



I Semester M.Sc. Degree Examination, Jan./Feb. 2014  
(2010 -11 Scheme) (NS)

CHEMISTRY

Paper – C 102 : Organic Chemistry – I

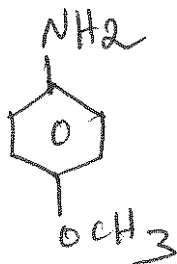
Time : 3 Hours

Max. Marks : 80

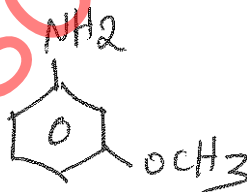
**Instruction** : Answer question no. 1 and **any five** of the remaining.

1. Answer **any ten** of the following : (2×10=20)

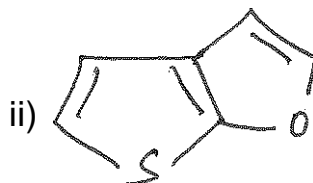
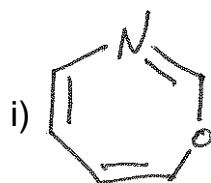
- Write all the possible resonance structures of p-nitrophenoxide ion.
- What are meso-ionic compounds ? Give an example.
- Write various energy levels for the following :
  - Benzyl cation
  - Benzyl carbanion
- Which of the compound in the following pair is stronger base and why ?



and



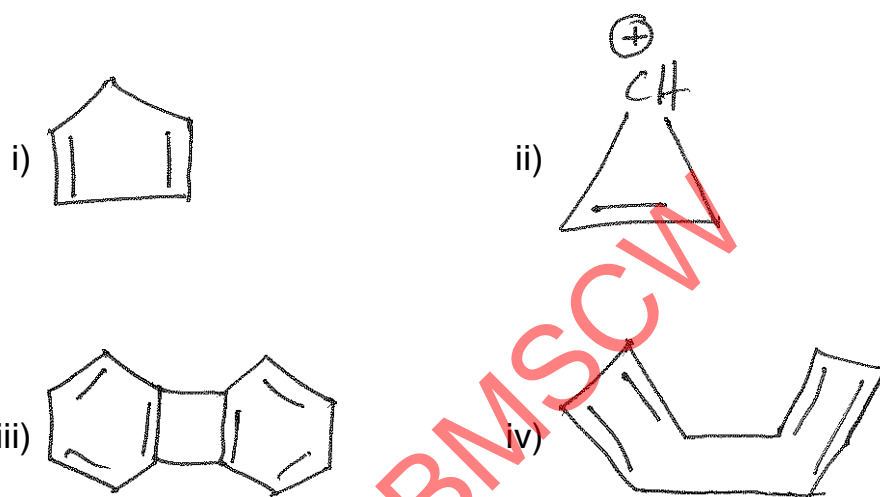
- Give any two reagents (name and structures) for the protection of  $\alpha$ -amino group in peptide synthesis.
- Write the Haworth structural formulae of the following :
  - Gentiobiose
  - Meliobiose
- Give the equation for the oxidation of D-glucose with  $\text{HNO}_3$ .
- Write the IUPAC names of the following :



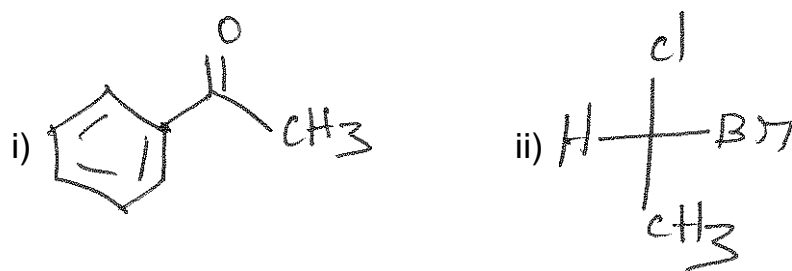


- i) What is Prelog's rule ?
- j) Between pyrazole and imilazole which is more basic and why ?
- k) Write the structures of the following :
- i) E-I-bromo-1, 2-dichloroethene    ii) Z-but-2-ene-2, 3-dioic acid
- l) Assign R or S configuration for the following :
- i) D-Glyceraldehyde                      ii) L-Serine

2. a) Which of the following are aromatic, non-aromatic or antiaromatic and why ?



b) Whether the following compounds are optically active or not ? Justify.



c) What are nitrenes ? Give any two methods of preparation and properties of nitrenes. (3×4=12)



3. a) Write a note on the following :
- i) Ambident nucleophiles.
  - ii) Curtin-Hammett principle.
- b) Discuss the synthesis of aldonic acid. **(8+4=12)**
4. a) Discuss the Merrifield's solid phase synthesis of oxytocin using *Fmoc* chemistry.
- b) Write a note on hard and soft acids and bases.
- c) Give a comparative account of Sanger's and Edman's methods for the determination of sequence of peptides. **(3×4=12)**
5. a) How is 2, 3, 6 - tri-O-methyl-D-glucose obtained from maltose ? Account for its oxidation to dimethyl-D-tartaric acid.
- b) Illustrate the application of acetylenic carbonyl compounds in the synthesis of isooxazoles and isothiazoles.
- c) Give the steps involved in Killiani-Fischer synthesis. **(3×4=12)**
6. a) Write a note on the following :
- i) Racemisation in peptide synthesis.
  - ii) DCC-HOBT method in peptide synthesis.
- b) Give the structural elucidation of maltose. **(8+4=12)**
7. Explain the following :
- a) Conformational analysis of cyclopentane
  - b) Reactions of coumarins and chromones
  - c) Pro chirality. **(3×4=12)**
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