Sr. No. 325104

December 2023

B.Sc(LS)- 1 SEMESTER

Conceptual Organic Chemistry-1 (NBLS-MIC-101)

Time: 3 Hours **Max. Marks:75**

Instructions:
1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART -A

Q1 (a) Write the structure of trans-1, 2-dimethylcyclohexane? (1.5)

(b) Write the reagents for the formation of cis-hydrogenation of alkene? (1.5)

(c) Explain the difference between the configuration and conformational isomers? (1.5)

(d) Write the nucleophilic addition reaction of acetaldehyde with methanol? (1.5)

(e) What is specific rotation and write its formula? (1.5)

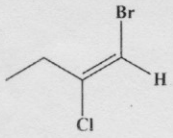
(f) Write the product of addition reaction of bromine to 1, 3-butadiene? (1.5)

(g) Draw the structure of the eclipsed conformation of ethane? (1.5)

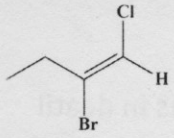
(h) Write the number of chiral centers in 1, 3 dimethyl cyclopentane? (1.5)

(i) Explain the aldol reaction with one example? (1.5)

(j) Determine the E and Z configuration of the given compounds? (1.5)



(A)

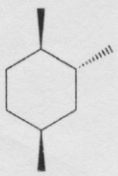


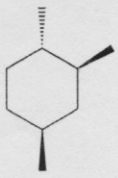
(B)

PART -B

Q2 (a) What are Markovnikov's and anti Markovnikov addition reaction? Give at least one example of each type of reaction? Discuss inn detail the oxymercuration-demercuration reaction inn detail along with mechanism? (10)

(b) Draw the most stable chair confirmation of the following two compounds and comment on their stability? (5)

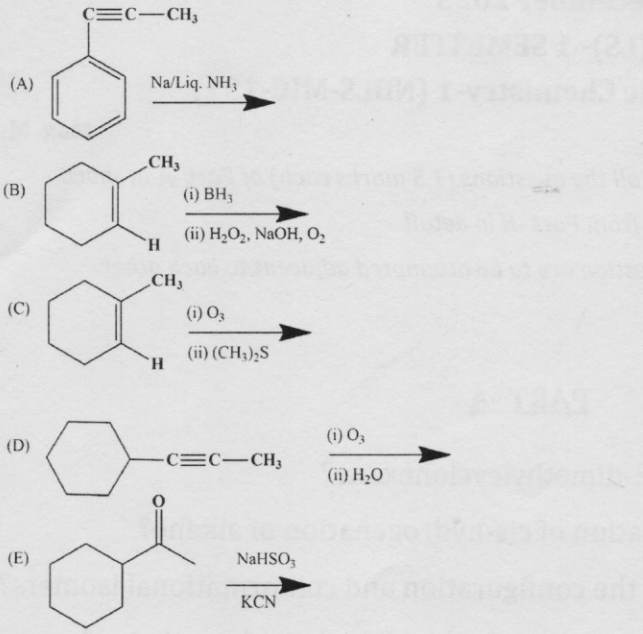

(A)


(B)

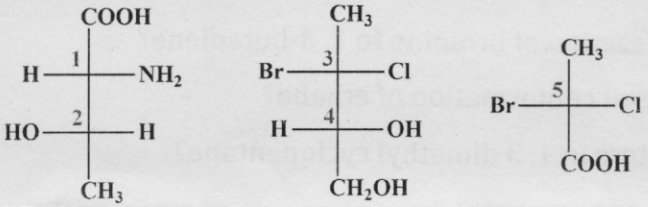
Q3 (a) Explain optical isomerism and optical activity. Draw schematically how the polarizer detect the d and l isomers? Explain the d and l isomers? (5)

(b) What are Cannizaro and cross Cannizaro reactions. Explain the mechanism of both these reactions with suitable examples. (10)

Q4 Write the product of the following reactions and explain the steps involved? (15)



Q5 (a) Write the configuration of all the five chiral centers labelled from 1 to 5? (5)



(b) Discuss in detail about the various conformation of cyclohexane. Draw the energy profile of all the confirmation and also comment on their relative stability? (10)

Q6 (a) Explain the mechanism of the given below reactions in deatil (10)

(i) Hydroboration-oxidation

(ii) Ozonolysis

(b) What are Newman and Sawhorse projections. Draw the Newman and Sawhorse projection of any two chiral compounds? (5)

Q7 Explain in detail the following terms with one suitable examples (15)

(a) Enantiomers

(b) Diasteromers

(c) Meso Compounds

(d) Chirality

(e) Racemic mixture

(f) Erythro and Threo

(g) D and L configuration of carbohydrates

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