(b) Write a brief note on aromatic character of followings : (6)

(i) Cyclopropenyl carbocation

(ii) Furan

(iii) Anthracene

(c) Differentiate between Saytzeff and Hofmann Rule. (4)

7. (a) Write a note on relative stability of various conformations of cyclohexane. (5)

(b) How does hybridization influence the shape and bond angles of molecules? Explain with examples CH_4, NH_3, and H_2O. (5)

(c) (i) Explain 1,2- and 1,4-addition reaction in conjugated dienes.

(ii) Write a note on acidity of alkynes. (5)

Roll No. ..... Total Pages : 3

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May-2026

B.Sc. Chemistry-IInd SEMESTER

ORGANIC CHEMISTRY-I

(BCHT-DS-201)

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

1. (a) What is dipole moment? Explain. (1.5)

(b) What is optical isomerism? (1.5)

(c) What are nucleophiles? Explain with examples. (1.5)

(d) What is hydrogen bonding? (1.5)

(e) What is the relative stability of 1^0,2^0,3^0 and benzyl carbocation? (1.5)

(f) Explain homolytic and heterolytic fission with suitable examples. (1.5)

(g) What are carbenes? (1.5)

(h) Convert the fisher projection of tartaric acid to sawhorse. (1.5)

(i) What is Anti-Markownikoff addition rule? (1.5)

(j) How the nitrobenzene is prepared from benzene? (1.5)

PART–B

2. (a) Differentiate between resonance effect and inductive effect in organic compounds. (5)

(b) What is hyperconjugation? Explain its role in the stability of alkenes and carbocations. (4)

(c) What are elimination reactions? Explain its types, their mechanisms and various factors affecting such reactions in details. (6)

3. (a) Differentiate between following with the help of examples. (8)

(i) Enantiomers and Diastereomers.

(ii) Configurational and conformational isomers.

(b) Write the structures of following molecules with absolute configuration: (3)

(i) R-Glyceraldehyde.

(ii) S-Lactic acid.

(iii) Meso-Tartaric acid.

(c) Define specific optical rotation. Calculate the specific optical rotation for a given 20% solution of sugar with the angle of rotation 25° and length of the tube containing the solution is 15cm. (4)

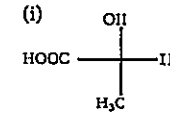
4. (a) Explain the following with examples : (12)

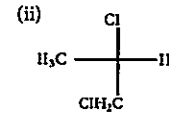
(i) Resolution methods of Racemic mixture.

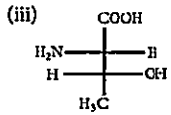
(ii) E/Z notation.

(iii) Symmetry elements.

(b) Assign R/S configuration of followings : (3)

(i) 

(ii) 

(iii) 

5. Explain the following reactions :

(i) Wurtz-Fittig reaction

(ii) Diels-Alder reaction

(iii) Reduction of alkenes

(iv) Oxymercuration-demercuration

(v) Allylic bromination

6. (a) Explain Friedal-craft reaction and sulphonation of toluene with mechanism. (5)