

Roll No.

Total Pages : 04

GSE/D-21

793

ORGANIC CHEMISTRY

Paper III

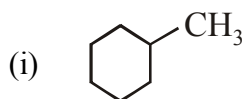
Time : Three Hours]

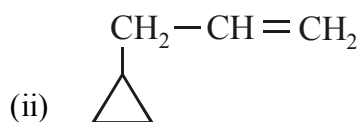
[Maximum Marks : 32

Note : Attempt *Five* questions in all, selecting *two* questions from each Section. Q. No. **1** is compulsory.

(Compulsory Question)

1. (a) What is no bond formation ? 1
- (b) Name the species formed by heterolytic cleavage of a covalent bond. 1
- (c) Define Plane Polarized light. 1
- (d) Give *two* examples of neutral electrophiles. 1
- (e) What is angle of strain ? Give formula. 1
- (f) Explain the term Mechanism. 1
- (g) What is inversion ? Give example. 1
- (h) Give IUPAC names of : 1





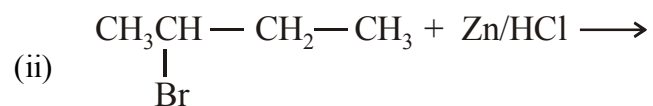
Section I

2. (a) What is conformational isomerism ? Write conformations of cyclohexane and their stability. 2
(b) Give examples of optically inactive solution or compound having : 2
(i) Internal Compensation
(ii) External Compensation.
(c) Give examples of each type of isomerism : 2
(i) Functional
(ii) Metamerism
(iii) Position
(iv) Ring-chain.
3. (a) What do you mean by +R and -R effect ? Discuss resonance. 2
(b) Define the localized and delocalized chemical bond. Give *two* examples of each type. 2
(c) What is inductive effect ? Discuss its types. 2
4. (a) Draw orbital diagram to represent delocalized bond in 1,3-Butadiene and Benzene. 2

- (b) What is the effect of van der Waals' interaction on the physical properties of alkane ? 2
- (c) Write conformations of *n*-butane. Give energy diagram for all the conformations. 2
5. (a) Define geometrical isomerism. Give its conditions. 2
- (b) Compare reactivity of alkyl halide and vinyl halide. 2
- (c) What do you mean by R and S configuration and E and Z configuration. 2

Section II

6. (a) Calculate % of isomers formed during bromination of propane. [reactivity order of 3° : 2° : 1°, Hydrogen is 1600 : 82 : 1] 2
- (b) What are carbocations ? Give structure, types and stability order of carbocation. 2
- (c) Explain theory of strainless molecules. 2
7. (a) Give methods of preparation of cycloalkanes : 2
- (i) [2 + 2] cycloaddition reaction
- (ii) Pyrolysis of calcium salt of fatty acid.
- (b) Write four postulates of Bayer's strain theory. 2
- (c) Complete the reaction : 2
- (i) $(\text{CH}_3)\text{CuLi} + \text{CH}_3\text{CH}_2\text{-I} \longrightarrow$



8. (a) Explain various types of organic reaction. Give example of each type. **3**
- (b) (i) Define homolytic cleavage with example. **1**
(ii) Define reactive Intermediate with example of different intermediate. **2**
9. (a) What is reactivity-selectivity principle ? Explain with the help of activation energy (Eact). **2**
- (b) (i) What are the main sources of alkanes ? **1**
(ii) What is difference between kinetic controlled reaction and thermodynamic controlled reaction ? **1**
- (c) Draw energy profile diagram for a single step reaction and for a two step reaction with a reactive intermediate. Give examples of each type. **2**