DII-003-010405 Seat No. _____

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

May / June – 2015

Organo - Pharmaceutical Chemistry

C (OP) - 403 : Stereochemistry

Faculty Code : 003

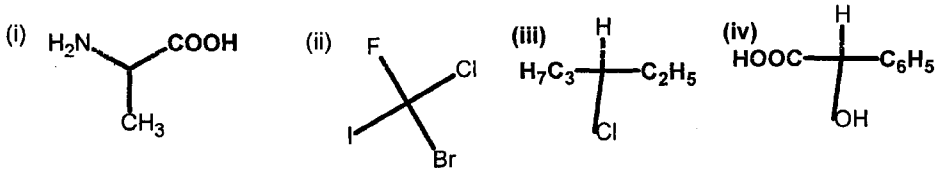
Subject Code : 010405

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.

Q.1 Answer any **seven** of the following ten questions. [14 Marks]

a. Differentiate Configuration and conformation.
b. Draw Fisher projection formula for 1R-2R and 1R-2S tartaric acid.
c. Distinguish Meso forms and receamic modification.
d. The J value in cyclic system is reduced by the presence of electronegative group. Explain with suitable examples.
e. What is resolution? Enlist the methods used for resolution.
f. Draw stable conformation of methyl and isopropyl cyclo hexane.
g. Define the followings:
(i) Atrop-isomerism (ii) Asymmetric carbon (iii) Diasteriomers (iv) Prochirality
h. Determine R,S chirality of the following compounds:



i. Differentiate anomers and epimers.
j. Explain meso form of inositol.

Q.2 Answer any three of the following [14 Marks]

a. Explain diastereo-selectivity in aldol reaction.
b. Give a brief account on stereo selective epoxidation of *cis* & *trans* substituted alkenes.
c. Discuss in detail, the attack of small and large nucleophile on 4-t-Butylcyclohexanone.
d. Explain optical isomerism of organic compounds containing two different asymmetric carbon atoms.

Q.3 Answer any **two** of the followings. [14 Marks]

a. Explain stereo-specific reaction of alkenes making use of single diasteromers.

b. Explain the stereo-selective aldol reaction considering geometry of enolate favored liked transition state to *Syn.* or *anti.* aldoles.
c. Explain rate and stereo-selectivity of α-hydroxy ketone considering chelate and Felkin-ahn model.

Q.4 Answer any two of the following [14 Marks]

a. Explain variation of coupling constant "J" with respect to ring size.
b. Give a brief account on "Karplus curve" with Barthner modification for the calculation of 3j.
c. Define: Dihedral angle. Discuss it's relation with coupling constant with respect to *cis* and *trans* isomer.

Q.5 Answer any **three** of the following. [14 Marks]

a. Write a note on conformations of ring systems containing sp2 hybridized carbon atom.
b. Discuss conformation of Decalin.
c. Discuss facile synthesis of epoxide in *trans* and *cis* isomer of 2-chlorocyclohexanone.
d. What are locking groups? Explain with suitable examples.