



KN-1630

Seat No. \_\_\_\_\_

M. Sc. (Sem. I) Examination

November / December - 2017

Chemistry : CHN - 402

(Organic Chemistry)

Time : 3 Hours]

[Total Marks : 70

Instructions :

- (1) All questions are compulsory.
- (2) The medium of answer is English only.

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

- (1) Define Huckel's rule for determining whether a molecule is aromatic. Give at least four examples.
- (2) Explain the types of bonding in fullerenes.
- (3) Differentiate alternant and non-alternant compounds with suitable examples.

(b) Answer any one of the following : 4

- (1) Give a detailed account of rotaxanes.
- (2) Write short note on Aromaticity of Annulin.

- 2 (a) Answer any two of the following : 10
- (1) Write a note on : Effect of confirmation on reactivity.
  - (2) What is resolution ? Give any three methods of resolution of racemates.
  - (3) What is the difference between Stereospecific and Stereoselective reactions ? Explain with suitable examples.
- (b) Answer any one of the following : 4
- (1) Discuss optical activity of allenes giving illustrations.
  - (2) Explain chirality due to helth shape.
- 3 (a) Answer any two of the following : 10
- (1) Discuss the stability and reactivity of carbaniones.
  - (2) What is neighbouring group participation ? Discuss its mechanism in the presence of different neighbouring groups.
  - (3) Give Hammet equation and explain the terms involved in it. Show that Hammet equation is linear free energy relationship.
- (b) Answer any one of the following : 4
- (1) Give application of NMR spectroscopy in detection of carbocations.
  - (2) Discuss the Resonance and field effect of structure on reactivity.

- 4 (a) Answer any two of the following : 10
- (1) Give an account of SET mechanism.
  - (2) Discuss effect of the leaving group on nucleophilic substitution.
  - (3) Give an account on  $S_N1$  mechanism.
- (b) Answer any one of the following : 4
- (1) Write note on : Ambient nucleophiles.
  - (2) Discuss the methods for determining reaction mechanism.
- 5 Answer any seven of the following : 14
- (1) What are ambidentate substrate ?
  - (2) Cyclopentadiene is highly acidic in nature, why ?
  - (3) Give one example each define enantiomers and diastereoisomers.
  - (4) Discuss stereochemistry of amines.
  - (5) Discuss limitation of Huckel's rule.
  - (6) Comment on bonding in fullness.
  - (7) Explain sigmatropic Rearrangement.
  - (8) What is Teft equation ? Explain it.
  - (9) What is cross conjugation ? Give at least two examples.
  - (10) Can you detect the carbocation with the help of NMR ?