



Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD (now MoE)

Re-accredited with an A++ Grade by NAAC CGPA 3.65/4, Category I by UGC

Coimbatore - 641043, Tamil Nadu, India

Continuous Internal Assessment II –October 2025 III Semester

Class : II UG
Major : Biochemistry and Biotechnology

Time : 2 Hours
Max. Marks : 60

23BBCC03 Proteins and Enzymes

Course Outcomes:

- CO1: Describe the isolation and purification of protein by various methods and to estimate the amount of proteins
CO2: Classify the protein based on structure, solubility and function. Understand the methods of sequencing of amino acid and proteins
CO3: Acquire theoretical knowledge on various methods of measurement of enzymatic reactions and understanding the enzyme kinetics and the mechanism of action of enzymes
CO4: Appreciate the role of enzyme in regulation of metabolism
CO5: Understanding the role of enzymes in clinical diagnosis and industries

Part A

Choose the Correct Answer

6 x 1 = 6

- The first step in the Edman degradation method is
a. Conversion to PTH derivative
b. Cleavage of the peptide chain completely
c. Reaction of N-terminal amino acid with PITC
d. Identification of the amino acid
CO2K2
- The lock and key hypothesis was proposed by
a. Michaelis and Menten b. Emil Fischer c. Linus Pauling d. Koshland
CO3K2
- Catalysts increase the rate of reaction by
a. Increasing activation energy b. Decreasing activation energy
c. Increasing free energy change (ΔG) d. Changing equilibrium constant
CO3K2
- Which of the following is not a method to measure enzyme activity?
a. Spectrophotometry b. Manometry c. Colorimetry d. X-ray diffraction
CO4K3
- Lysozyme catalyzes its reaction mainly through
a. Acid-base catalysis b. Metal ion catalysis c. Radical catalysis d. Photocatalysis
CO4K2
- The most widely used method for chemical synthesis of peptides is
a. Solid-phase peptide synthesis (SPPS) b. Enzyme catalysis
c. Ribosomal protein synthesis d. Recombinant DNA method
CO5K2

Part B

Answer ALL questions

3 x 6 = 18

Each answer should not exceed 400 words or two pages

- a. Describe the tertiary structure of myoglobin with a neat diagram.
(or)
b. Illustrate the secondary structure of protein.
CO2K2
CO3K2
- a. Give a structured overview of isoenzymes including their tissue distribution and biological functions.
(or)
b. Explain enzyme compartmentalization and its significance in cellular metabolism.
CO3K2
CO4K2
- a. Outline the concepts of enzyme unit, turnover number, and katal, and their significance in enzyme kinetics.
(or)
b. Discuss site-directed mutagenesis, its purpose, and outline the general steps involved in the technique.
CO4K2
CO5K2

Part C

Answer ALL questions

3 x 12 = 36

Each answer should not exceed 800 words or four pages

- Illustrate the structure of proteins with examples of insulin, collagen, and hemoglobin. Explain their structural features and functional significance.
CO2K3

- 11.a. Elaborate on titrimetric and spectrometric methods for measuring enzyme activity, with explanation of the underlying principles, steps involved, and representative examples. CO4K2
(or)
11.b. Discuss the enzyme-mediated regulation of metabolism. CO4K2
12.a. Explain the chemical synthesis of peptides with examples. CO5K2
(or)
12.b. Discuss immobilization of enzymes methods, advantages, and applications with examples. CO5K2

Total Number of QP: 60(aided)+40 (SF) = 100

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18