

M.Sc. Semester - 4 (CBCS) Examination

March/April- 2018

ADVANCED STEREO CHEMISTRY

(ELECTIVE - 1)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

(1) Answer any seven : (14)

- a. What are tautomers and metamers? Give example of each.
- b. Draw fisher and sawhorse projection formula for meso tartaric acid.
- c. Define Configurational isomers and conformational isomers and give one example of each
- d. What is optical activity? Discuss its causes.
- e. What is regioselectivity? Give one example.
- f. Justify stereo regularity in diene polymerization.
- g. Suitably substituted tertiary amines doesnot show optical activity. Why?
- h. Give name and draw structures of the smallest fused ring systems which can span both cis as well as trans fusion.
- i. What are enantiotopic and diastereotopic ligands.
- j. Draw structures of the following :
(a) Bicyclo(2.1.1)hexane (b) Tricyclo(2.2.1.0^{3,5})heptane

(2) Answer any two from the following : (14)

- a. Discuss stereochemistry of SN1 and SN2 and SNi reaction mechanism.
- b. Drawing conformation discuss symmetry and stabilities based on gauche interactions in both cis and trans forms of Decaline.
- c. What is pyramidal atomic inversion? Explain its mechanism and rate of inversion in amines.

(3) Answer a,b,c or a,b : (14)

- a. Explain Bredt's rule and give its limitations.
- b. Differentiate between stereospecific and stereoselective reactions.
- c. Justify stereoregularity in protein synthesis.

OR

- a. Discuss nucleophilic substitution in alkyl, aryl and vinyl halides.
- b. Write a note on stereoisomerism of quadricovalent Arsenic compounds with special reference to dissociation equilibrium.

(4) Answer any two from the following : (14)

- a. What is Neighbouring Group Participation? Give conditions for effective NGP and explain its stereochemical effect in nucleophilic reactions.
- b. What is anchimeric assistance? Explain acetolysis of 7-Norbornenyl tosylate.
- c. Explain stereochemistry of quinquivalent P compounds with a double bond with special emphasis on racemization.

(5) Answer any two from the following : (14)

- a. Explain in detail types of racemic modifications.
- b. Explain (1) Alder's rule with limitations.
(2) Explain mechanism of interconversion of oximes..
- c. Explain anomeric effect, stereoelectronic effect and steric effects.
- d. Write a note on stereochemistry of spiro compounds.

M.Sc. SEMESTER-IV)
Organo-Pharmaceutical Chemistry
Paper-C (OP)-404:Advanced Stereochemistry
Elective-1

Answer Key

All questions carry 14 marks

Internal options have specified marks