[153] SEAT No._____ No. of Printed Pages : 02

SARDAR PATEL UNIVERSITY

M.Sc. Semester-IV (Organic Chemistry) Examination

Thursday, 21st November 2019

Stereochemistry of Organic Compounds: PS04CORC03

Time: 02:00 p.m. to 05:00 p.m. **Marks: [70]**

Note: Right hand figures indicate marks

Q-1 Select the correct answer in the following. [08]

1. The characteristic must be required for resolving agent is _____.
   (a) unstable (b) pure form
   (c) high toxicity (d) high molecular weight
2. Resolving agent (-)-Brucine is used in resolution of _____.
   (a) (±)-α-methyl benzylamine (b) (±)-alanine
   (c) (±)-2-octanol (d) None of them
3. Dihedral angle in the chair conformer of cyclohexane is _____.
   (a) 0° (b) 65° (c) 56° (d) 90°
4. The preferred conformations of 1,2-ethane diol are _____.
   (i) p-gauche (ii) m-gauche (iii) anti (iv) (±) sp
   (a) (i) & (iii) (b) (ii) & (iii) (c) (iii) & (iv) (d) (i) & (ii)
5. Nonbonding molecular orbital will be absent in _____.
   (a) 1,3-butadiene (b) 2,4-pentadienyl cation
   (c) 2,4-pentadienyl cation (d) allyl anion
6. Which of the following is not correct for electrocyclic reactions?
   (a) The staring material is having a conjugated π-electron system
   (b) Only one starting material is involved in the reaction
   (c) Two unsaturated compounds are involved for reaction to occur
   (d) There is a gain or loss of one π-bond
7. In axial haloketone rule for cyclohexanone, vertical plane 'A' passing through carbon number _____.
   (a) 1 & 4 (b) 1 & 5 (c) 1 & 2 (d) 1 & 3
8. In case of formation of double helix, approximate stabilization energy of C≡ T is _____.
   (a) 300 KJ/mole (b) 40 KJ/mole (c) 70 KJ/mole (d) 50 KJ/mole

Q-2 Answer the following (Any Seven). [14]

1. Discuss the Cram's Rule.
2. Define the terms: (i) Meso compound (ii) Racemic mixture
3. Discuss the resolution of aldehyde and ketone.
4. Draw the conformation of cyclononane as monocyclic compound.

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5. Discuss pyramidal inversion in 1,3-dimethyl piperdine.
6. Discuss the disrotatory motions in electrocyclic reactions with example.
7. Draw the molecular orbital diagram of 1,3,5-cyclohexatriene.
8. State the plane polarized light and its importance.
9. What is "cotton effect"? Write its importance.

Q-3 [A] What is resolution? List the general methods for resolution and explain the resolution through formation of diastereomers. [06]

[B] Describe experimental method for resolution of racemic mixture of (±)-α-methyl benzylamine. [06]

OR

[B] Outline the following. [06]
1. Sharpless asymmetric epoxidation
2. Meerwein Ponndorf Verley reduction

Q-4 [A] What is conformational energy? Draw the potential energy diagram of n-butane, on the bases of different conformers. [06]

[B] Draw the conformations of the following. [06]
1. γ-Ephedrine 2. Menthol 3. Hexachloro cyclohexane

OR

[B] Discuss the conformational analysis of 1,2-, 1,3- and 1,4-dimethyl cyclohexane. [06]

Q-5 [A] Write a note on sigmatropic rearrangement. [06]

[B] Discuss the correlation diagram of [2+2] cycloaddition reaction. [06]

OR

[B] Outline the following. [06]
1. 1,3-diploar cycloaddition reactions
2. Group transfer reactions

Q-6 [A] Write a note on: ORD and CD curves. [06]

[B] Draw the structure of DNAs and discuss in detail. [06]

OR

[B] Discuss the octant rule in cyclohexanone. [06]

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