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MBU-003-010405 Seat No. _____

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

April / May - 2018

C (OP) - 403 : Stereochemistry

(Organo - Pharmaceutical Chemistry)

(Old Course)

Faculty Code : 003

Subject Code : 010405

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

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

(2) Draw suitable diagram / Scheme wherever necessary.

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

(a) Explain "Cis" and "Trans" isomer with respect to coupling constant.

(b) Define: Dihedral angle with suitable example.

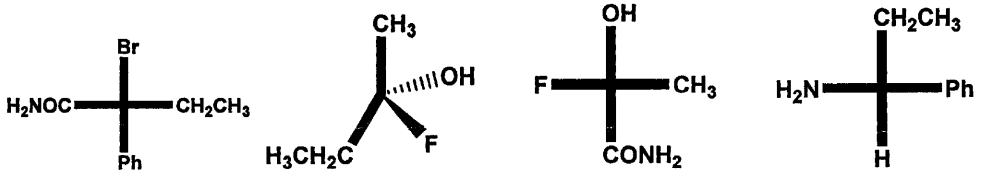
(c) Depicted the Bothner equation for the theoretical calculation of coupling constant.

(d) Indexing different conformer of cyclohexane in terms of stability.

(e) Explain resolution by Chromatographic technique.

(f) Determine R,S chirality of the following compounds:

(i) (ii) (iii) (iv)



(g) Define the followings:

(i) Chirogenicity

(ii) Stereogenicity

(h) What is meant by anomers and epimers?

(i) Explain stereo selective reaction with suitable example.

(j) Draw Sawhorse and Newman projection of 2-phenyl propionic acid and 1 - Chloropropane.

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

(a) Explain rules for R/S nomenclature with proper example.

(b) What is chirality? Why it is important in drug ?

(c) Write a note on kinetic resolutions.

(d) Draw all the possible Ficher projections of the molecules Cabc-Cabc originating from the Fischer projection having Cs point group (a, b, c are achiral substituents).

3 Answer the following : **14**

(a) Discuss the relation of orbital overlapping, dihedral angel and coupling constant.

(b) Explain the effect of hydrogen bond on the coupling constant with suitable example.

OR

3 (a) What is meant 3j coupling constant, explain its relation with stereochemistry?

(b) Give a brief account on "Cyclobutane and coupling constant".

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

(a) Discuss facile synthesis of epoxide in trans and cis isomer of 2-chlorocyclohexanone.

(b) What are locking groups? Explain with suitable examples.

(c) Explain the energy diagram of conformer inversion of cyclohexane.

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

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

(b) Explain rate and stereo-selectivity of α-hydroxy ketone considering chelate and Felkinahn model.

(c) Project the cis and trans Decalin of Sawhorse formula and discuss their stability.
