JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech.-V Semester (BT)

COURSE CODE (CREDITS): 25B1WBT733 MAX. MARKS: 15

COURSE NAME: Industrial Enzyme Technologies

COURSE INSTRUCTOR: Dr. Ashok Kumar Nadda MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator is not allowed

Q.No	Question	CO	Marks
	Section I		
Q 1	A) Do enzymes change the equilibrium constant of a reaction?	**CO I**	**1**
	B) Name one factor that affects enzyme activity. What is meant by enzyme saturation?	**COII**	**1**
	C) What is the optimum temperature of an enzyme? What is meant by enzyme denaturation?	**COII**	**1**
	D) Define the terms coenzyme and cofactors. How do these differ from each other?	**COI**	**1**
	E) Define activation energy. What is the role of enzymes in biochemical reactions?	**COI**	**1**
	Section II		
Q2	Explain the lock-and-key model and induced-fit model of enzyme substrate interaction. Which model better explains enzyme specificity?	**COI , COII**	**1.5**
Q3	An enzyme catalyzes the transfer of a phosphate group from ATP to glucose and another enzyme catalyzes the hydrolysis of a peptide bond using water. Identify the enzyme class and explain your answer.	**COI, COII**	**1.5**

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Q4	How do changes in amino-acid sequence can affect the structure and catalytic activity of an enzyme? How does temperature affect the rate of an enzyme-catalyzed reaction?	**COII**	**2.0**
	Section III		
Q5	Does an enzyme change the ΔG of a reaction? Explain your answer with a suitable energy diagram. Explain the difference between free-energy change (ΔG) and activation free energy (ΔG‡).	**COIII**	**2.5**
Q6	Why the transition state is often described as a high-energy and unstable state? Why does the reaction velocity eventually become constant even when substrate concentration continues to increase?	**CO1, COIII**	**2.5**