

B.Sc. Semester-5 Examination**CC 304****Bio-Technology****March-2024****Time : 2-30 Hours]****[Max. Marks : 70**

Question 1: Derive Michaelis-Menten equation and mention its significance. (14 Marks)

OR

Question 1(A): What is the importance of an Enzyme Commission (EC) number, and how is it assigned to enzymes? (7 Marks)

Question 1(B): Describe the various factors that influence the enzymatic activity. (7 Marks)

Question 2: How does enzyme inhibition affect biological reactions, and what are the different types of enzyme inhibition mechanisms? (14 Marks)

OR

Question 2(A): What factors contribute to the classification of the pyruvate dehydrogenase complex as a multi-enzyme complex? (7 Marks)

Question 2(B): Describe lactate dehydrogenase as an isozyme? (7 Marks)

Question 3: How can different purification techniques based on protein characteristics such as size, mass, and solubility be employed to isolate and refine specific proteins? (14 Marks)

OR

Question 3(A): Explain the production of glucose isomerase and T4 DNA ligase. (7 Marks)

Question 3(B): What are some key industries and their specific applications where enzymes play a crucial role, and how do enzymes benefit these industries? (7 Marks)

Question 4: How is protein engineering utilized to modify proteins, and what are some methods and examples of enzyme engineering techniques employed in this field? (14 Marks)

OR

Question 4(A): What are the various methods and advantages of enzyme immobilizations. (7 Marks)

Question 4(B): What are Biosensors? Explain its types and applications. (7 Marks)

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Question 5: Attempt any seven questions (2 Mark each)

(14 Marks)

1. Define turnover number of an enzyme?
 2. What is lock and key model of an enzyme?
 3. Define K_m and V_{max} of an enzyme.
 4. What are ribozymes?
 5. What is the full form of PLP and TPP?
 6. What are Allosteric regulators?
 7. Define coenzyme with suitable examples.
 8. What are Isozymes?
 9. Write the name of the substrate and the product of a chemical reaction catalysed by amylase.
 10. What is the commercial use of Glucose isomerase?
 11. What is salting in and salting out?
 12. Write two advantages and disadvantages of immobilization of cells.
 13. What is the role of transducer in biosensor?
 14. What is an example of a supercritical fluid?
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