



MEB-4700 Seat No. \_\_\_\_\_

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

November / December - 2018

**Chemistry : CHN-402**

*(Organic Chemistry)*

Time : 3 Hours]

[Total Marks : 70

**Instructions :** All questions are compulsory.

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

- (1) Explain alternant and non-alternant Hydrocarbon with suitable examples.
- (2) Give an explanation of hyper conjugation with suitable examples. Explain Baker-Nathan effect.
- (3) What is Annulene ? Discuss the aromatic character of geometrical isomers of [10] Annulene.

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

- (1) Write a short note on catenanes and rotaxane.
- (2) Explain the types of bonding in fullerenes.

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

- (1) What is effect of conformation on reactivity ? Explain in detail by taking acyclic and cyclic compounds.
- (2) Difference between stereospecific and stereoselective synthesis.
- (3) Explain steric strain due to unavoidable crowding.

- (B) Answer any **one** of the following : 4
- (1) Discuss the stereochemistry of sulphur compounds.
  - (2) Discuss conformations of decalines.
- 3 (A) Answer any **two** of the following : 10
- (1) What are nitrenes ? Give any two methods of generation of nitrenes. Explain Schmidt rearrangement.
  - (2) Write a note : Non classical carbocations.
  - (3) Discuss Thermodynamic and Kinetic requirements of the reaction.
- (B) Answer any **one** of the following : 4
- (1) Discuss methods of determining mechanism of organic reactions.
  - (2) Write a note on : Hard and soft electrophiles and nucleophiles.
- 4 (A) Answer any **two** of the following : 10
- (1) Discuss mixed  $SN^1$  and  $SN^2$  mechanism with suitable examples.
  - (2) Give a brief account of nucleophilic substitution at Allylic carbons.
  - (3) Discuss effect of the attacking group on nucleophilic substitution.
- (B) Answer any **one** of the following : 4
- (1) Write a note on Ambident nucleophile.
  - (2) What is phase transfer catalyst ? Discuss the mechanisms of phase transfer catalyst laying stress in quaternary salt.

5 Answer any **seven** of the following :

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- (1) Give a charge types for nucleophilic substitutions.
  - (2) What is cryptands ?
  - (3) What is Anti aromaticity ?
  - (4) Define term "Chirality".
  - (5) What is epimerisation ?
  - (6) Arrange the isomeric butyl groups in decreasing order of priority.
  - (7) Give the difference between singlet and triplet carbene.
  - (8) Explain : Delocalisation of positive charge by hyper conjugation.
  - (9) Give example of nucleophilic substitution at Vinylic carbon.
  - (10) Write a Taft equation.
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