

Bachelor of Science (B.Sc. III) Fifth Semester
B.Sc. 3510 – Chemistry Paper – I (Organic Chemistry)

P. Pages : 2

Time : Three Hours



GUG/W/18/1330

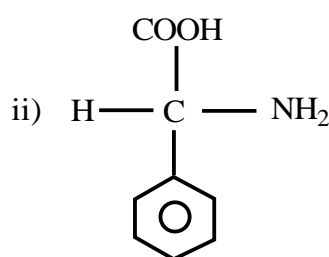
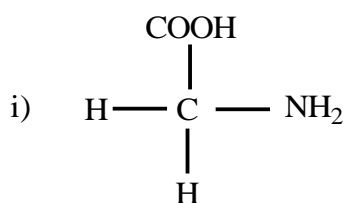
Max. Marks : 50

- Notes : 1. All **five** questions are compulsory and carry equal marks.
2. Give diagrams and chemical reactions wherever necessary.

1. a) Discuss principle of NMR Spectroscopy. How many NMR peak would you expect in 5
i) ethyl acetate ii) Acetone
- b) Write a note on : 5
i) Chemical shift ii) Coupling constant
OR
- c) Explain why TMS is used as reference compound in NMR Spectroscopy. 2½
- d) What do you mean by equivalent & non – equivalent proton in NMR Spectroscopy. 2½
- e) How is peak area related to number of identical proton in NMR Spectroscopy. 2½
- f) An organic compound having molecular formula C_3H_6O shows following NMR data – 2½
i) 3 H – triplet $\delta - 1.5$
ii) 2 H – Quartet $\delta - 2.6$
iii) 1 H – Singlet $\delta - 9.6$
Deduce the structure.
2. a) Discuss molecular orbital picture and aromaticity in pyrrole. 5
- b) Discuss the mechanism of Woodward and prevost hydroxylation. 5
OR
- c) Discuss the application of 1,3 Dithiane umpolung. 2½
- d) Compare basicity of pyrrole and pyridine. 2½
- e) Why do electrophilic aromatic substitution reaction in pyridine occure at 3 – position? 2½
- f) Give any two methods of synthesis of Pyridine. 2½
3. a) What are carbohydrates? Give their classification in details. How will you convert glucose into sorbitol & Glucose oxime. 5
- b) Discuss in brief. 5
i) Acid – base property of amino acid. ii) Isoelectric point of amino acid.
OR
- c) How will you convert Glucose to fructose? 2½
- d) Define the term. 2½
i) Saponification value. ii) Synthetic detergent.
- e) Explain hydrogenation of oil. 2½

- f) Explain secondary structure of protein. 2½
4. a) Give synthesis and application of 5
 i) Aspirin ii) Paracetamol
- b) What is meant by dye? Give the classification of dye based on chemical constitution. 5
 Mention uses of dyes.
- OR**
- c) Define the term with example- 2½
 i) Tranquilizer.
 ii) Analgesic.
- d) Write the synthesis of crystal violet. 2½
- e) Give the methods of preparation of methyl orange. 2½
- f) Draw the structure of detol and write its uses. 2½

5. Solve any ten.
- i) How many NMR peak obtain in Toluene? 1
- ii) Calculate the degree of unsaturation for molecular formula C_8H_8O . 1
- iii) Give any two examples of solvent used in NMR spectroscopy. 1
- iv) What are Sulphur ylides. 1
- v) Draw the molecular orbital picture of pyridine. 1
- vi) Give one use of LDA. 1
- vii) Draw Haworth projection formula of glucose. 1
- viii) Explain denaturation of protein. 1
- ix) Write the name of following amino acid. 1



- x) Draw the structure of Congo red. 1
- xi) Give any two qualities of ideal drugs. 1
- xii) Give any two uses of Indigo dye. 1
