Exam. Code : 107401
Subject Code : 1819

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

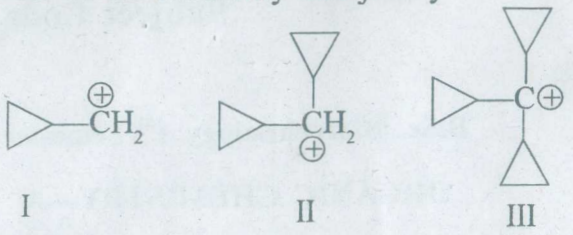
1. (a) Write Newman projections for Chair and Boat form of Cyclohexane and predict their relative stability. 3

   (b) Discuss the stability of tropylium cation. 3

   (c) Why allyl free radical is more stable than alkyl free radical ? 2

2. (a) Draw potential energy diagram for various conformations of n-butane and discuss their relative stabilities. 4

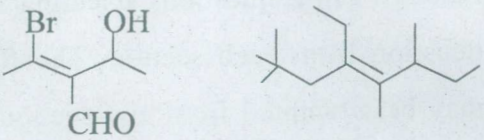
(b) Arrange the following carbocations in increasing order of their stability and justify. 4



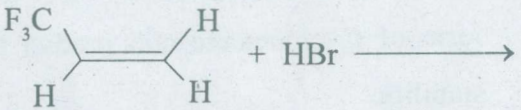
I II III

SECTION—B

3. (a) Assign E/Z configurations to the following alkenes : 4

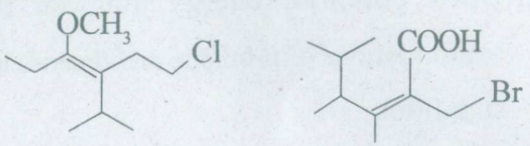


(b) Complete the following reaction and give a suitable mechanism : 2

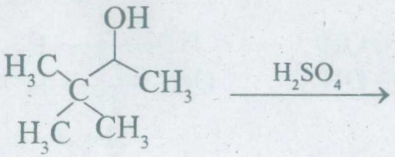


(c) *Trans* 2-bromo-2-butene undergoes elimination in the presence of a base more readily than the cis-isomer, explain. 2

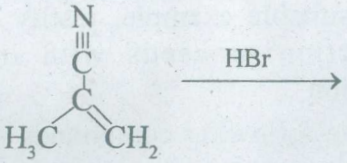
4. (a) Assign E/Z configurations to the following alkenes : 4



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

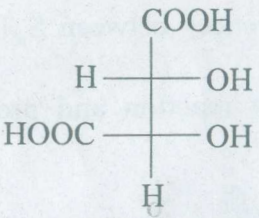


(c) Complete the following reaction with suitable mechanism : 2



SECTION—C

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



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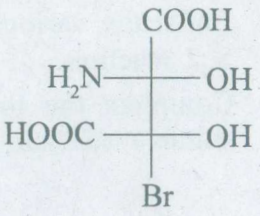
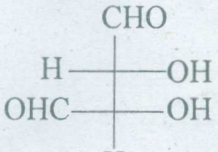


II

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

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



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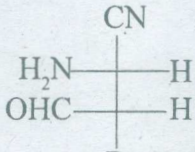


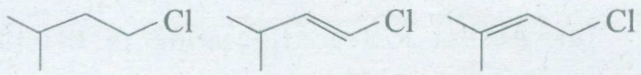
II

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

SECTION—D

7. (a) Giving a suitable example, justify the fact that "S_N2 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



I II III

8. (a) Enlist the various differences between S_N1 and S_N2 reaction. 4

(b) Complete the following reaction and provide suitable mechanism : 4