

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)
Branch - **BIOCHEMISTRY**

ENZYMOLOGY

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	An enzyme is a biological _____ that speeds up chemical reactions in living organisms. a) substrate b) catalyst c) inhibitor d) product	K1	CO1
	2	The active site of an enzyme is the region where _____ binds and the reaction occurs. a) product b) substrate c) coenzyme d) water	K2	CO1
2	3	An example of an oxidoreductase enzyme is _____. a) Amylase b) Catalase c) Lipase d) Trypsin.	K1	CO2
	4	In enzyme kinetics, Km is the substrate concentration at which the reaction rate is _____ of its maximum value. a) 25% b) 50% c) 75% d) 100%	K2	CO2
3	5	Competitive inhibition occurs when an inhibitor binds to the _____ of an enzyme, preventing the substrate from binding. a) product b) allosteric site c) active site d) coenzyme	K1	CO3
	6	In competitive inhibition, the inhibitor competes with the substrate for the active site, while in non-competitive inhibition, the inhibitor binds to _____. a) the active site b) a different site on the enzyme c) the substrate d) the product	K2	CO3
4	7	An isozyme involved in metabolism is _____. a) Lactase b) Hexokinase c) Amylase d) Lipase	K1	CO4
	8	The role of lactate dehydrogenase is to convert pyruvate into _____ during anaerobic respiration. a) glucose b) acetyl-CoA c) lactate d) ethanol?	K2	CO4
5	9	A therapeutic enzyme used in clinical diagnostics is _____. a) Streptokinase b) Trypsin c) Amylase d) Lipase	K1	CO5
	10	Enzyme immobilization refers to the technique of attaching enzymes to a _____ to improve their stability and reusability. a) substrate b) product c) solid support d) enzyme	K2	CO5

Cont...

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.	Explain the structure and function of NAD ⁺ in enzymatic reactions.	K2	CO1
		(OR)		
	11.b.	Describe the role of coenzymes in enzyme activity.		
2	12.a.	Discuss the Michaelis-Menten equation and its significance in enzyme kinetics.	K3	CO2
		(OR)		
	12.b.	Explain the concept of V _{max} in enzyme reactions.		
3	13.a.	Describe the mechanism of enzyme inhibition using the example of competitive inhibition.	K3	CO3
		(OR)		
	13.b.	Differentiate between reversible and irreversible enzyme inhibitors.		
4	14.a.	Discuss the importance of isozymes in clinical diagnosis	K3	CO4
		(OR)		
	14.b.	Explain the role of pyruvate dehydrogenase in cellular metabolism.		
5	15.a.	Explain enzyme immobilization techniques and their applications in industry.	K4	CO5
		(OR)		
	15.b.	Discuss the use of enzymes in the food industry, focusing on amylases.		

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	Describe the isolation and purification methods of enzymes from biological tissues.	K4	CO1
2	17	Explain the role of allosteric regulation in enzyme activity.	K5	CO2
3	18	Discuss the different types of enzyme inhibition and their mechanisms.	K5	CO3
4	19	Explain the importance of enzyme kinetics in understanding metabolic pathways.	K5	CO4
5	20	Discuss the role of enzymes in biotechnology and their applications.	K5	CO5

Z-Z-Z END