



**B.Sc. V Semester Degree Examination, Sept./Oct. - 2024**

**CHEMISTRY**

**DSC-6 : Organic and Physical Chemistry**

**(NEP)**

Time : 2 Hours

Maximum Marks : 60

**Note :** Answer **all** Sections.

**SECTION - A**

1. Answer the following sub-questions. Each sub-question carries **one** mark. **10x1=10**
- (a) Define hyper conjugation.
  - (b) What is tautomerism ?
  - (c) What is conformational analysis in Stereochemistry ?
  - (d) Give an example for Polysaccharide.
  - (e) Write the structure of Pyrazole.
  - (f) Mention the chemical name of vitamin-B6.
  - (g) What is Laplacian operator ?
  - (h) Define quantum mechanical tunneling.
  - (i) Define homogeneous catalysis.
  - (j) What are enzyme catalysed reactions ?

**SECTION - B**

Answer **any four** of the following questions. Each question carries **five** marks. **4x5=20**

- 2. Explain briefly method of determining mechanisms based on isotopic labelling.
- 3. Write a note on conformational analysis of cyclohexane.



4. Describe the structure and reactivity of oxazole.
5. Write a brief note on synthesis of Vitamin - A.
6. Briefly explain the solution of Schrodinger wave equation for a free particle.
7. Describe the mechanism of thermal and photochemical reactions between hydrogen and chlorine.

## SECTION - C

Answer **any three** of the following questions. Each question carries **ten** marks.

**3x10=30**

8. (a) Explain the method of determining mechanisms based on isotopic effects from stereochemical evidences. **6**  
(b) Write a note on energy levels for benzyl cation. **4**
9. (a) Describe Ruff degradation method in chain shortening in aldoses. **6**  
(b) Explain briefly the synthesis of aldaric acids in carbohydrates. **4**
10. (a) Describe the synthesis of Vitamin-B<sub>1</sub>. **6**  
(b) Write a short note on biological importance of Vitamin-E. **4**
11. (a) Describe the application of schrodinger equation to rigid rotator. **6**  
(b) Write a note on angular momentum operators. **4**
12. (a) Write a note on comparison of enzyme catalysed and chemical catalysed reactions. **6**  
(b) Describe briefly the Lineweaver-Burk plot in case of enzyme catalysis. **4**

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