

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021****Subject Code:2170401****Date:23/11/2021****Subject Name:Enzymes and Proteins****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	MARKS
Q.1 (a) What are the first digits according to Enzyme classification system for all main classes of enzymes?	03
(b) Which class of enzyme catalyses conversion of L glutamate to L glutamine?	04
(c) Explain the advantages of covalent methods for enzyme immobilization over physical method of immobilization and Explain any two platforms of next generation sequencing	07
Q.2 (a) What is turnover number? It is determine by which expression?	03
(b) Elaborate on the effectiveness factor of an immobilized enzyme.	04
(c) Derive Michaelis-Menten equation with Briggs-Haldane modification.	07
OR	
(c) Write a detailed note about significance of Michaelis- Menten equation	07
Q.3 (a) Draw the principle of Edman degradation for peptide sequencing	03
(b) Explain encapsulation as a means for immobilization of proteins	04
(c) Derive the equation of Haldane relationship for reversible reactions.	07
OR	
Q.3 (a) Draw the principle of Sangers sequencing of DNA	03
(b) Explain the diagnostic application of enzymes	04
(c) Explain control of protein activity using an inhibitor	07
Q.4 (a) Which enzymes are derived from plant sources, which industries use them? What are the EC numbers of these enzymes	03
(b) Which type of enzyme immobilization Is used for biodiesel formation, why?	04
(c) When you want to study the percentage of alpha helices, beta sheets and random coils, which technique will you use? Explain the principle for the same.	07
OR	
Q.4 (a) Give commercial application of enzymes in food and pharmaceutical industries.	03
(b) Explain control of protein activity through allosteric interaction.	04
(c) Justify the statement “ selection has tuned vertebrate opsins so that the adsorption maximum matches the light environment	07

- Q.5** (a) How can we use ammonium sulphate for purification of proteins? **03**
(b) Explain the use of X-ray free electron laser for determination of dynamic protein structure determination. **04**
(c) What are different ways by which proteins evolve new functions **07**

OR

- Q.5** (a) Name at least 3 enzymes of microbial origin, and give their industrial use. **03**
(b) Give brief summary of comparative analysis of different globins that depict sequence structure relation and evolution of full length globins. **04**
(c) To what constraints are pathways of protein evolution subject **07**
