Bachelor of Science (B.Sc.) Semester-VI (C.B.S.) Examination

CH-602 : ORGANIC CHEMISTRY

Paper—2

(Chemistry)

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All **FIVE** questions are compulsory.

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

1. (A) With reference to NME spectroscopy, explain :
   (i) Equivalent and non-equivalent protons and
   (ii) Chemical shift. 5
   (B) How will you differentiate Acetaldehyde and Ethylacetate by ^{1}HNMR spectra ? 5

OR

   (C) Explain the term coupling constant 'J'. 2½
   (D) Why is TMS used as reference compound in NMR spectroscopy ? 2½
   (E) A compound (M) having molecular formula $C_2H_4Br_2$ gave the following two NMR signals :
   (i) Doublet, δ 2.5 (3 H) and
   (ii) Quartet, δ 5.85 (1 H)
   Assign the structure for compound (M). 2½
   (F) How many NMR signals would you expect for :
   (i) Toluene and
   (ii) Acetophenone. 2½

2. (A) Discuss Claisen Condensation with mechanism. 5
   (B) Explain ring size of Glucose molecule by Haworth methylation process. 5

OR

   (C) Write a note on Keto-Enol tautomerism. 2½
   (D) How will you convert :
   (i) Acetoacetic ester into 4-Methyl Uracil and
   (ii) Malonic ester into Barbituric acid ? 2½
   (E) How will you convert Glucose into Fructose ? 2½
   (F) Draw the structures of :
   (i) Maltose and
   (ii) Sucrose. 2½

3. (A) Write notes on :
   (i) Electrophoresis
   (ii) Isoelectric point of Amino acid. 5
   (B) Explain hydrogenation of unsaturated oils. Define the terms :
   (i) Saponification value
   (ii) Acid value and
   (iii) Iodine value. 5

OR

(C) Write a note on Double helical structure of DNA. 2½

(D) Discuss acid-base behaviour of amino acids. 2½

(E) Discuss the method of preparation of sulphonate. 2½

(F) Explain cleaning action of soap. 2½

4. (A) Discuss Witt's theory of colour and chemical constitution. 5

(B) What is chain growth polymerisation ? Discuss ionic mechanism of Vinyl Polymerisation. 5

OR

(C) Give preparation and uses of Aspirin. 2½

(D) How phenolphthalein dye is prepared ? Give uses. 2½

(E) Give the qualities of an ideal drug. 2½

(F) Give the preparation and uses of terylene. 2½

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

(i) How many sets of proton are present in ethyl alcohol ?

(ii) Give any two applications of NMR spectroscopy.

(iii) Name the solvents use din PMR spectroscopy.

(iv) How is malonic ester prepared from malonic acid ?

(v) What happens when glucose reacts with bromine water ?

(vi) Define the term : Epimerisation.

(vii) What are peptides ?

(viii) What are the advantages of synthetic detergents over soap ?

(ix) Give the constituents of nucleic acid.

(x) Give the uses of crystal violet.

(xi) Draw the structure of Chloramine-T.

(xii) What are polyamides ? Give example. 10×1=10