



**B.Sc. V Semester Degree Examination, April/May - 2024**

**CHEMISTRY - VI**

**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) What are non-alternant hydrocarbons ?
  - (b) Write Taft equation.
  - (c) Define Cram's rule.
  - (d) Write the Haworth Structure of glucose.
  - (e) Write the structure of imidazole.
  - (f) Mention the chemical name of Vitamin B<sub>1</sub>.
  - (g) What is Hamiltonian operator ?
  - (h) Mention the types of angular momentum operators.
  - (i) What are fast reactions in kinetics ?
  - (j) What is homogeneous catalysis ?

**SECTION - B**

Answer **any four** of the following questions. Each question carries **five** marks.

**4x5=20**

- 2. Draw the energy levels for benzyl cation.
- 3. Write a note on conformational analysis of cyclobutane.
- 4. Describe the structure and reactivity of thiazole.
- 5. Explain Quantum Mechanical degeneracy.
- 6. Write a short note on Flash photolysis.
- 7. Explain briefly temperature jump method of fast reactions in Kinetics.



## 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 Structure of products. **6**  
(b) Write the energy levels for benzyl carbanion. **4**
- 9.** (a) Write briefly the Kiliani-Fischer synthesis in chain lengthening in aldoses. **6**  
(b) Write a note on epimerization. **4**
- 10.** (a) Describe the synthesis of Vitamin-B<sub>6</sub>. **6**  
(b) Write the biological importance of Vitamin-E. **4**
- 11.** (a) Describe the application of Schrödinger equation to harmonic oscillator. **6**  
(b) Explain briefly commutation of operators. **4**
- 12.** (a) Write a note on Henri-Michaelis-Menten mechanism for enzyme catalytic reaction. **6**  
(b) Explain the effect of enzyme concentration and pH on enzyme activity. **4**

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