BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024

Certificate Programme in Enzyme Technology

(For the candidates admitted from the academic year 2005-2006 onwards)

Paper – I

ENZYMES

Unit I

Definition, Nomenclature, Classification of Enzymes – Properties, Enzymes as biological Catalyst.

Unit II

Enzyme activity – Specificity of Enzymes – Units of Enzyme Activity, Turnover number, Factors influencing Enzyme activity, Michaelis Menten Equation.

Unit III

Mechanism of Enzyme action, active side, Lock and Key Hypothesis, Induced fit Hypothesis, Enzyme – Substrate Complex.

Unit IV

Coenzymes – NAD, NADP, FAD, PLP, TPP.

Unit V

Allosterie Enzyme – Phosphofructokinase – Multi Enzyme Complex – Pyruvate dehydrogenase complex, Isoenzymes – Lactate dehydrogenase.

Text Books :

1. Enzymes – Dixon & Webb
2. Biochemistry – Stryer
3. Biochemistry – Corn & Stump
4. Principles of Biochemistrt – Lehninger.

Reference Books :

1. Harpics Biochemistry – Robert K. Murray, Daryl K. Granner, Peter A.Mayes, Victor W.Rodwell.
2. The Enzymes (Vol I & II) – PD Boyter, H Laedy & Myaback (Academic Press, 1973).
3. Enzyme Catalysed reactions – (H Gray (van Nostrand Reinhold, 1971).
4. Enzyme – GH Guttfreybd (Balckwell).

Paper II- Techniques in Enzymes

Unit I

Homogenization and Cell fractionation – Centrifuges – Principle and Instrumentation – Ultracentrifuge (Preparative).

Unit II

Electrophoresis – Principles, Methods, Instrumentation and Application – Agarose gel, PAGE, Cellulose acetate electrophoresis.

Unit III

Chromatography : Principle, Methods and Applications of Affinity Chromatography Column, High Performance liquid Chromatography.

Unit IV

Spectroscopy : Colorimetry – beer – Lambert's Law – Spectrophotometer – Absorption spectra – Principles and Instrumentation, Applications.

Unit V

Immobilifed Enzymes – Methods, Principle and Instrumentation and application. Industrial applications of Enzymes – Amylase, Lipase. Clinical importance of Enzymes – LDH, Creatine kinase, Aspartate transaminase, Alanine transaminase, Alkaline and acid phosphatase.

Text Books :

1. Biophysical Chemistry – Principles and Techniques – Upadhyay, Upadhyay and Nath.

2. Principles and techniques of Practical Biochemistry – Wilson & Walker
3. Principles and techniques of Practical Biochemistry – Williams and Wilson.

Reference Books :

1. Laboratory Manual in Biochemistry – J.Jeyaraman.
2. Practical Biochemistry – Plummer.

Paper III

Practical – Enzyme Technology

1. Isolation of Enzymes – Differential Centrifugation
2. Separation of Enzymes – SDS PAGE
3. Purification of Enzymes – Colomn Chromatography
4. Estimation of Alkaline Phosphatase, Acid Phosphatase.
5. Estimation of SGOT, SGPT.
6. Estimation of LDH.

Text Books:

1. Manuals in Biochemistry – Dr.J.Jayaraman
2. Manuals in Biochemistry – Dr.S.Ramakrishnan
3. Practical Biochemistry – Plummer

Reference Books :

1. Text Book of Clinical Chemistry – Tietz
2. Principles & Techniques of practical biochemistry – Wilson & Walker.

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SCHEME OF EXAMINATIONS

Semester	Title of Paper		Marks
I	Paper I – Enzymes		100
	Paper II - Techniques in Enzymes		100
	Paper III - Practical – Enzyme Technology		100
Total			300