647510 **MSC4schC0310** **Seat No: _____**

M.Sc. Semester - 4 (CBCS) Examination
March/April- 2018
STEREO CHEMISTRY
(CORE)

Time: 2:30 Hours **Marks: 70**

Instructions:

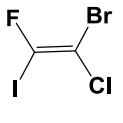
1. All All questions are compulsory & carry equal marks.
2. Draw diagram and/or scheme wherever necessary.

Q.1 Answer any **seven** of the following ten questions. (14)

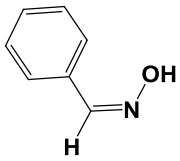
1. Define: (i) Chirality (ii) Stereocenter

2. What are conformational isomers ? Explain with example.

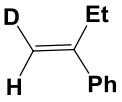
3. Give appropriate nomenclature for following steroisomers:



(i)

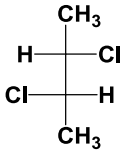


(ii)

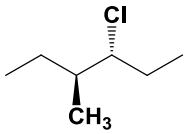


(iii)

4. Assign appropriate configuration (R/S) at each stereocenter for the following steroisomers:



(i)



(ii)

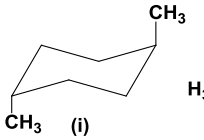
5. Explain the term: (i) Optical activity (ii) ORD & CD

6. Write Fischer structure of following compounds:

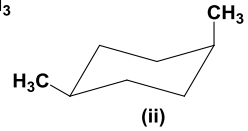
(a). (D)-Glyceraldehyde

(b).(R,R)-Tartaric acid

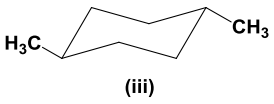
7. Arrange the following isomers according to their increasing order of stability:



(i)



(ii)



(iii)

8. What is pyrolytic elimination ? Explain using example of Xanthate.

9. What is neighboring group participation ? Explain with one example.

10. Explain geminal coupling in six member ring with suitable example.

Q.2 Answer any **two** of the following three questions. (14)

1. What is Prochirality? Discuss enantiotopic ligands & faces in detail.
2. Discuss stereochemistry of 1,2 & 1,3 dimethyl cyclohexanes.
3. Explain R/S nomenclature for compound having two asymmetric center.

Q.3 Answer the following questions. (14)

1. Discuss conformational isomerism in cis & trans decalin with example.
2. What is molecular dissymmetry? Explain molecular dissymmetry in Bipheyl compounds.

OR

Q.3 Answer the following questions. (14)

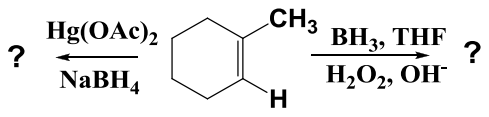
1. Explain the effect of conformation on reactivity in E2 elimination of 2-bromobutane.
2. What are stereospecific reactions ? Give three examples.

Q.4 Answer any **two** of the following three questions. (14)

1. Describe nuclear over houser effect in detail.
2. Write a note on stereo selective reaction.
3. Describe the geometric isomerism & its nomenclature with suitable examples

Q.5 Answer any **two** of the following four questions. (14)

1. What is stereo electronic effect ? Explain Anomeric Vs Gauche effect.
2. What is racemic mixture? Write briefly various methods of resolution.
3. Explain Felkin-Ahn model for predicting diastereoselctivity in carbonyl compounds.
4. Give product of following two reactions: Justify your Answer.



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Bhakta Kavi Narsinh Mehta University

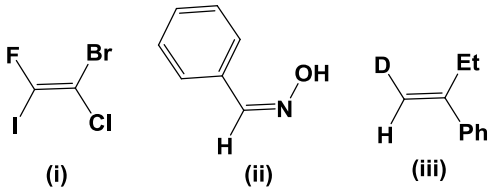
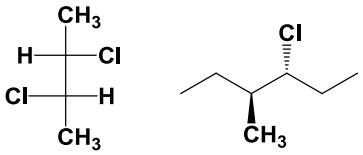
M.Sc. SEM- 4

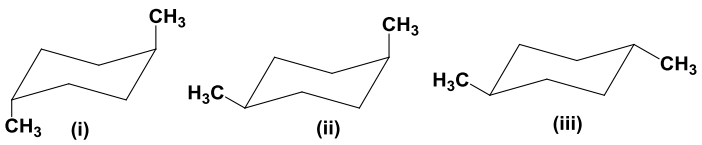
Organic Pharmaceutical Chemistry

C(OP)-403: Stereo Chemistry

Assessment Scheme

Q.1 S**even** of the following ten questions. [14 Marks]

1.	Define: (i) Chirality: phenomena of having handedness (ii) Stereocenter: a center due to which molecule becomes chiral
2.	conformational isomers refers to stereoisomers aries due to rotation around a single bond.
3.	Give appropriate nomenclature for following steroisomers:  (i) (ii) (iii) i): E, ii) syn (iii) E
4.	Assign appropriate configuration (R/S) at each stereocenter for the following steroisomers:  (i) (ii) i) (2S,3S)-2,3-dichlorobutane ii) (3R,4S)-3-chloro-4-methylhexane
5.	Explain the term: (i) Optical activity: rotation of plane polarized light by stereo isomer (ii) ORD & CD: optical rotatory dispersion and circular diechroism
6.	Write Fischer structure of following compounds: 1. (D)-Glyceraldehyde

	2.(R,R)-Tartaric acid
7.	Arrange the following isomers according to their increasing order of stability:  (i) < (ii) < (iii)
8.	Pyrolytic elimination using example of Xanthate.
9.	Neighboring group participation
10.	Explain geminal coupling in six member ring with suitable example.

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

1. Prochirality, Discuss enantiotopic ligands & faces in detail.
2. Stereochemistry of 1,2 & 1,3 dimethyl cyclohexanes.
3. R/S nomenclature for compound having two asymmetric center.

Q.3 Answer the following questions. [14 Marks]

1. Conformational isomerism in cis & trans decalin with example.
2. Molecular dissymmetry in Bipheyl compounds.

OR

Q.3 Answer the following questions. [14 Marks]

1. Effect of conformation on reactivity in E2 elimination of 2-bromobutane.
2. Stereospecific reactions with examples.

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

1. Nuclear over houser effect in detail.
2. Stereo selective reaction.
3. Describe the geometric isomerism & its nomenclature with suitable examples

Q.5 Answer any **two** of the following four questions. [14 Marks]

1. Stereo electronic effect, Anomeric Vs Gauche effect.
2. Racemic mixture: equal amount of two enantiomers ? various methods of resolution.

3. Felkin-Ahn model for predicting diastereoselctivity in carbonyl compounds.

4. Give product of following two reactions: