KUMARAGURU
college of technology
character is life

Register Number: ……

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Fifth Semester

BIOTECHNOLOGY

BTY113 : Enzyme Technology

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The enzymes involved in feedback inhibition are called as
   a) Allosteric enzymes b) Holoenzymes
   c) Apoenzymes d) Coenzymes
2. The following coenzyme takes part in hydrogen transfer reactions:
   a) NAD^+ b) Coenzyme A
   c) Pantothenic acid d) Biotin
3. The following coenzyme takes part in oxidation reduction reactions:
   a) Pyridoxal phospate b) Lipoic acid
   c) Thiamine diphospate d) Adipic acid
4. Which of the following is the substrate specific enzyme?
   a) Hexokinase b) Thiokinase
   c) Lactase d) Decarboxylase
5. Name the enzyme that catalyses geometric or structural changes within one molecule.
   a) Lyases b) Hydrolases
   c) Isomerases d) Ligases
6. Caging of enzymes by covalent or non-covalent bonds within gels or fibers are called as
   a) Affinity immobilization b) Entrapment
   c) Adsorption d) Covalent binding
7. Size exclusion Chromatography is a widely used polymer characterization method because of its ability to provide good
   a) Charge distribution b) Molecular weight distribution

c) Resolution d) Molar mass distribution

8. Which is an anionic detergent applied to protein sample to linearize and impart a negative charge to the proteins?
   a) SDS b) Deoxycholic acid
   c) CMC d) Surfactants
9. Pectin methyl esterase is widely adopted in _____ industries
   a) Leather and wool b) Defense
   c) Food d) Detergents
10. Biosensors that employ nucleic acid interactions can be referred to as
   a) Bioreceptors b) Bioreceptors
   c) Biosensors d) Genosensors

PART B (10 x 2 = 20 Marks)

11. What is an enzyme activity?
12. Distinguish between collision theory and Transition state theory.
13. Define Turnover number.
14. List the two different types of an allosteric regulation of enzymes.
15. Write any two practical applications of an immobilized enzyme.
16. Name the various materials used for fabrication of immobilization supports.
17. Give any four examples for commercially available Gel Filtration (GF) matrix.
18. State the applications of Affinity Chromatography.
19. Define saccharification.
20. Give the principle of immunosensors.

PART C (5 x 14 = 70 Marks)

21. a) (i) Elucidate the concept of Lock and key model with suitable Diagram. (4)
    (ii) Explicate the classification of enzymes and scheme for generation of EC numbers. (10)

(OR)

    b) (i) Elaborate on the energetics of enzyme substrate complex formation. (4)
    (ii) Give a detailed account on collision and transition theory. (10)

22. a) (i) Derive Eadie – Hofstee plot. (4)
    (ii) Explain about competitive and non competitive types of enzyme inhibition with diagram. (10)

(OR)

	b)	(i)	Comment on Ping pong mechanism.	(4)
		(ii)	Explicate the concept and applications of Monod-Wyman-Changeux model (MWC Model).	(10)
23.	a)	(i)	Summarize the principle and applications of gel entrapment technique with neat diagram	(10)
		(ii)	Mention the advantages and disadvantages of cross linking of enzyme.	(4)
			(OR)	
	b)	(i)	Give a detailed account on covalent modification of enzyme immobilization with suitable examples.	(7)
		(ii)	List the importance of immobilized enzymes in industries.	(7)
24.	a)	(i)	Interpret the role of PAGE in enzyme purification systems	(4)
		(ii)	Explain the steps involved in isolating adenylate kinase from pig muscle.	(10)
			(OR)	
	b)	(i)	Elaborate the principle and applications of Size-exclusion chromatography in enzyme technology.	(10)
		(ii)	How to achieve the selective enzyme purification?	(4)
25.	a)	(i)	Classify enzyme biosensors	(4)
		(ii)	Give a detailed account on the application of enzymes in brewing and wool industries.	(10)
			(OR)	
	b)	(i)	Interpret the current status of enzyme biosensor in Healthcare industry	(4)
		(ii)	Explain the principle, technique and applications of potentiometric biosensor with a suitable sketch.	(10)

****