SARDAR PATEL UNIVERSITY Programme: MSC (Biotechnology) Semester: III Syllabus with effect from: June 2011

Paper Code: PS03CBIT03	Total Creditar
Title Of Paper: Enzymology	Total Creuits: 4

Unit	Description in detail	Weightage (%)
1	Introduction to enzymology and historical developments in enzymology Protein	
	Structure: Primary, secondary, tertiary and quaternary structure, techniques	
	used in enzyme characterization Enzyme classification: IUB enzyme	25 %
	classification.	
	Enzyme Activity: Principle and techniques of enzymatic analysis, factors	
	affecting enzyme Activity, Extraction and Purification of enzyme: Objectives	
	and strategy, separation techniques, test of purity.	
2	Enzyme Kinetics: Bioenergetics and Catalysis Single substrate kinetics: Equilibrium and Staady state kinetics, significance of Km. Umay & Koat, Dra	
	steady state and Relayation kinetics.	
	Multisubstrate kinetics: General rate equation compulsory order random order	
	and ping-pong mechanisms and their primary and secondary plots.	25 %
	Enzyme inhibition and its kinetics: Reversible and irreversible inhibition,	//
	competitive, noncompetitive and uncompetitive, mixed, partial, substrate and	
	allosteric inhibition.	
	Thermal kinetics: Effect of temperature on reaction rate, enzyme stability,	
	Arrhenius equation and activation energy.	
3	Mechanism of Enzyme Action: Enzyme activators, co-enzymes and co-factors	
	in enzyme catalysis, Enzyme and substrate specificity	
	Investigation of active Centre, Factors affecting catalytic efficiency,	25.0/
	Experimental approaches to determine enzyme mechanisms.	25 %
	endonuclease Aspartate transcarbomylase Allosteric enzymes and sigmoidal	
	kinetics: Protein ligand hinding Co-operativity MWC & KNF models	
	Regulation of enzyme activity. Control of metabolic pathways.	
4	Isoenzymes and its physiological significance, Ribozymes and Abzymes	
	Enzyme engineering: Chemical modification of enzymes: methods of	
	modification of primary structure, catalytic and allosteric properties, use of	25 %
	group specific reagents. Enzyme Immobilization Enzymes in non conventional	
	media, Enzymes sensors, Enzymes as analytical reagents	

Basic Text & Reference Books:

- > Fundamentals of Enzymologist: Nicholes C. Price and Lewis Stevens, Oxford Univ. Press.
- > Enzyme Structure and mechanism: Alan Fersht, Reading, USA.
- Understanding Enzymes: Trevor Palmer
- The chemical kinetics of enzyme action: K. J. Laider and P. S. Bunting, Oxford University Press, London.
- Enzymes: M. Dixon, E. C. Webb, CJR Thorne and K. F. Tipton, Longmans, London.
- Proteins: Thomas Creighton
- Biochemistry: Lubert Stryer.

