Bachelor of Science (B.Sc. III) Fifth Semester

B.Sc. 3510 – Chemistry Paper – I (Organic Chemistry)

P. Pages : 2 **GUG/W/18/1330**

Time : Three Hours * 1 0 4 3 * 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. Mention uses of dyes. **5**

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**

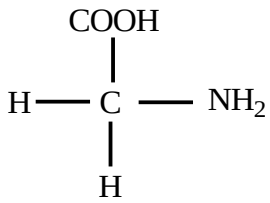
v) Draw the molecular orbital picture of pyridine. **1**

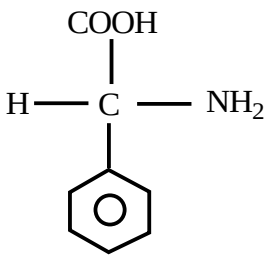
vi) Give one use of LDA. **1**

vii) Draw Haworth projection formula of glucose. **1**

viii) Explain denaturation of protein. **1**

ix) Write the name of following amino acid. **1**

i) 

ii) 

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**

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