

B.Sc. III (With Credits)-Regular-Semester 2012 Sem V
B.Sc. 3510 - Chemistry Paper - I (Organic Chemistry)

P. Pages : 2

Time : Three Hours



GUG/W/16/3358

Max. Marks : 50

- Notes : 1. All **five** questions are compulsory and carry equal marks.
2. Write chemical equation & draw diagrams whenever necessary.

1. a) Explain the principle, theory and instrumentation of NMR spectroscopy. **5**
b) Write brief note on – **5**
i) The Role of TMS in NMR spectroscopy.
ii) Equivalent and Non-equivalent protons.

OR

- c) What is spin-spin coupling? **2½**
d) Explain NMR spectra of Acetophenone. **2½**
e) Identify and interpret the given compound – **2½**
i) Molecular formula – $C_2H_4Br_2$ ii) Ratio of peak area – 3:1
iii) a : Doublet at $\delta = 2.5$ ppm. iv) b : Quartet at $\delta = 5.8$ ppm.
f) What is nuclear shielding and deshielding in NMR spectroscopy? **2½**
2. a) What are heterocyclic compounds? Define six-membered Heterocyclic compound and discuss molecular orbital structure of pyridine. **5**
b) How will you convert – **5**
i) Lithium diisopropylamide into lithium enolates.
ii) Alkene into cis-diols by Woodward Hydroxylation.

OR

- c) Discuss prevost hydroxylation. **2½**
d) Write note on sulphur ylides. **2½**
e) Explain sulphonation in both Quinoline & Isoquinoline. **2½**
f) What is Fischer-Indole synthesis? **2½**
3. a) What are carbohydrates? Give classification of carbohydrates with flow chart. How will you convert glucose into sorbitol & glucose oxime? **5**
b) Discuss in brief – **5**
i) Acid-base property of amino acid. ii) Hydrogenation of oil.

OR

- c) Discuss preparation of Alkyl benzene sulphonate as synthetic detergent and mention its advantages over soap. 2½
- d) Write note on classification of protein with one example of each. 2½
- e) Discuss Ruff degradation in aldose. 2½
- f) Explain inter-conversion of Glucose to fructose. 2½
4. a) Discuss the relationship between colour and constitution in the view of otto witt. 5
- b) Write brief note on – 5
- i) Synthesis and applications of Paracetamol.
- ii) Synthesis and applications of Aspirin.

OR

- c) Discuss synthesis and applications of congo red. 2½
- d) Give account on synthesis and applications of methyl orange. 2½
- e) Mention synthesis and application of chloroquine. 2½
- f) What is Chloramine-T? Give structure & uses. 2½
5. Solve **any ten** –
- i) Write the name of solvent used in NMR. 1
- ii) How many kinds of proton and signals may expected from ethyl alcohol. 1
- iii) Define and Express the formula to calculate chemical shift. 1
- iv) Mention one synthesis of 1, 3-Dithiane ion. 1
- v) Draw only m.o. figure of any five membered Heterocyclic organic compound. 1
- vi) What happens when Indole undergoes reduction with Raney Nickel? 1
- vii) Explain nucleophilic addition of HCN to Glucose. 1
- viii) Define conjugated protein with one example. 1
- ix) What is Rancidity. 1
- x) Give structure & two main uses of crystal violet. 1
- xi) What is antiseptic? Define with example & two uses. 1
- xii) Define Narcotic drugs with structure of one example. 1
