KNT/KW/16/5082

Bachelor of Science (B.Sc.) Semester—II (C.B.S.) Examination

CHEMISTRY (Organic Chemistry)

Compulsory Paper—1

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All **FIVE** questions are compulsory and carry equal marks.
(2) Draw diagrams and chemical equations wherever necessary.

1. (A) Explain the term with example :
   (i) Inductive effect and
   (ii) Mesomeric effect. 5
   (B) What are reactive intermediates ? Discuss formation and stability of Free radicals. 5

OR

   (C) Explain the formation of Ethylene molecule on the basis of hybridization. 2½
   (D) Write a short note on Hydrogen bonding. 2½
   (E) Explain with suitable example :
   (i) Elimination reaction and
   (ii) Substitution reaction. 2½
   (F) Explain Homolytic and Heterolytic bond fission with example. 2½

2. (A) Define and explain the term Geometrical Isomerism. Discuss geometrical isomerism exhibited by Fumaric and Maleic acid. 5
   (B) Define the term :
   (i) Racemisation and
   (ii) Resolution.
   Give chemical method for resolution of recemic mixture. 5

OR

   (C) Write a note on 'Walden Inversion'. 2½
   (D) Distinguish between conformation and configuration. 2½
   (E) Write sequence rules related to R-S system of nomenclature. 2½
   (F) Discuss optical isomerism of Tortaric acid. 2½

3. (A) Discuss Bayer's Strain Theory. How does it explain relative stability of cycloalkanes ? Write its limitations. 5
   (B) State Markownikoff's rule. Give mechanism of addition of HBr to propylene. 5

OR

   (C) Write a note on L.P.G. 2½
   (D) Discuss free radical mechanism of chlorination of Methane. 2½

(E) What is the action of :
(i) Ozone followed by hydrolysis and
(ii) HIO_4 on propylene ? 2½

(F) How will you prepare ethylene from :
(i) Ethyl alcohol and
(ii) Ethyl bromide ? 2½

4. (A) What are alkadienes ? How are they classified ? What is the action of following on 1, 3-butadiene :
(i) Maleic anhydride and 5
(ii) HBr ?

(B) Discuss structure of Benzene on the basis of : 5
(i) Molecular Orbital Theory and
(ii) Resonance.

OR

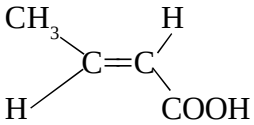
(C) How acetylene reacts with :
(i) Sodium in liquid ammonia and
(ii) Ammonical solution of cuprons chloride ? 2½

(D) Discuss mechanism of nitration of benzene. 2½

(E) Discuss the acidic nature of acetylene. 2½

(F) How 1, 3-Butadiene is prepared from :
(i) n-butane and
(ii) 1, 4 butadiol ? 2½

5. (i) Define : Bond length.
(ii) Define Nucleophile with example.
(iii) Draw structure of Singlet and Triplet carbenes.
(iv) Define positional isomerism.
(v) Give E, Z-notation for the following :



(vi) Define plane of symmetry.
(vii) What is pyrolysis ?
(viii) What is Kharasch peroxide effect ?
(ix) How polypropene prepared from propene ?
(x) Draw molecular orbital diagram of acetylene.
(xi) What is oxyacetylene flame ?
(xii) State Huckel's rule of aromaticity. 10×1=10