

M.Sc.(Chem.) Semester - 3 (CBCS) Examination
Nov/Dec-2023 (NEW COURSE)
Stereochemistry (Core (New))

Time: 2:30 Hours

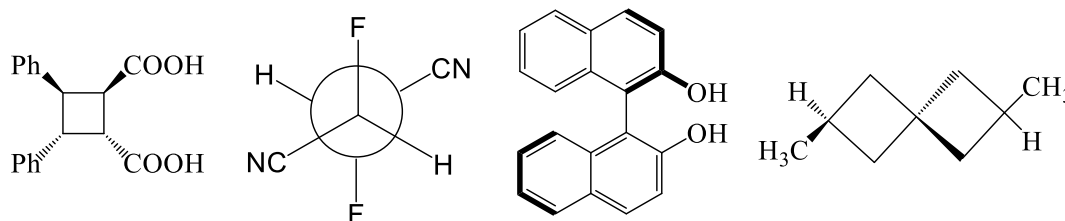
Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1(A) Answer the following. (04)

- 1) What is chirality? Which of the following compounds are chiral and optically active?

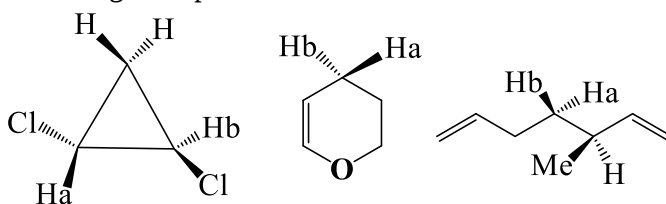


Que.1(B) Answer any two question out of three. (10)

- 1) Discuss the stereoisomerism in following with example:
(A) Allenes (B) Ansa Compounds
- 2) What is racemic modification? Explain the use of enzyme for the resolution with two examples.
- 3) What is geometrical isomerism? Discuss it for following:
(A) Aldoxime (B) cyclooctene

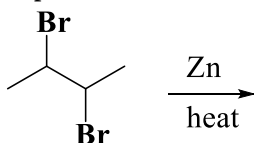
Que.2(A) Answer the following. (04)

- 1) What is prosteroisomerism? Determine the topicity of Ha & Hb ligands in following examples:



Que.2(B) Answer any two question out of three. (10)

- 1) Discuss the effect of following forces on the stability of conformations with example:
(A) Van der waals attraction (B) Hydrogen bonding
- 2) Explain the effect of conformations on reactivity for following reaction:



- 3) What is pseudo asymmetry? Explain it using 2,3,4-trihydroxy glutaric acid.

Que.3(A) Answer the following. (04)

- 1) What is anomeric effect? Explain with example.

Que.3(B) Answer any two question out of three. (10)

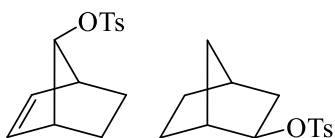
- 1) Describe stability of various conformations of cyclohexane and monosubstituted cyclohexanes.
- 2) Discuss the conformations and stereoisomerism of following:
(A) N-methyl Piperidine (B) 1,3-dimethyl piperidine
- 3) Draw cis and trans-1,3-dimethyl cyclohexanes in chair form and explain its stereoisomerism using ring inversion.

Que.4(A) Answer the following. (04)

- 1) Enlist various factors affecting for SN^1 and SN^2 reactions.

Que.4(B) Answer any two question out of three. (10)

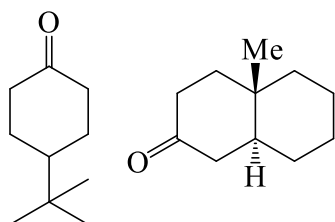
- 1) What is anti-elimination? Discuss any one stereospecific elimination reaction with example.
2) What is NGP? Explain NGP phenomena for following substrate by acetolysis reaction.



- 3) Explain the stereoselectivity of the reaction between (R) 2-octanol with thionyl chloride with or without the presence of pyridine.

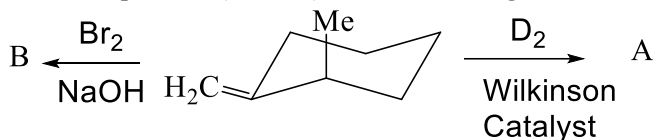
Que.5(A) Answer the following. (04)

- 1) What product will form when following substrates will react with (a) NaBH_4 (b) L-Selectride

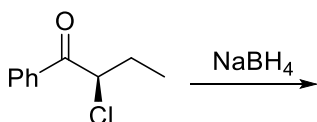


Que.5(B) Answer any two question out of three. (10)

- 1) Write the product (A & B) of the following reaction mechanism:



- 2) Predict the diastereoselectivity of following reaction using Cram's & Felkin-Ahn model.



- 3) Discuss the stereoselectivity of following with example:
(A) Hydroboration (B) OsO_4
