* B B C - 0 0 3 - 0 1 0 4 0 5 *

BBC-003-010405 Seat No. _____

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

July – 2021

C(OP) - 403 : Stereochemistry

(Old Course)

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 all the five questions.

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

(a) Explain conformations of methyl cyclohexane.

(b) What is the effect of electronegative atom on coupling constant in cyclic structure?

(c) Draw stable conformation of 1,4-Cyclohexanediol.

(d) Draw Fisher and Newman projection formulae of 2-Bromo,3-butanol.

(e) Explain Syn and Anti-nomenclature in aldoxime.

(f) Differentiate between Configurational enantiomers and Conformational enantiomers.

(g) Explain Chirality.

(h) Differentiate between RS and D,L.

(i) Show gauche interactions in Methylcyclohexane.

(j) What are epimers? Explain with an example.

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

(a) Explain Karplus and Barthner equation for the calculation of 3j.

(b) Discuss ring strain theory for cyclic systems. Discuss variation by Plotting graph of ring size versus angle strain per CH_2.

(c) Stability of conformations changes in presence of looking groups? Explain with suitable example

3 Answer the followings : **14**

(a) Explain isomerism of organic compounds containing two asymmetric carbon atoms.

(b) Discuss chirality due to molecular dissymmetry.

OR

(a) Discuss conformations of cis and trans forms of decalin.

(b) Define the following

(1) Homomer

(2) Isomer

(3) Enantiomer

(4) Diastereomer

(5) Tautomer

(6) Constitutionally heterotopic ligands

(7) π-diastereoisomers

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

(a) Explain Nucleophilic addition to chiral ketones

(b) Explain stereochemistry of 6-membered cyclic compound with respect to Karplus curve

(c) Differentiate between stereospecific and stereo selective reactions with one example for each

5 Answer any **two** of the following : **14**

(a) Explain variation in the value of J with variation of the size of the ring of cyclic alkene.

(b) Differentiate between Enantiotopic and diastereotopic ligands and faces with example.

(c) Explain conformations of 1,2 and 1,3-Dimethyl cyclohexane

(d) Explain Houk model to explain reactivity of chiral alkenes.
