

Roll No.

Exam Code : D-23

Subject Code—60394

B. Sc. EXAMINATION

(First Semester)

(Batch 2019 Onwards) (Main/Re-appear)

CHEMISTRY

CCL-105

Organic Chemistry-I

General Organic Chemistry and Aliphatic
Hydrocarbon

Time : 3 Hours

Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Which types of species are formed in homolytic fission ?

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- (ii) Write the type of hybridization and structure of carbocation.
- (iii) Why are all C-C bond lengths in benzene equal ?
- (iv) Draw the structure of carboxylic acid having molecular formula $C_3H_6O_3$ which is optically active.
- (v) Which is necessary condition for Geometrical isomerism ?
- (vi) Write the product of reaction when propene reacts with hot alkaline $KMnO_4$.
- (vii) Explain terminal and non-terminal alkynes. Give one example of each.
- (viii) Arrange the following groups in order of increasing priority (lowest first) I, Br, CH_3 , OH.
- (ix) What is asymmetric carbon atom ? Give suitable example.
- (x) Write the IUPAC name of products formed by ozonolysis of 2-methyl propene.

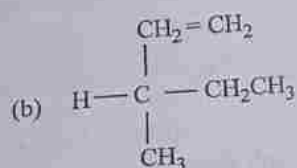
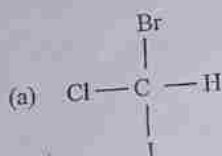
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Unit 1

- 2. (i) Explain stability order in propene and ethene on the basis of hyper conjugation. Why hyperconjugation called non-bond resonance ? Explain. 5
- (ii) Write the differences between inductive effect and Resonance effects. 5
- (iii) What are carbocations ? Write two methods of preparation of carbocation and explain the order of stability of primary, secondary and tertiary carbocations. 5
- 3. (i) What is Aromaticity ? Explain Huckel Rule with example. 5
- (ii) What is inductive ? Explain why trichloro acetic acid is more acidic than acetic acid. 5
- (iii) What are van-der Waal forces ? Out of *n*-pentane and neo-pentane which have more van der Waal's forces and why ? 5

Unit II

4. (i) Explain the following :
 (a) Meso compounds 5
 (b) Enantiomers 5
 (ii) Assign R and S configuration : 5



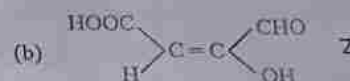
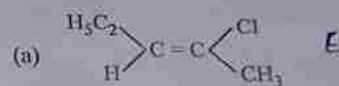
- (iii) Define diastereoisomers with suitable example and give characteristics of diastereoisomers. 5

5. (i) Draw energy diagram of various conformations of *n*-butane and explain their relative stability. 5

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- (ii) Assign E and Z configuration for the following : 5



- (iii) Explain Erythro and Threo isomers with suitable examples. 5

Unit III

6. (i) What is Kolbe's electrolysis, explain mechanism of Kolbe's reaction for preparation of Alkane. 5
 (ii) Prepare alkane by : 5
 (a) Wurtz reaction
 (b) Catalytic hydrogenation
 (iii) What is Anti Markovnikov rule? Explain with suitable example. 5

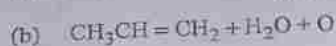
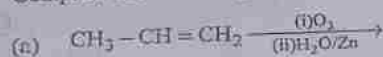
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7. (i) What is Birch reduction? Write the mechanism of Birch reduction for preparation of alkene. 5

- (ii) Complete the following reactions : 5

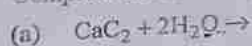


$\xrightarrow{\text{dil alk KMnO}_4}$

- (iii) Explain mechanism of Hydroboration oxidation in alkene. 5

Unit IV

8. (i) Complete the following reactions : 5

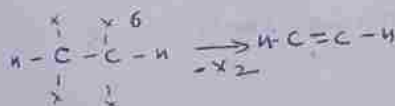


$\xrightarrow{\text{KMnO}_4 (\text{hot alkaline})}$

- (ii) Give the method of preparation of alkynes from 5

- (a) dehydro halogenation of vicinal dihalide $n - \overset{\text{X}}{\underset{\text{X}}{\text{C}}} - \overset{\text{X}}{\underset{\text{X}}{\text{C}}} - n \xrightarrow{-\text{HX}} n - \text{C} = \text{C} - n$

- (b) dehalogenation of tetra halides.



- (iii) Why terminal alkynes are acidic in nature? Explain. 5

9. (i) Explain with mechanism, addition of chlorine to acetylene. 5

- (ii) Write short notes on the following : 5

(a) Ozonolysis of Acetylene

(b) Oxidation of Alkynes

- (iii) Complete the following reactions : 5

