

- (iii) What is Hoffmann Elimination? Give its mechanism. How it is different from E2 elimination? (5,5,5)
5. (i) Write the general mechanism for electrophilic substitution of benzene.
- (ii) Name the electrophiles involved in the electrophilic substitution of benzene during a) Nitration b) Halogenation c) Sulphonation d) Friedel-Craft alkylation e) Friedel-Craft acylation
- (iii) What are mesomers, explain stereoisomerism in Tartaric acid. (5,5,5)
6. Write note on the following
- (i) Hyperconjugative Effect
- (ii) Hydroboration-oxidation
- (iii) Directive influence of groups in electrophilic substitution of benzene (5,5,5)

(500)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3017

I

Unique Paper Code : 2174001002

Name of the Paper : GE Basic Concepts of Organic Chemistry

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

Semester : I/III/V

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll. No. on the top immediately on receipt of this question paper.
2. Attempt any FOUR questions
3. All questions carry equal marks.

1. (i) Compound A, C_6H_{12} , gave the following results:

(a) It decolorises bromine solution and when treated with dilute $KMnO_4$ it gives brown precipitate.

P.T.O.

- (b) On ozonolysis followed by treatment with zinc dust and water gave propanal as the only product. What are the two possible structures of A and explain above reactions.
- (ii) Predict the product of the reaction of 1-bromo-1-methylcyclohexane with a) sodium ethoxide in ethanol b) refluxing ethanol
- (iii) How will you synthesize the following
- (a) Vinyl chloride from ethylene
- (b) 2-bromobutane from 1-bromo butane
(5,5,5)
2. (i) Describe homolytic and heterolytic fission of covalent bonds. How do these lead to the formation of carbonium ions and carbanions.
- (ii) Arrange the following in increasing order of stability with explanation
- (a) $\text{C}^-\text{H}_3, (\text{CH}_3)_2\text{C}^-\text{H}, (\text{CH}_3)_3\text{C}^-, \text{CH}_3\text{C}^-\text{H}_2$
- (b) $\text{C}^+\text{H}_3, (\text{CH}_3)_3\text{C}^+, (\text{CH}_3)_2\text{C}^+\text{H}, \text{CH}_3\text{C}^+\text{H}_2$

- (iii) Differentiate between Electromeric effect and Inductive effect
(5,5,5)
3. (i) What does the term polarized light signify. Define optical isomerism with example and specific rotation.
- (ii) (a) What are chiral compounds explain with the help of example.
- (b) Differentiate between Enantiomers and Diastereomers
- (iii) What are the rules for assigning R and S configuration to an optically active compound, explain with the help of example.
(5,5,5)
4. (i) Draw structures of all possible E2 products when 2-bromobutane reacts with conc. sodium hydroxide. Identify the geometrical isomers formed during this reaction.
- (ii) Write mechanism of free radical substitution involved in halogenation of methane.