



**M.Sc. I Semester Degree Examination, April / May - 2024**

**CHEMISTRY**

**Theoretical Organic Chemistry**

**(NEP)**

Time : 3 Hours

Maximum Marks : 70

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**Note :** Answer **any five** of the following questions with Question No. **1 (Q.1)** is **Compulsory**.  
Each question carries **equal** marks.

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1. (a) Discuss the concept of hybridization in ethylene and acetylene. **5+5+4=14**  
(b) Explain the aromaticity in benzenoids and non-benzenoid compounds.  
(c) What is hyper conjugation ? Explain with a suitable example.
  
2. (a) Give the detailed account of elements of symmetry. **5+5+4=14**  
(b) Explain the optical activity in biphenyl compounds.  
(c) Explain the interconversion of Fisher projection formulae into Sawhorse using suitable example.
  
3. (a) Discuss the factors affecting  $SN_1$  and  $SN_2$  reactions. **5+5+4=14**  
(b) Explain the nucleophilic substitution reaction at allylic carbon.  
(c) Differentiate between  $SN_1$  and  $SN_2$  reactions.
  
4. (a) Describe the mechanism of Sommet-Houser Rearrangement. **5+5+4=14**  
(b) Discuss the arenium ion mechanism.  
(c) Explain how benzyne is obtained ? Discuss its reactions.
  
5. (a) What are carbocation ? Explain its Stability. **5+5+4=14**  
(b) Explain the importance of thermodynamics and kinetics studies in determining the reaction mechanism.  
(c) Describe the Reimer-Tiemann reaction and give its applications.



6. (a) Write a note on : **5+5+4=14**
- (i) Bonding in Fullerenes
  - (ii) Crown ethers
- (b) Explain conformational analysis of Butane.
- (c) Describe the optical isomerism in Nitrogen compound with examples.
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7. (a) Explain Von-Richter reaction with suitable example. **5+5+4=14**
- (b) Discuss the mechanism of Dieckmann condensation reaction and give its applications.
- (c) What is Wittig reaction ? Explain its mechanism.
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8. (a) Discuss the mechanism of Perkins reaction and mention its uses. **5+5+4=14**
- (b) Explain  $SE_1$  and  $SE_2$  mechanism.
- (c) Write a note on optical activity in spiranes.

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