

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

- (i) What is Coupling Constant ? 1
- (ii) How many NMR signals would you expect from acetyl acetone ? 1
- (iii) Define Peak Area. 1
- (iv) What are reactive methylene compounds ? 1
- (v) What are epimers ? 1
- (vi) Draw the structure of 2-Deoxyribose. 1
- (vii) What are peptides ? 1
- (viii) Why are amino acids called amphoteric Compounds ? 1
- (ix) Name the types of bases present in nucleotides. 1
- (x) Write the structure of chloramine-T. 1
- (xi) What are the two main types of polyamides ? 1
- (xii) Write the structure of Dettol. 1

TKN/KS/16/5918

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

Examination

CH-602 : ORGANIC CHEMISTRY

Paper—2

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 the principle of Nuclear Magnetic Resonance Spectroscopy ? How many NMR signals would you expect for :

- (i) Ethyl acetate
- (ii) Ethanal and
- (iii) 1, 2-Dibromo-ethane ? 5

(B) A compound with a molecular formula C_8H_8O has the following NMR data :

- (i) Singlet δ –2.25 (3H)
- (ii) Complex multiplet δ –7.45 (3H)
- (iii) Complex multiplet δ –7.90 (2H)

Give reasons and assign the structure of the compound.

5

OR

- (C) Explain spin-spin coupling with suitable example. 2½
- (D) What is shielding and deshielding of protons in NMR spectroscopy ? 2½
- (E) An organic compound with molecular formula C_7H_8 gave the following data :
- (i) Singlet δ 2.32, 3H and
- (ii) Singlet δ 7.17 5H
- Explain and assign a structural formula to the compound. 2½
- (F) What is Chemical Shift ? On what scales the chemical shift can be measured ? 2½
2. (A) What is Claisen Condensation ? Discuss its mechanism. 5
- (B) Why is open chain structure of glucose discarded ? How is pyranose type six membered cyclic structure of glucose established ? 5

OR

- (C) Starting from malonic ester, how will you prepare :—
- (i) Succinic acid and
- (ii) Barbituric acid ? 2½
- (D) How is fructose converted to glucose ? 2½
- (E) Write a note on keto-Enol tautomerism in Acetoacetic ester. 2½
- (F) What happens when glucose is treated with excess of phenyl hydrazine ? 2½

3. (A) What are Amino Acids ? How are they classified ? Give one example of each class. 5
- (B) Discuss the double helical structure of DNA. 5

OR

- (C) Explain the terms :
- (i) Saponification value, and
- (ii) Iodine value of Fats and oils. 2½
- (D) Write a note on electrophoresis. 2½
- (E) What are detergents ? How do they differ from traditional soaps ? 2½
- (F) Discuss—‘Denaturation of Proteins’. 2½
4. (A) Explain electronic concept of Colour and Chemical Constitution of dyes. 5
- (B) What are Polymers ? Give an example. Discuss free radical mechanism of chain growth polymerisation. 5

OR

- (C) Give the preparation, properties and uses of Aspirin. 2½
- (D) Explain Ziegler-Natta polymerisation. 2½
- (E) Give synthesis and uses of Congo-red. 2½
- (F) Define with example :
- (i) Chromophore and
- (ii) Auxochrome. 2½