stereochemistry and configuration in Spiro compounds. (8,7)

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[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 9900

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Unique Paper Code : 2173010039

Name of the Paper : GE - Advanced Stereochemistry

Name of the Course : B.Sc. (H)

Semester : VII

Duration : 2 Hour

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
  2. Attempt any **four** questions.
  3. **All** questions carry equal marks.
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1. (a) Indicate the simple axes of symmetry present in the following molecules :  
  
(i) ethylene

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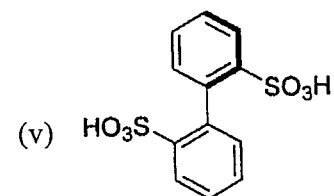
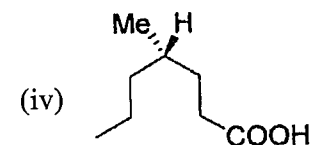
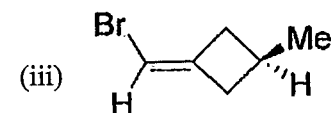
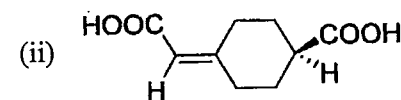
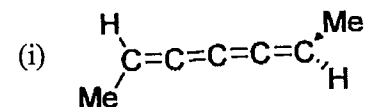
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- (ii) dichloromethane
- (iii) benzene
- (iv) methane
- (v) cis-1,3- dimethylcyclobutane
- (vi) trans-1,3-dimethylcyclobutane
- (vii) 2-hydroxycyclohexane.
- (b) Arrange the atoms and groups with increasing priority  $-\text{CH}_2\text{CH}_3$ ,  $-\text{NO}_2$ ,  $-\text{CH}_2\text{Br}$ ,  $-\text{COOH}$ ,  $-\text{CH}_2\text{OH}$ ,  $-\text{CH}_2\text{NH}_2$ ,  $-\text{CH}_2\text{CHFBr}$ ,  $-\text{CH}_2\text{CHF}$ . (7,8)
2. (a) What do you mean by asymmetric and dissymmetric molecules? Give two examples.
- (b) What are the most common features, which makes a compound chiral?
- (c) Explain the most stable confirmation of cyclohexane. (7,4,4)

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3. Assign the absolute configuration of the following optically active compounds.



(15)

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