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DO-003-1104007 Seat No. _____

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

March – 2022

C(OP)-403 : Stereo-Chemistry

(Organo-Pharmaceutical Chemistry)

Faculty Code : 003

Subject Code : 1104007

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All Questions are compulsory & carries equal 14 marks.

(2) Draw suitable diagram / Scheme wherever necessary.

1 Answer any **seven** of the following ten questions : **14**

(a) Write the limitation of Fisher projection.

(b) Write the difference between stereospecific and stereo selective reaction.

(c) Define the term "Conformation" and draw all conformation of butane.

(d) Write Karplus equation and Bothner modification.

(e) Draw the flying wedge formula for R (-) 2,3 dihydroxypropanal.

(f) Explain enantiotropic phase.

(g) Define the term, Specific rotation and Optical activity.

(h) Calculate total isomer, optical isomer and meso-isomer for (2R,3s,4S),2,3,4 pentane triol.

(i) Write the classification of stereo-isomer.

(j) Differentiate chirogenicity and stereogenicity with suitable example.

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

(a) Discuss in details "Cotton effect" with CD-spectrum.

(b) Discuss Felkin-Ahn model with suitable example.

(c) Draw the confirmation of cyclohexane with energy diagram and discuss its stability.

3 Answer the following : **14**

(a) Differentiate ORD and CD. Discuss the application of ORD and CD spectrum.

(b) Discuss the stereochemistry of substituted cyclohexane with respect to the coupling constant.

OR

3 Answer the following : **14**

(a) Discuss Cram's rule with its limitation in details.

(b) Discuss the conformation of all disubstituted cyclohexane with reference to it's stability index.

4 Answer the following : **14**

(a) Explain the conformation of mono-methyl-cyclo-hexane.

(b) Give an account on conformation of cis and trans decalin.

5 Answer the following : (Any **Two**) **14**

(a) Discuss the stereo dynamicity of SN reaction with suitable example.

(b) Explain the stereoselectivity of addition reaction with suitable example.

(c) Define the term "Dihedral angle" and effect of substitution on coupling constant for cyclobutane derivatives.

(d) Discuss in details, Circular-birefringence and Circular-dichroism.