



NBW-003-010405 Seat No. _____

M. Sc. (Sem. IV) (CBCS) Examination

April / May - 2017

C (OP) - 403 : Stereochemistry

Faculty Code : 003

Subject Code : 010405

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions :

- (1) All the questions carry **equal** marks.
- (2) Attempt **five** questions in all.

1 Answer any **seven** from the following briefly : **14**

- (a) Differentiate configurational enantiomers and conformational enantiomers.
- (b) Point out variation of J values with different parameters.
- (c) What are constitutionally heterotopic ligands ? Give one example of such molecule.
- (d) Draw structures of 2R, 3R and 2S,3S tartaric acid.
- (e) Name factors which affects the stability of conformations.
- (f) Differentiate between asymmetric and dissymmetric.
- (g) Name types of racemic modifications.
- (h) Draw stable conformation of 2, 5-Ditertiary butyl cyclohexane-1, 4-diol.
- (i) Draw E and Z forms of 2, 3-Dichlorobut-2-ene.
- (j) Discuss effect of electronegative atom on J values in cyclic systems with suitable examples.

2 Answer any **two** from the following : **14**

- (a) Write a note on resolution of racemic modifications.
- (b) What is axial chirality ? Explain molecular dissymmetry in allene derivatives.

- (c) Discuss resolution of naproxen and ibuprofen using diastereomeric salt.
- 3** Answer the following :
- (a) What are locking groups ? Explain conformation of molecules having such groups. 4
- (b) Epoxide formation occurs readily in trans-2-Chlorocyclohexanol than its cis isomer. Why ? 5
- (c) Discuss variation in coupling constant with the size of the ring. 5
- OR**
- (a) Discuss stereochemistry of compounds having two different asymmetric carbon atoms. 7
- (b) Discuss conformational stabilities of Dimethylcyclohexane derivatives. 7
- 4** Answer any **two** from the following : 14
- (a) Compare symmetry and stabilities of cis and trans forms of decalin.
- (b) Explain diastereoselective synthesis using Felkin-Anh control.
- (c) Write the equation of Karplus and Barthner for the calculation of 3J .
- 5** Answer any **two** from the following : 14
- (a) Discuss the stereochemistry of 6-membered cyclic compound with respect to Karplus curve.
- (b) Write a note on stereoselectivity in aldol reaction.
- (c) Explain diastereofacedifferentiation in nucleophilic addition reaction of chiral ketones using Cram's rule.
- (d) Explain Homotopic and enantiotopic ligands and faces with example.