

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI

(MID SEMESTER EXAMINATION)

CLASS: BTECH
BRANCH: BIOTECH

SEMESTER: IVth
SESSION: SP/2025

SUBJECT: BE216 ENZYME TECHNOLOGY

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
 2. Candidates attempt for all 25 marks.
 3. Before attempting the question paper, be sure that you have got the correct question paper.
 4. The missing data, if any, may be assumed suitably.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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			CO	BL
Q1	(a) Explain multifunctional enzyme with example.	[2]	CO1	BL2
Q1	(b) An enzyme preparation contains 6 mg/mL protein. The specific activity of enzyme is 21 units/mg proteins. Calculate the initial velocity of the reaction in a standard 1 mL reaction mixture containing 20 μ L of preparation.	[3]	CO1	BL4
Q2	With the help of equations, explain how the Lineweaver-Burk plot and kinetic parameters changes with 3 types of reversible enzyme inhibitions.	[5]	CO2	BL3
Q3	(a) Discuss acid-base catalysis with example.	[2]	CO2	BL2
Q3	(b) Analyze any two factors that influence enzyme activity.	[3]	CO1	BL3
Q4	For an enzyme preparation, $V_{max} = 17 \mu\text{mole/L/min}$ and $K_m = 3.7 \times 10^{-5} \text{ M}$. what would be the velocity at $2 \times 10^{-4} \text{ M}$ substrate and $4 \times 10^{-4} \text{ M}$ uncompetitive inhibitor at $K_i = 3 \times 10^{-4} \text{ M}$? Calculate degree of inhibition.	[5]	CO2	BL5
Q5	(a) Name any two enzyme characterization techniques.	[2]	CO3	BL2
Q5	(b) Write an overview on enzyme purification techniques.	[3]	CO3	BL3

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