

Roll No. ....

Total Pages : 5

**12969/N****K-8/2111****ORGANIC CHEMISTRY**

Paper-1102T

Semester-I

Time Allowed : 3 Hours] [Maximum Marks : 55

**Note :** The candidates are required to attempt **two** questions each from Section A carrying 8 marks each and Section B carrying 8½ marks each and the entire Section C consisting of 11 short answer type questions carrying 2 marks each.

**SECTION—A**

1. Discuss the Generation, Structure, Stability and Stereochemistry of following intermediates :
  - (a) Carbocations. 4
  - (b) Nitrenes. 4
2. Write mechanism of following reactions : 2,2,4
  - (a) Chlorination.
  - (b) Bromination.
  - (c) Free radical addition of HBr.
3. What are Aromatic compounds? How one can distinguish between Aromatic and Non-Aromatic Compounds? Discuss Homo-Aromaticity and PMO approach. 8

4. Why Crown ether compounds are considered to have bonding weaker than Covalent bonding? What do you mean by Catenanes and Rotaxane? 8

### SECTION—B

5. Discuss E1 and E2 mechanism of elimination reaction in detail along with mechanism and examples. Why E2 is Bimolecular reaction and E1 is Unimolecular reaction? 8½
6. Compare Elimination and Substitution reaction mechanism by comparing different factors like Structure of Reactant, Nature of Base and Nature of Solvent. How thermal elimination reaction takes place? 8½
7. Discuss Molecular orbital of 1,3-butadiene, allyl and hexatriene systems? 8½

8. What are Suprafacial and Antarafacial processes involved in Stereochemical modes of Cycloaddition as well as Sigmatropic Rearrangements reactions? Discuss selection rules for Cycloaddition and Electrocyclic reactions by PMO method. 8½

### SECTION—C

9. Write short notes on the following : 11×2=22
- (i) Write stability of Carbanions.
  - (ii) What are Arynes?
  - (iii) What do you mean Lariat Ethers and Hemispherands?
  - (iv) Draw structure of Cryptands.
  - (v) What do you mean by Fullerenes? Explain by taking example.
  - (vi) How cross over experiments are helpful in determining reaction mechanism?

- (vii) Draw the structure of simplest Aromatic ring present.
- (viii) What is 4S+2S systems in Cycloaddition reactions?
- (ix) Discuss the Saytzeff rule.
- (x) What do you mean by Xanthates?
- (xi) What is 4+2 and 2+2+2 cycloaddition reactions?