PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 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 of the following technique is commonly used to determine the three-dimensional structure of an enzyme's active site? (i) Spectroscopy (ii) Centrifugation (iii) X-ray crystallography (iv) Electrophoresis	K1	CO1
	2	Show which of the following is the multienzyme complex. (i) Hexokinase (ii) Pyruvate dehydrogenase (iii) Pyruvate kinase (iv) Lactate dehydrogenase	K2	CO1
2	3	What type of reactions does tetrahydrofolic acid (THF) primarily participate? (i) Transfer of one-carbon groups (ii) Redox reactions (iii) Phosphorylation (iv) Hydrolysis	K1	CO2
	4	Select the following enzyme that function as metalloenzyme. (i) Carbonic anhydrase (ii) Amylase (iii) Lactase (iv) Pepsin	K2	CO2
3	5	What does a steep slope indicate in a Lineweaver-Burk plot? (i) Low Km (ii) High Km (iii) High Vmax (iv) Low Vmax	K1	CO3
	6	Identify the following that is a common example for suicide inhibitor. (i) Ibuprofen (ii) Methotrexate (iii) Acetaminophen (iv) Penicillin	K2	CO3
4	7	Which of the following enzymes that are involved in the feedback inhibition? (i) Apoenzymes (ii) Holoenzymes (iii) Allosteric enzymes (iv) Coenzymes	K1	CO4
	8	Label the substrate does lysozyme specifically act upon. (i) DNA (ii) RNA (iii) Lipids (iv) Peptidoglycan	K2	CO4
5	9	Name the method that involves trapping enzymes within a polymer matrix or gel. (i) Adsorption (ii) Encapsulation (iii) Cross-linking (iv) Chemical synthesis	K1	CO5
	10	How is enzyme engineering utilized in the textile industry? (i) For dyeing fabrics with natural colors (ii) For creating synthetic fibers (iii) For improving fabric softness and removing stains (iv) For increasing the durability of textiles	K2	CO5

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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.	List out the IUB classification enzymes with example.	K4	CO1
		(OR)		
	11.b.	What are multienzyme complexes? Explain with one example.		
2	12.a.	Distinguish between glutathione peroxidase and glutathione reductase.	K4	CO2
		(OR)		
	12.b.	Compare and contrast metalloenzymes and metal activated enzymes. Give example.		
3	13.a.	Explain and derive Michaelis – Menten equation.	K5	CO3
		(OR)		
	13.b.	Criticize the difference between irreversible inhibitors and suicide inhibitors.		
4	14.a.	Formulate the enzyme catalysis by metals with example.	K6	CO4
		(OR)		
	14.b.	Elaborate the nature and action of lysozyme.		
5	15.a.	Interpret on how enzymes act as biosensors in various instruments.	K5	CO5
		(OR)		
	15.b.	Explain in detail about artificial enzymes with example.		

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	Explain about the active site and describe the investigation process for active site structure.	K5	CO1
2	17	Classify the coenzymes and explain the structure and mechanism of action of any two coenzymes.	K4	CO2
3	18	Elaborate the types on reversible enzyme inhibition.	K6	CO3
4	19	Explain the mechanism of action of enzymes by general acid base catalysis.	K5	CO4
5	20	Compare the industrial application of immobilized enzymes and enzyme engineering.	K4	CO5

Z-Z-Z   END