

(3 Hours)

[Total Marks: 80]

- N.B.** 1) Q.No. 1 is **compulsory**.  
2) Attempt any **3** questions from Q.No. 2 to 6.

- Q1. Answer the following (any 4):- [20]
- What are Vitamins? Explain the role of vit D in calcium metabolism.
  - What are the various non-covalent interactions in biomolecules.
  - What are peptide bonds? explain its nature and relevance in a biomolecules.
  - Explain the First Law of Thermodynamics.
  - Explain the effect of pH on enzyme activity.
- Q2. Give structure and functions of the following: [20]
- tRNA
  - Hemoglobin
  - Insulin
  - Starch
- Q3. a. What are enzymes? How does the enzyme work? Add a note on an enzyme which is not protein in nature. [10]
- b. Define : i. Activation energy [10]  
ii. Transition Energy  
iii. Binding Energy  
iv. Vmax
- Q4. Describe the following pathways in detail: [20]
- TCA Cycle
  - Z pathway
- Q5. a. Explain the steps involved in oxidative decarboxylation of Pyruvate to acetyl-CoA by the PDH complex. [10]
- b. Explain the  $\alpha$  and  $\omega$  oxidation of fatty acids. [10]
- Q6. Write short notes on: [20]
- Peptide Bond
  - $\alpha$ -helix
  - Calcitonin
  - Vit E