Z-3501 & Z-3502 **BIOCHEMISTRY-I Cr. 4(3+1)**

Theory

Amino acids: Amino acids, their structure and Classification; Properties of amino acids; Peptides; Three dimensional structure of proteins, Secondary and supra secondary structures of proteins; Alpha-Keratin, Collagen and silk; Tertiary and Quaternary structure of proteins, Globular proteins, Myoglobin, Haemoglobin and their oxygen binding properties;. Protein Denaturation; Separation technique; Ion exchange chromatography.

Enzymes: Characteristics of enzymes; enzymes action; Cofactors; Enzyme kinetics, Effect of substrate concentration, pH and temperature enzyme activity; Enzyme Inhibition. Enzymes regulation Allosteric regulation; Reversible covalent modification of Enzymes.

Carbohydrates: Classification, types, characteristics and structure of Monosaccharides; Oligosaccharides and Polysaccharides; Storage and Structural carbohydrates, glycoprotein.

Lipids: Fatty acids, their types and major characteristics; Storage Lipids, Acylglycerols; Waxes; Structural Lipids in membranes, phosphoglycolipids, Sphingolipids,; Glycolipids and their role; Isoprenoids, Terpenoids and Sterols; Major functions of Lipids; Lipoproteins, their types and major functions; Prostaglandin.

Nucleic Acids: Structure of DNA and RNA.(The functional aspects will be dealt in Cell biology course)

Recommended text book

1. David L. Nelson, and Michael M. Cox, 2000. Lehninger Principles of Biochemistry, 3rd Ed., Macmillan Worth Publishers, New York.
2. Murray, R.K., Granner, D.K., Mayer, P.A. and Rodwells, V.W., 2000. Voet. D., Voet, J.G., and Pratt, C.W., 1999. Fundamentals of Biochemistry, John Wiley and Sons, Inc., New York.
3. Zubay, G., 1995. Biochemistry, 4th Ed., Wm. C. Brown Publishers, Inc., Oxford, England.
4. Stryer, L., 1995. Biochemistry, 6th Ed., W.H. Freeman and Company, New York.

Practicals

Preparation of standard curve for glucose by *ortho*-Toluidine method; Estimation of glucose from blood serum or any other fluid using *ortho*-Toluidine technique. Tests for detection of carbohydrates in alkaline medium. Tests for detection of carbohydrates in acidic medium. Tests for detection of Disaccharides. Tests to demonstrate relative instability of glycosidic linkage in carbohydrates. Detection of Non-Reducing sugars in the presence of Reducing sugars. Demonstration of Acid Hydrolysis of Polysaccharide. Determination of pKa values of an amino acid by preparation of titration curves.

Books Recommended

1. Plummer, David T., 1990. An Introduction to Practical Biochemistry, 4th Ed. McGraw-Hill Book Company, London.
2. Wilson, K and Walker, J., 1994. Practical Biochemistry: Principles and Techniques, 4th Ed., Cambridge University Press.
3. Sawhney, S.K and Singh, R., 2008. Introductory Practical Biochemistry, Narosa Publishing House, New Delhi, India.