Model Question Paper-1 with effect from 2021-22 (CBCS Scheme)

Sixth Semester B.E. Degree Examination

Subject Title: Enzyme Technology

Time : 3 hours Max marks: 100

Note : Answer any FIVE full questions, choosing ONE full questions from each module					
Module-1					
1	a.	Describe the basic structure of enzymes and explain how this structure enables them to perform their biological functions within cells.	CO1	L1	10
	b.	Following the guidelines established by the Enzyme Commission, categorize enzymes into different groups and provide an example for each group to demonstrate your understanding.	CO1	L2	10
Or					
2	a.	Outline the various methods used for purifying enzymes from their sources	CO1	L1	10
	b.	Explain the diverse mechanisms involved in enzyme-catalyzed reactions.	CO1	L2	10
Module-2					
3	a.	How does Flavin nucleotide act as a coenzyme?	CO2	L1	10
	b.	Discuss the differences between enzyme activity measurements using fixed incubation and kinetic methods	CO2	L2	10
Or					
4	a.	Describe the role of Nicotinamide nucleotide as a coenzyme.	CO2	L1	10
	b.	How to standardize and optimize enzyme assays for research and industry?	CO2	L2	10
Module-3					
5	a.	Explain the process of standardizing and optimizing rapid, reliable, and reproducible enzyme assays for use in both research and industry.	CO2	L2	10
	b.	Analyze the differences in kinetics between enzyme-catalyzed reactions of immobilized enzymes and free enzymes, and evaluate how these differences impact reaction rates and efficiency.	CO3	L3	10
Or					
6	a.	Describe how immobilized amino acid acylase is used to separate racemic mixtures	CO2	L2	10
	b.	Examine the kinetics of immobilized enzymes, specifically in relation to solute partition and solute diffusion mechanisms.	CO3	L3	10
Module-4					
7	a.	Analyze the application of molecular imprinting techniques in incorporating remote functionalization mechanisms into steroid templates of artificial enzymes.	CO2	L3	10
	b.	Develop strategies to identify and resolve host-guest complexation chemistry between enzymes and substrates, enabling the rational and confident design of synthetic enzymes tailored to perform specific functions and tasks.	CO3	L4	10

		Or			
8	a.	Develop a comprehensive approach integrating chemical and biological methods to transform progesterone into therapeutically superior adrenal hormones like prednisolone, employing hydroxylation and dehydrogenation mechanisms.	CO2	L3	10
	b.	Analyze the multifaceted role of angiotensin-converting enzyme within the renin-angiotensin-aldosterone system (RAAS), elucidating its pivotal significance in the management of conditions including high blood pressure, heart failure, diabetic nephropathy, and type 2 diabetes mellitus.	CO3	L4	10
		Module-5			
9	a.	Explain the diagnostic process of myocardial infarction using isoenzyme levels.	CO3	L3	10
	b.	Formulate a comprehensive strategy for utilizing patterns of enzymes in blood samples to trace diseases such as liver necrosis.	CO3	L4	10
		Or			
10	a.	Devise a detailed manufacturing strategy aimed at substituting hazardous chemical ingredients in domestic detergents with enzymes that demonstrate efficient performance under mild conditions.	CO3	L4	10
	b.	Describe how enzymes are applied in wool processing.	CO3	L3	10