

- (iii) Vinyl chloride is less reactive than Allyl chloride towards nucleophilic substitution reactions.

(5,5,5)

8. Write short on the followings (**any three**)

- (i) Wurtz reaction (with mechanism and limitations)
 (ii) Saytzeff Vs Hofmann elimination
 (iii) Baeyer's Strain Theory
 (iv) Diels-Alder reaction

(5×3=15)

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1038

D

Unique Paper Code : 2172011102

Name of the Paper : DSC 2-Basic Concepts and Aliphatic Hydrocarbons (Organic Chemistry-I)

Name of the Course : B.Sc. (Hons.)

Semester : I

Duration : 3 Hours Maximum Marks : 90

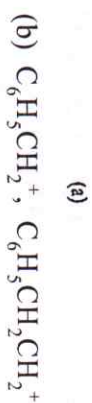
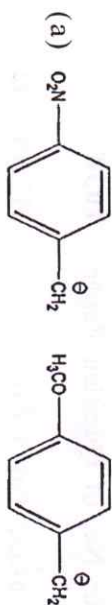
Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Attempt any **SIX** questions.
 3. All questions carry **15** marks.
 4. This paper contains 8 questions.
1. (i) Acid catalysed dehydration of Neopentyl alcohol gives two alkenes A and B as major and minor product(s). Identify the two alkenes A and B and explain the mechanism involved.

(500)

P.T.O.

- (ii) Out of following, which is more stable and why?



- (iii) Define the terms racemic mixture and resolution of racemic mixture. Illustrate the chemical method for the resolution of a racemic mixture with an example. (5,5,5)

2. (i) Write down the Fischer Projection of all the possible stereoisomers of 2,3-Dibromo pentane. Designate erythro and threo nomenclature to all the stereoisomers and assign absolute configuration (R/S) at each chiral centre.

- (ii) (a) Give name and structure of one meso compound. Meso compounds are optically active or inactive? Give reason in support of your answer.

- (b) Indicate whether each of the following compound is E or Z

- (iii) Compare the reactivity of alkene and alkynes towards electrophilic addition reactions. (5,5,5)

6. Give reasons :

- (i) Propene reacts with HBr in presence of peroxide to give 1-bromopropane whereas in absence of peroxide it gives 2-bromopropane.

- (ii) Electromeric effect is temporary effect while Inductive effect is permanent effect.

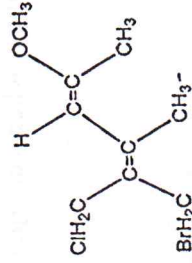
- (iii) Bromination of trans-2-butene gives meso dibromo product while bromination of cis-2-butene gives racemic mixture? (5,5,5)

7. (i) Arrange the following in increasing order of acidity with giving suitable reasons-

- (a) Acetic acid, 1-chloro acetic acid and Propanoic acid.

- (b) Phenol, Ethanol. Acetic acid

- (ii) Define hyperconjugation. Explain on the basis of hyperconjugation, why 2,3-dimethyl but-2-ene is more stable than 2-methyl but-1-ene.



- (iii) Give the Structure and hybridisation of Carbocation and Carbenes. (5,5,5)

3. (i) Draw all the conformations of cyclohexane and arrange them in order of increasing stability. Give reasons for stability order.

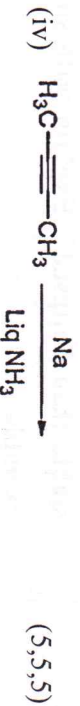
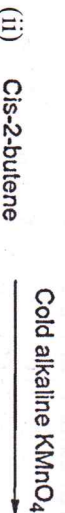
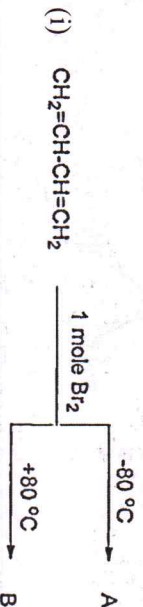
- (ii) (a) "Staggered conformation of n-butane is more stable than Eclipsed". Explain with suitable example.

- (b) Define plane polarised light and specific rotation.

- (iii) Differentiate between enantiomers and diastereomers with example. Among these two, which can be easily separated and why?

(5,5,5)

4. Write the products with mechanism and appropriate stereochemistry wherever applicable : (Attempt any three)



5. (i) Chlorine is more reactive while bromine is more selective in its reaction with Propane. Explain.

- (ii) Calculate the percentage of isomers formed during the monobromination of 2,3-dimethylbutane. The relative reactivity for 1°, 2°, 3° hydrogens are 1, 82 and 1600, respectively.