

## 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 and carry equal marks.  
(2) Write chemical equations and diagrams wherever necessary.

1. (A) With reference to NMR spectroscopy explain :

- (i) Equivalent and non-equivalent protons
- (ii) Chemical shift.

5

(B) What is the significance of peak area in NMR spectroscopy ? A compound having molecular formula  $C_2H_4Br_2$  gave following signals :

- (i) Doublet,  $\delta 2.5$  (3H)
- (ii) Quartet,  $\delta 5.85$  (1H)

Assign the structure of compound giving reasons.

5

**OR**

(C) Explain shielding and deshielding of protons in NMR Spectroscopy.

2½

(D) Explain the role of TMS in NMR spectroscopy.

2½

(E) How many NMR signals do you expect in the following compounds :

- (a) Acetophenone
- (b) Ethyl acetate ?

2½

(F) Define the term “Coupling constant”. Write its unit and factors affecting coupling constant.

2½

2. (A) What are reactive methylene compounds ? Starting from malonic ester how will you synthesize the following :

- (i) Acetic acid,
- (ii) Cinnamic acid
- (iii) Barbituric acid ?

5

(B) Discuss the open chain structure of glucose and give its limitations.

5

**OR**

(C) What is the action of excess of phenyl hydrazine on glucose ?

2½

(D) Starting from acetoacetic ester, how will you prepare :

- (i) 4-methyl uracil
- (ii) Acetone ?

2½

(E) Write a note on Keto Enol tautomerism in acetoacetic ester.

2½

(F) What is Killiani's synthesis ? Explain.

2½

3. (A) What are amino acids ? Explain following of amino acid
- (i) Acid Base behaviour
  - (ii) Electrophoresis. 5
- (B) What are detergents ? In what way are they superior to soaps ? Discuss the method of preparation of sulphonate. 5

**OR**

- (C) Write a note on denaturation of proteins. 2½
  - (D) Distinguish between fats and oils. 2½
  - (E) Discuss the process of hydrogenation of oil. 2½
  - (F) How the proteins are classified on the basis of structure ? 2½
4. (A) What is addition polymerisation ? Explain free radical mechanism of vinyl polymerisation. 5
- (B) What are qualities of Ideal drug ? Explain preparation, properties and uses of Chloramin T. 5

**OR**

- (C) Define with example Chromophore and Auxochromes. 2½
  - (D) Give synthesis and uses of Phenolphthalein. 2½
  - (E) Give synthesis of Nylon-66. 2½
  - (F) Give preparation and uses of Dettol. 2½
5. Attempt any **TEN** of the following :
- (i) How many NMR signals would you expect from acetaldehyde ? 1
  - (ii) What are the units of expressing chemical shifts ? 1
  - (iii) How many NMR signals will appear for Acetone ? 1
  - (iv) What is acidity of  $\alpha$ -hydrogen ? 1
  - (v) Write the reaction of Claisen condensation. 1
  - (vi) What are carbohydrates ? 1
  - (vii) What is isoelectric point ? 1
  - (viii) What are conjugated proteins ? 1
  - (ix) Give the reaction for the preparation of soap. 1
  - (x) Give the uses of Alizarin dye. 1
  - (xi) Draw the structure of Paracetamol. 1
  - (xii) Give any two uses of Terylene. 1