15/12/23 (M)

(i) Printed Pages: 4 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 0 5 0

Exam. Code : 0 0 0 1

B.A./B.Sc. (General) 1st Semester

(2123)

CHEMISTRY

(Same for B.Sc. Microbial & Food Tech.)

Paper–II Organic Chemistry–A

Time Allowed : Three Hours] [Maximum Marks : 22

Note :—Attempt **five** questions in all, including Question No. 9 (Unit V) which is compulsory and taking at least **one** question each from Unit I–IV.

UNIT–I

1. (a) What is Inductive Effect ? Give its application in stability of different classes of carbocations. 2

   (b) Discuss the effect of resonance in explaining the relative acid strength of aryl and alkyl carboxylic acids. 2

2. (a) What are Free Radicals ? Discuss the relative stability of different classes of free radicals. 2

   (b) How do the methods such as 'isotope effect' and 'stereochemical studies' help in determination of reaction mechanism ? 1

   (c) Assign formal charge on Methyl Carbanion and Dichlorocarbene. 1

UNIT–II

3. (a) Give the mechanism of halogenation of alkane. 2

   (b) Give mechanism of Kolbe electrolysis reaction. 1

   (c) Write a note on alternation effect with reference to alkane. 1

4. (a) Compare reactivity and selectivity in reference of halogenation of alkane. Calculate the percentage of 2-Chloropropane and 1-Chloropropane obtained by chlorination of propane, if the reactivity ratio is 1 : 3.8 : 5. 2

   (b) Differentiate between Clemmenson reduction and Wolff-Kishner reduction by taking suitable example. 2

UNIT–III

5. (a) Draw the structure of erythro and threo isomers of Butane-2,3-diol. 1

   (b) Give difference between external and internal compensation. 1

   (c) Give difference between enantiomers and diastereomers. 2

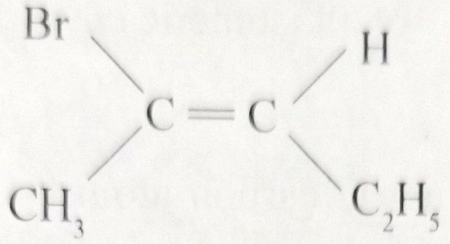
6. (a) Explain with examples Configurational and Conformational isomers. 2

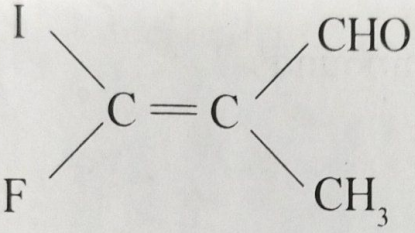
   (b) By taking examples discuss that the presence or absence of chiral carbon atoms in a molecule is not the necessary and sufficient condition for the existence of optical activity. 1

   (c) Define and illustrate the terms : Retention and inversion of configuration. 1

UNIT–IV

7. (a) Assign priorities and then assign E and Z configuration to the following :

(i) 

(ii) 

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(b) Discuss the conformations of n-Butane and their relative stabilities. 2

8. (a) Draw the two chair conformations of methyl cyclohexane. Also draw the Newman projection formulae. Which out of the two is more stable and why ? 2

(b) What are geometric isomers ? How do we find out configuration of geometric isomers on the basis of :

(i) Melting point,

(ii) Dipole moment ? 2

UNIT—V

(Compulsory Question)

9. (a) Define localized chemical bond by taking an example.

(b) What are substitution reactions ? Give example.

(c) Draw the structures of all isomeric ethers having formula $C_5H_{12}O$.

(d) What is an asymmetric carbon atom ? Give example.

(e) Give the structures of the lowest molecular mass alkyl iodide which is chiral.

(f) What are meso compounds ? 6