

B.Sc. Biotechnology 1st Semester

ORGANIC CHEMISTRY—A

Paper—BT-4

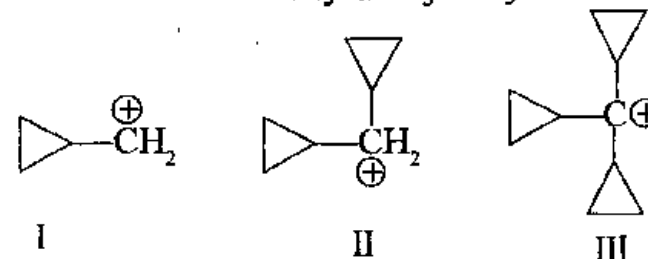
Time Allowed—Three Hours] [Maximum Marks—40

Note :—Attempt **FIVE** questions selecting at least **ONE** question from each section. The **fifth** question may be attempted from any section.

SECTION—A

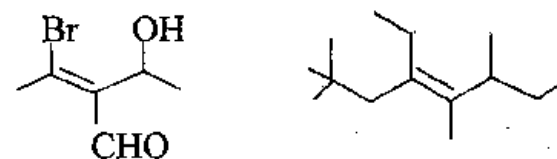
- Write Newman projections for Chair and Boat form of Cyclohexane and predict their relative stability. 3
 - Discuss the stability of tropylium cation. 3
 - Why allyl free radical is more stable than alkyl free radical ? 2
- Draw potential energy diagram for various conformations of n-butane and discuss their relative stabilities. 4

- Arrange the following carbocations in increasing order of their stability and justify. 4

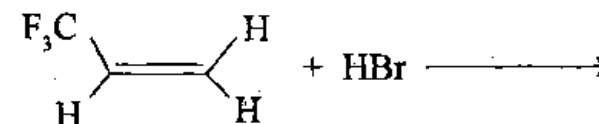


SECTION—B

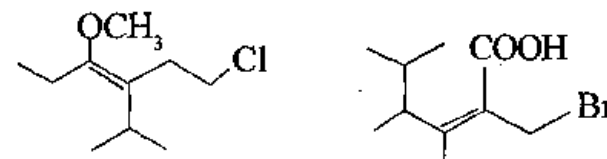
- Assign E/Z configurations to the following alkenes : 4



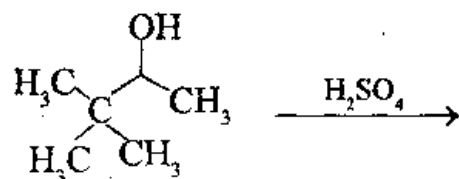
- Complete the following reaction and give a suitable mechanism : 2



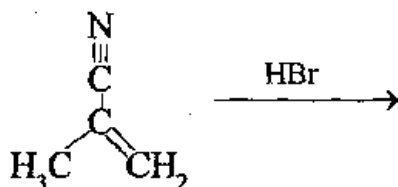
- Trans* 2-bromo-2-butene undergoes elimination in the presence of a base more readily than the *cis*-isomer, explain. 2
- Assign E/Z configurations to the following alkenes : 4



- (b) Complete the following reaction and give a suitable mechanism : 2

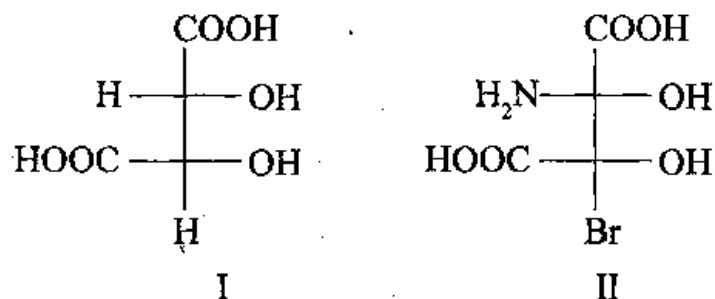


- (c) Complete the following reaction with suitable mechanism : 2



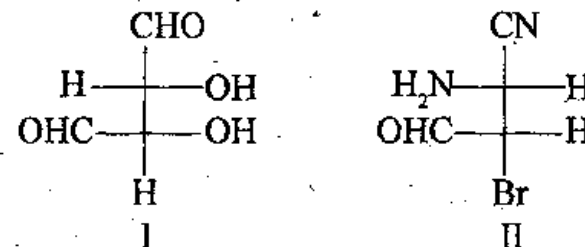
SECTION—C

5. (a) Assign R/S configuration to the following compounds : 4



- (b) Enlist various differences between Enantiomers and Diastereomers. 4

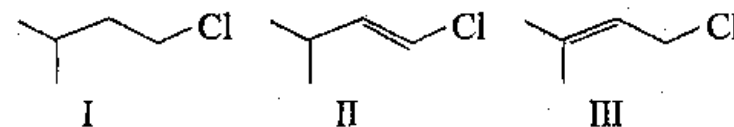
6. (a) Assign R/S configuration to the following compounds : 4



- (b) Dissymmetry is an important condition for optical activity. Explain. 4

SECTION—D

7. (a) Giving a suitable example, justify the fact that " $\text{S}_{\text{N}}2$ reaction proceeds with inversion of configuration". 4
- (b) Arrange the following compounds in increasing order of their reactivity towards nucleophilic substitution reaction and justify. 4



8. (a) Enlist the various differences between $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reaction. 4
- (b) Complete the following reaction and provide suitable mechanism : 4

