

M.Sc.(Chem.) Semester - 4 (CBCS) Examination
May/June-2021 (OLD COURSE)
STEREOCHEMISTRY (CORE)

Time: 1:30 Hours**Marks: 42****Instructions:**

1. Figures to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any three of the following questions.
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- Que-1(A) **Answer The Following Questions.** (04)
A. What are epimers? Give example.
B. Explain meso form of inositol.
- Que-1(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. Explain isomerism of organic compounds containing two similar and dissimilar asymmetric carbon atoms.
B. What is ORD? Discuss positive and negative cotton effect curves.
C. What is prochirality? Discuss enantiotopic ligands and faces in details.
- Que-2(A) **Answer The Following Questions.** (04)
A. Draw stable conformation of 1, 4-Cyclohexanediol.
B. Draw norbornane ring system and show stereoheterotopic relationship between hydrogen atoms.
- Que-2(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. Write a note on Karplus equation for the calculation of 3J .
B. Write a note on Circular birefringence and its causes.
C. What are locking groups? Explain with suitable example.
- Que-3(A) **Answer The Following Questions.** (04)
A. Show a pair of homotopic, constitutionally heterotopic and diastereotopic ligands in 2-Chlorobutane.
B. What is anomeric effect?
- Que-3(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. Discuss rigidity, stability, and optical property of cis and trans forms of decalin.
B. Write a note on stereochemical restrictions in bridged ring systems.
C. What is NGP? Explain Molecular rearrangement and NGP in substitution reaction of 2-Bromo-3-butanol with HBr.
- Que-4(A) **Answer The Following Questions.** (04)
A. What is D,L Syn and anti? Give example of molecules with such configuration.
B. Draw Fischer and sawhorse structures of (R,S) and meso-Tartaric acid.
- Que-4(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. What is Cram's rule? Explain Felkin-Ahn model for Nucleophilic attack on carbonyl compound.
B. Discuss variation of coupling constant J in 3,4 and 5 membered rings.
C. What is molecular dissymmetric? Explain molecular dissymmetry in allenes or spiranes.
- Que-5(A) **Answer The Following Questions.** (04)
A. Assign appropriate configuration (R,S) at each stereo center of D-Erythrose and L-Threose.
B. Explain effect of epoxidation on J values of H in cis and trans alkenes.
- Que-5(B) **Answer The Following Questions. (Any Two Out of Four)** (10)
A. Give classification and synthesis of stereoregulated polymers.
B. Differentiate stereospecific and stereoselective reactions with one example for each.
C. Explain distereoselectivity in aldol reaction.
