25BCP103

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **BIOCHEMISTRY**

ENZYMES AND ENZYME TECHNOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which model describes the dynamic nature of the active site, where it changes shape to fit the substrate? a) Lock and Key Model b) Induced Fit Model c) Rigid Template Model d) Fluid Mosaic Model	K1	CO5
	2	Which enzyme is a classic example of a multienzyme complex, specifically involved in the conversion of pyruvate to acetyl-CoA? a) Pyruvate Kinase b) Pyruvate Dehydrogenase Complex c) Citrate Synthase d) Malate Dehydrogenase	K2	CO1
2	3	The activation energy of enzyme catalysted reaction a) increases b) decreases c) depends on the nature of the reaction d) zero	K1	CO5
	4	What is the primary function of superoxide dismutase (SOD)? a) To catalyze the hydroxylation of a substrate b) To degrade peptide bonds c) To convert superoxide ions (O_2^-) into hydrogen peroxide and oxygen d) To convert primary amines to aldehydes	K2	CO1
3	5	When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained? a) Hyperbolic curve b) Parabola c) Straight line with positive slope d) Straight line with negative slope	K1	CO5
	6	Feature of the competitive inhibition include a) Vmax increases b) Vmax decreases c) Vmax remains constant d) None of the above	K2	CO1
4	7	The allosteric inhibitor of an enzyme _____. a) Causes the enzyme to work faster b) Binds to the active site c) Participates in feedback regulation d) Denatures the enzyme	K1	CO5
	8	In acid-base catalysis, what is the primary role of the acid or base catalyst? a) To directly incorporate into the product of the reaction. b) To increase the activation energy of the reaction. c) To donate or accept protons, thereby stabilizing reaction intermediates. d) To completely absorb the reactants.	K2	CO1

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5	9	Which of the following is a disadvantage of an immobilized enzyme? a) Immobilization process allows continuous process b) Immobilization mean additional cost c) Increase productivity d) Immobilization prevents loss of activity	K1	CO5
	10	Which of the following property may not be improved or altered using genetic engineering? a) Yield and Kinetics b) Various safety aspects c) Ease of downstream processing d) Accurate, precise, reproducible and linear	K2	CO1

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Describe the Characteristic features of active site in an Enzyme.	K1	CO5
		(OR)		
	11.b.	Outline the Affinity labeling using active site directed reagents.		
2	12.a.	Elborate the Metalloenzymes in detail.	K2	CO1
		(OR)		
	12.b.	Interpret the role of PP as coenzymes.		
3	13.a.	Investigate the LB plot of Enzyme substrate complex.	K3	CO2
		(OR)		
	13.b.	Tabulate the features of Non competitive enzyme inhibition.		
4	14.a.	Analyse the Sequential and concerted models of allosteric regulation.	K4	CO4
		(OR)		
	14.b.	Explain the mechanism of action of lysozyme.		
5	15.a.	Evaluate how Enzyme is acting as biosensor.	K5	CO3
		(OR)		
	15.b.	Discuss on the Design and construction of Novel Enzymes.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Classify enzymes in detail.	K2	CO1
2	17	Outline how NAD acts as coenzyme in dehydrogenase reactions.	K1	CO5
3	18	Narrate Enzyme inhibition in detail.	K3	CO2
4	19	Describe the Covalent method of enzyme catalysis.	K4	CO4
5	20	Explain the various methods of Enzyme immobilization.	K5	CO3

Z-Z-Z END