



Bachelor of Science (B.Sc.) Semester-II Examination
CHEMISTRY

CH-201 : (Organic Chemistry)

Compulsory Paper—I

Time—Three Hours]

[Maximum Marks—50

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

(2) Give diagrams and chemical equations wherever necessary.

1. (A) What is hybridization ? Explain formation of Ethylene molecule on the basis of hybridization. 5

(B) Explain with suitable examples :

(i) Homolytic bond fission and

(ii) Heterolytic bond fission of a covalent bond. 5

OR

(C) Write a note on Hydrogen bonding with reference to alcohol. 2½

(D) Write a note on Electromeric effect. 2½

(E) Define :—

(i) Bond length and

(ii) Bond angle. 2½



(F) Identify electrophiles and nucleophiles :

- (i) NH_3
- (ii) FeCl_3
- (iii) $\text{H}_3\text{O}^\oplus$
- (iv) H_2O and
- (v) CN^\ominus

2½

2. (A) Define conformation. Discuss conformational analysis of n-Butane molecule. 5

(B) Explain the following :

- (i) Enantiomer with reference to Lactic acid and
- (ii) Diastereomer with reference to tartaric acid.

5

OR

(C) What is difference between configuration and conformation ? 2½

(D) Discuss the geometrical isomerism in maleic acid and fumaric acid. 2½

(E) Explain in short :—

- (i) Chiral centre and
- (ii) Optical activity.

2½

(F) Write a note on 'Walden Inversion'. 2½



3. (A) Write note on conformational analysis of cyclohexane. Show axial and equatorial bonds. 5
(B) What is Markovnikoff's rule ? Give ionic mechanism of addition of HBr to Propylene. 5

OR

(C) Give free radical mechanism of chlorination of methane. 2½

(D) How will you prepare ethane by following :
(i) Wurtz reaction and
(ii) Kolbe's reaction ? 2½

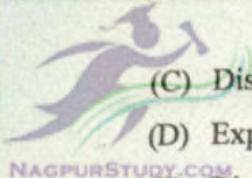
(E) Draw the structure of following :—
(i) 2-Methyl-2-butene and
(ii) 2, 3-Dimethyl-1-butene. 2½

(F) What happens when propylene is oxidized with alkaline solution of KMnO_4 in cold as well as hot condition ? 2½

4. (A) What are dienes ? Give their classification with one example of each. Give preparation of 1, 3-butadiene from :
(i) n-Butane and
(ii) Butane-1, 4-diol. 5

(B) What is aromatic electrophilic substitution reaction ? Discuss the mechanism of sulphonation of benzene with energy profile diagram. 5

OR



(C) Discuss molecular orbital picture of benzene. 2½
(D) Explain acidic nature of acetylene molecule. 2½
(E) Discuss Diels-Alder reaction. 2½
(F) Why following ions show aromatic behavior ? 2½
 (i) Cyclopentadienyl anion and
 (ii) Cycloheptatrienyl cation.

5. Give any TEN answers of following questions :—

(i) Define bond energy. 1
(ii) What is meant by Reactive intermediate ? 1
(iii) Write a reaction representing addition reaction. 1
(iv) Define molecular chirality. 1
(v) Why is Racemic mixture optically inactive ? 1
(vi) Draw Newman Projection and Sawhorse formulae of ethane. 1
(vii) What is alkyl group ? Give one example. 1
(viii) Give IUPAC name of neo-Pentane. 1
(ix) Give the reaction of Polymerisation of ethylene. 1
(x) Draw the Kekule structure of benzene. 1
(xi) How is benzene obtained from acetylene ? 1
(xii) What is oxyacetylene flame ? 1