

Reg.No.:

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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 90004

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025

Fifth Semester

Biotechnology

U23BT514 – ENZYME ENGINEERING

(Regulation 2023)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Write about the significance of the EC number.	2	K1	CO1
2.	Define - katal.	2	K1	CO1
3.	Mention the importance of turnover number.	2	K1	CO2
4.	What are allosteric enzymes?	2	K1	CO2
5.	Differentiate between competitive and non-competitive inhibition.	2	K2	CO3
6.	Explain the suicide inhibition.	2	K2	CO3
7.	List the steps involved in the purification of an enzyme.	2	K1	CO4
8.	Write down the advantages and disadvantages of enzyme immobilization.	2	K1	CO4
9.	Difference between pectolytic and proteolytic enzymes.	2	K1	CO5
10.	Explain a thrombolytic enzyme with an example.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	i. Enumerate the classes of enzymes with examples.	8	K2	CO1
	ii. Explain the collision theory in detail.	5		

(OR)

	b)	i. Discuss the transition state theory in detail.	5	K2	CO1
		ii. Classify the different types of enzyme specificity.	8		
12.	a)	Derive the Michaelis-Menten equation.	13	K2	CO2
		(OR)			
	b)	Elaborate in detail about the kinetics of multi-substrate enzyme-catalyzed reactions.	13	K2	CO2
13.	a)	i. Write in detail about the enzyme deactivation kinetics.	8	K3	CO3
		ii. Discuss in detail about allosteric regulation of enzymes.	5		
		(OR)			
	b)	Write in detail about the types of enzyme inhibition.	13	K3	CO3
14.	a)	Explain in detail the extraction, purification, and characterization of enzymes from microbial sources.	13	K3	CO4
		(OR)			
	b)	Elaborate the physical methods for enzyme immobilization.	13	K3	CO4
15.	a)	i. Depict the diagnostic and therapeutic enzymes in detail.	8	K3	CO5
		ii. Exemplify the enzymes and their application brewing industry.	5		
		(OR)			
	b)	i. Discuss the application of enzymes in the fruit juice industry.	5	K3	CO5
		ii. Illustrate the role of enzymes in the leather and detergent industry.	8		

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16.	a) Enzymatic transesterification is commonly used for biodiesel production. Which enzyme is used for the conversion of triglycerides into fatty acid methyl ester? Explain the process of enzyme production from microbial sources.	15	K3	CO4
	(OR)			
	b) i. Elucidate the chemical methods for enzyme immobilization.	7	K3	CO4
	ii. Describe the enzymatic essays for pectinase and trypsin enzymes.	8		