

**Bachelor of Science (B.Sc.) Semester-II (CBS) Examination**  
**CH-201 : CHEMISTRY**  
**Compulsory Paper—1**  
**(Organic Chemistry)**

Time : Three Hours]

[Maximum Marks : 50]

**N.B. :—** (1) All **FIVE** questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) What is hybridization ? Explain the structure of ethane on the basis of hybridization. 5  
(B) What are Reactive intermediates ? Explain the formation and stability of carbocations. 5

**OR**

(C) Write a note on Inductive effect. 2½  
(D) Define free radicals. Discuss the stability of free radicals. 2½  
(E) Define the terms :  
(i) Bond length and  
(ii) Bond angle. 2½  
(F) Discuss with example Homolytic bond fission. 2½

2. (A) What is Resolution ? Describe various methods used for resolving racemic mixture. 5  
(B) What is conformation ? Discuss the conformations of ethane. 5

**OR**

(C) Discuss the optical isomerism in Lactic acid. 2½  
(D) Write a note on geometrical isomerism in 2-Butene. 2½  
(E) State the sequence rules for assignment of RS-configuration. 2½  
(F) Write a note on ‘Asymmetric synthesis.’ 2½

3. (A) Discuss Baeyer's strain theory. What are the limitations of this theory ? 5  
(B) What is Markownikoff's rule ? Explain the ionic mechanism of addition of HBr to propene. 5

**OR**

(C) Discuss the mechanism of chlorination of methane. 2½  
(D) How does ethene react with :  
(i) Ozone and  
(ii) Cold aqueous  $\text{KMnO}_4$  ? 2½  
(E) Write a note on L.P.G. 2½  
(F) Give the preparation of propene from :  
(i) 1-Propanol and  
(ii) 2-Bromopropane. 2½

4. (A) What are Alkadienes ? How are they classified ? What is the action of :  
(i) Bromine and  
(ii) HBr on 1, 3-butadiene ? 5  
(B) What is aromatic electrophilic substitution reaction ? Discuss mechanism of nitration of benzene with energy profile diagram. 5

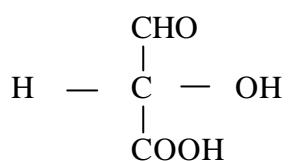
**OR**

(C) Describe Diel's Alder reaction. 2½  
(D) Discuss molecular orbital structure of Benzene. 2½  
(E) Write a note on acidic nature of acetylene. 2½  
(F) Discuss the structure of benzene on the basis of resonance. 2½

5. Attempt any **TEN** of the following :

(i) What is Hydrogen bonding ?  
(ii) Define the term nucleophile.  
(iii) Draw molecular orbital diagram of ethylene molecule.  
(iv) Define the term enantiomers.

(v) Write R-or-S configuration for the following :



(vi) Draw Newman's projection formulae of n-Butane.

(vii) State Saytzeff's rule

(viii) What is peroxide effect ?

(ix) Define Octane number.

(x) Give polymerisation reaction of Acetylene.

(xi) What is the action of Bromine on 1, 3-Butadiene ?

(xii) State Huckel's rule of aromaticity.

$1 \times 10 = 10$