

PBT3I101 **BIOCHEMISTRY**

**Module-I**

Structure and Function of Carbohydrates: Monosaccharide, Oligosaccharides, Polysaccharides (Starch, Glycogen, Cellulose), Optical Isomerism

Structure and Function of Lipids: Saturated and Unsaturated Fatty Acids, Triacylglycerols, Phosphoglycerides, Sphingolipids, Waxes and Sterol

Structure and Function of Proteins: 20 Amino acids, Peptide bond, Hierarchy of protein architecture, Ramachandran Plot

Structure and Function of Nucleic Acids: DNA, RNA, Double Helix Model of DNA, Denaturation and Renaturation DNA;

Structure and function of Hormones, Minerals and Vitamins

**Module-II**

Principle of Bioenergetics: Bioenergetics and Thermodynamics, Phosphoryl group transfer and energy currency-ATP; Biological Oxidation and reduction reactions

Metabolism-I: Introduction to metabolic processes; Metabolism of Carbohydrates: Glycolysis, TCA Cycle, ETS and Oxidative Phosphorylation, Gluconeogenesis ,

Metabolism of Lipids: Anabolism (Saturated), Catabolism ( $\alpha$ - Oxidation,  $\beta$ -Oxidation) and Energetics of lipid metabolism;

Metabolism Of Nucleic Acids: Catabolism and anabolism of purine and pyrimidine nucleotides.

Photosynthesis: Light reaction and dark reaction.

**Module-III**

Metabolism-II: Metabolism of proteins: Biosynthesis of amino acids (role of precursors);

Enzymes: Properties of Enzyme, Classification of Enzymes, Mechanism of enzyme action, Kinetics of enzyme action, Activation energy, Enzyme Inhibition, Coenzyme

**Text Book**

1. Principle of Bio-Chemistry – Lehinger, Nelson and Cox
2. Biochemistry of Biochemistry by L. Stryer
3. Fundamentals of Biochemistry – Voet & Voet
4. Biochemistry by Zubay.
5. Biochemistry, C.B.Powar & G.R.Chatwal, Himalaya Publishing House.
6. Biochemistry, Rastogi, Tata McGraw Hill.
7. Fundamental of Biochemistry, Jain and Jain