



**MCHT 1.2**

**I Semester M.Sc. Degree Examination, May 2015**  
**CHEMISTRY**  
**Organic Chemistry – I**

Time : 3 Hours

Max. Marks : 80

**Instruction:** Answer question No. 1 and **any four** of the remaining questions.

1. Answer **any eight** questions : (8×2=16)
  - a) Write the essential conditions for aromaticity.
  - b) Write the differences between configuration and conformation of molecule.
  - c) What are diastereomers ? Give one example.
  - d) Explain why cyclopentadiene anion is stable but cation is unstable.
  - e) Write any two methods of generation of nitrene.
  - f) What is the structure of electrophile involved in nitration of benzene ? Write the structure of major product obtained in nitration of aniline.
  - g) What is anchimeric assistance ? Give example.
  - h) What is primary isotopic effect ?
  - i) With suitable example explain the Saytzeff's Rule.
  - j) What is meant by linear free energy relationship ?
2.
  - a) Discuss geometrical isomerism in 1, 4-dibromo-2-butene. (4+6+6=16)
  - b) Explain the conformational analysis of 1, 2-dihydroxyethane (ethylenediol).
  - c) Write a note on optical isomerism in allenes.
3.
  - a) What are aromatic, non aromatic and antiaromatic compounds ? Give two examples each. (5+5+6=16)
  - b) Discuss the concept of aromaticity and energy level of  $\pi$ -molecular orbitals.
  - c) Write a note on Huckel's rule and aromaticity.
4.
  - a) Discuss the structure, generation and stability of free radical. (5+5+6=16)
  - b) Why aromatic nucleophilic substitution reaction is generally difficult ? Explain with two examples.
  - c) What is Ortho-Para ratio in aromatic compound ? Explain with suitable example.

P.T.O.



5. a) Why  $S_N1$  reaction does not takes place at bridgehead and vinylic carbon ?  
(5+5+6=16)
- b) Discuss mechanism and stereochemistry of  $S_Ni$  reaction.
- c) What are the significance of  $\sigma$  (substituent constant) and  $\rho$  (reaction constant) ?
6. a) Discuss the any two methods of resolution of racemic mixture. (5+5+6=16)
- b) What are spiro compounds ? Explain their optical isomerism.
- c) Write the stable conformation of the following compounds.
- i) t-butyl cyclohexane
  - ii) cis 1,3-dimethyl cyclohexane
  - iii) trans 1,2-dimethyl cyclohexane
7. a) Write any two method of preparation of carbocations. Discuss their geometry. (5+5+6=16)
- b) Discuss sulfonation and desulfonation of benzene.
- c) Write a note on  $E1CB$  reaction.