



ABR-1660      Seat No. \_\_\_\_\_

**M. Sc. (Sem. I) Examination**

November / December - 2016

**Chemistry : CHN - 402**

*(Organic Chemistry)*

Time : 3 Hours]

[Total Marks : 70

**Instructions :** (1) All questions are compulsory.  
(2) The medium of answers is English only.

**1 (a) Answer any two of the following : 10**

- (1) Discuss aromatic systems with electron numbers two and ten.
- (2) Discuss the structures exhibit delocalization in conjugated double bond in conjugation with  $a p$  orbital on an adjacent atom.
- (3) Discuss Hyper conjugation giving suitable examples and explain Baker-Nathen effect.

**(b) Answer any one of the following : 4**

- (1) Give a detailed account of Inclusion compounds.
- (2) Discuss various bonding in fullerene giving examples.

**2 (a) Answer any two of the following : 10**

- (1) What is conformation ? Discuss confirmation analysis in Decalines.
- (2) Give a brief account on Enantiotopic and Diastereotopic group and faces.
- (3) Explain Steric strain due to unavoidable crowding.

- (b) Answer any **one** of the following : 4
- (1) Discuss optical activity of Spiro compounds giving illustration.
  - (2) Explain stereochemistry of Phosphorous containing compounds.
- 3 (a) Answer any two of the following : 10
- (1) Discuss Thermodynamic and Kinetic requirements of the reaction.
  - (2) Explain Hammett equation and linear free energy relationship.
  - (3) Discuss Resonance and Field effects of structure on reactivity.
- (b) Answer any **one** of the following : 4
- (1) Discuss application of NMR spectroscopy in the detection of Carbocations.
  - (2) Write a note on : Hard and Soft acids and bases.
- 4 (a) Answer any **two** of the following : 10
- (1) Give an account on SET mechanism.
  - (2) Give a brief account of Tetrahedral mechanism in Nucleophilic substitution.
  - (3) Discuss effect of the attacking group on nucleophilic substitution.
- (b) Answer any **one** of the following : 4
- (1) Discuss mechanism of phase transfer catalyst.
  - (2) Write a note on Ambident substrates.

5 Answer any **seven** questions in 2-4 lines each : 14

- (1) Give the stability of dianion of squaric acid.
  - (2) Draw the structure of hexahelicene and why it shows chirality ?
  - (3) Use of chiral catalyst in asymmetric synthesis.
  - (4) What is Cross conjugation ? Give any three examples.
  - (5) Draw structures of any four Annulenes.
  - (6) What are crown ether complexes ?
  - (7) Define classical and non classical carbocations.
  - (8) Give any two methods for generation of carbanions.
  - (9) How cyclopropyl ring act as neighbouring group ?
  - (10) Write effect of solvent polarity on  $S_N1$  mechanism.
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