

M.Sc. Semester - 4 (CBCS) Examination

May/June-2021 (OLD COURSE)

ADVANCED STEREO CHEMISTRY (ELECTIVE - 1)

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. Differentiate: Asymmetric and Dissymmetric molecules.
B. Draw configurational and conformational isomeric projections of tartaric acid.
- Que-1(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. Discuss stereochemical consequences of SN1 reaction mechanism with special reference to structure of substrate, effect of nucleophile, leaving group and solvent.
B. What is Neighbouring group participation? Give its stereochemical effects. Discuss anchimeric assistance in acetolysis of syn, anti and saturated Norbornenyl tosylate.
C. Write a note on stereoisomerism of quadricovalent Arsenic compounds with special reference to dissociation equilibrium.
- Que-2(A) **Answer The Following Questions.** (04)
A. What is optical activity? Discuss its causes.
B. Give four differences between enantiomers and diastereomers.
- Que-2(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. Explain Alder's rule and give its limitations.
B. Differentiate between stereoelectronic and steric effect.
C. Explain Atactic, isotactic and syndiotactic polymers.
- Que-3(A) **Answer The Following Questions.** (04)
A. Explain optical activity and specific rotation?
B. Explain how ring inversion and pyramidal inversion in N-methyl piperidine brings the same conformational change.
- Que-3(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. Discuss stereochemical features of nucleophilic substitution in aryl and vinyl halides.
B. Discuss stereochemistry of Bicyclo[4.3.0] nonane Hydrindane.
C. Explain in detail types of racemic modifications.
- Que-4(A) **Answer The Following Questions.** (04)
A. Difference between cis and trans forms of perhydroazulene is extremely low.- Justify.
B. What is regioselectivity? Give one example.
- Que-4(B) **Answer The Following Questions. (Any Two Out of Three)** (10)
A. What is pyramidal atomic inversion? Explain its mechanism and discuss rate of inversion in tertiary amines.
B. Explain NGP in epoxide formation from halohydrin.
C. Explain stereochemistry of quinquivalent P compounds with a double bond with special emphasis on racemization.
- Que-5(A) **Answer The Following Questions.** (04)
A. What are Atropisomers? Give conditions for optical isomerism in biphenyl derivatives.
B. Draw of the following :
(a) Bicyclo(5.3.0) decane (b) Bicyclo (3.3.1) nonane
- Que-5 **Answer The Following Questions. (Any Two Out of Four)** (10)
A. Explain 1) Bromocamphor cannot be dehydrobrominated.
2) Discuss in brief stereochemical feature of Beckmann rearrangement and its application in identification of stereochemistry of oximes.
B. Explain geometrical isomerism in disulfoxides of 1,3-dithiane and discuss stereochemistry of sulphinic esters.
C. Explain 1) Tritactic polymers 2) Stereochemistry in diene polymerization.
