Reg. No. : | | | | | | | | | | | | |

Question Paper Code: UC101S

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Professional Elective

Biotechnology

21BTV101- ENZYME TECHNOLOGY

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	Define stereochemical specificity of an enzyme with an example.	CO1-U
2.	Would D-glucose and L-glucose have same enzyme for reaction? Justify your answer.	CO2-App
3.	How Ks value is related to enzyme – substrate affinity?	CO1-U
4.	What is the relationship between Kcat and Km value and write down its significance.	CO1-U
5.	Classify the methods of extraction.	CO1-U
6.	In gel electrophoresis whether the compounds with low molecular size moves faster than the higher size compounds. Justify the statement.	CO2-App
7.	List some application of Immobilized enzyme.	CO1-U
8.	Suggest the type of carrier molecule which has high mechanical stability and give some examples for it.	CO2-App
9.	Draw the block diagram of a biosensor.	CO1-U
10.	Illustrate an electrochemical cell and mention its parts.	CO1-U

PART – B (5 x 16= 80 Marks)

11.	(a)	Explain in detail about the two models that are used to describe the way enzymes interact with substrates?	CO1-U	(16)
		Or		
	(b)	Explain collision theory and transition state theory in detail.	CO1-U	(16)

12.	(a)	Illustrate various inhibition ways in which the enzymatic reaction is stopped. Derive the kinetic equation for each inhibition way and draw the plots for each.	CO2-App	(16)
		Or		
	(b)	Studies on serine proteases are being conducted by a research team. Create a Line Weaver-Burk Plot, using an equation between substrate concentration and beginning velocity, to get the values of Vmax and Km.	CO2-App	(16)
13.	(a)	Suggest a chromatography technique to purify a partially purified enzyme molecule using salting out technique. Justify your answer in detail.	CO3-App	(16)
		Or		
	(b)	Illustrate the application of pectinase enzyme in an industrial process such as food, fermentation, textile, paper, detergent, and pharmaceutical industries.	CO3-App	(16)
14.	(a)	Classify the methods by which the enzymes were immobilized and explain them in detail.	CO1-U	(16)
		Or		
	(b)	Demonstrate the methods of enzyme immobilization and its effect on mass transfer.	CO1-U	(16)
15.	(a)	Demonstrate in detail about the subdiscipline of Chemistry that deals with the study of the relationship between electrical energy and chemical changes.	CO2-App	(16)
		Or		
	(b)	Explain about biosensors that are used in food industry for monitoring the food spoilage and maintaining the food safety parameters with an example.	CO2-App	(16)