

**Bio-Chemistry (M.D)**  
**POST GRADUATE DEGREE STANDARD**

UNIT I

Cells and Cellular Components

- A. Organisation and Components of eucaryotic cells
- B. Functional role of sub cellular organelles.
- C. Methods of Separation of Sub cellular organelles

UNIT II

Composition, Structure and function of Biomolecules A.

Carbohydrates Monosaccharides, disaccharides, Polysaccharides, Fibres, Amino sugars and muco polysaccharides.

B.

Lipids Fatty acid, Triacylglycerol, Phospholipids, Cholesterol, Lipoproteins, essential Fattyacids and their derivatives.

UNIT III

Enzymology

- A. Classification, Mechanism of action, enzyme kinetics, factors regulating enzyme action
- B. Regulation of enzyme action, enzyme inhibitors
- C. Enzymes of clinical importance
- D. Isoenzymes, Co-enzymes and Co-factors (metallo enzymes)

UNIT IV

Biological Oxidation

- A. Enzymes of oxidation, Components of Electron transport chain
- B. Oxidative Phosphorylation
- C. Inhibitors of Electron transport chain

UNIT V

Digestion and absorption of Nutrients

Carbohydrates, Proteins and Lipids

UNIT VI

Nutrition

Principles involved - BMR, SDA, RDA etc - Protein energy metabolism & Nutritional disorders

UNIT VII

Vitamins

Fat soluble Vitamins and its Deficiency disorders Water soluble Vitamins, its co-enzyme functions and Deficiency disorders Vitamins assay.

UNIT VIII

Metabolism and Regulation

A.

Carbohydrate - Glycolysis, TCA Cycle, HMP shunt Uronic acid pathway, Galactose Glycogen metabolism, Gluconeogenesis, Metabolism of fructose

B.

Diabetes Mellitus - Glycogen Storage Disorders - essential Fructosuria - Fructose intolerance - galactosemia - Lactose intolerance

C.

Lipids-Fattyacid Synthesis and oxidation - Synthesis of TAG, Phospholipids Metabolism of Cholesterol, Lipo Proteins and Glycolipids

D.

Lipid Storage disorders,Refsum Disease,Lipoproteinemia

PAPER - II

UNIT I

Structure and Functions of Proteins and Nucleic Acid

Amino Acids, Structure of Protein, Biologically important Peptides, Physiological Proteins like Hemoglobin, Structural Protein, Myoglobin, Collagen, Immuno globulins, Glycoprotein and Plasma Proteins.

Nucleic Acids-DNA and RNA-Nucleotide Analogues

UNIT II

Metabolism of Amino Acid

Amino Acid Nitrogen and Urea Synthesis. Fate of Carbon Skeleton of Individual Amino Acids into Specialized Products - Hemoglobin synthesis and breakdown, bilirubin metabolism - Nucleic acids - Purine and pyrimidine - synthesis and breakdown

UNIT III

Disorders associated with regulatory pathway

Inborn errors of metabolism - Proteins - Inborn errors of metabolism associated with individual amino acids - Urea cycle disorders- Nucleic acids-Gout, Lesch-Nyhan syndrome, orotic aciduria and other inherited disorders - Porphyrias

-Hemoglobinopathies and Hyper bilirubinaemias

UNIT IV

Molecular Biology

Genetic code, Replication, Transcription, translation, post translational modification - Regulation of gene expression. - Mutation and repair of DNA damage.

DNA Recombinant Technology - its application, gene therapy and molecular basis of diseases

UNIT V

Water and electrolytes and its associated disorders.

UNIT VI

Acid base balance and its disorders

Principles involved - BMR, SDA, RDA etc - Protein energy metabolism & Nutritional disorders

UNIT VII

Hormones and their related disorders

Mechanism of action - Peptide hormones and Steroid hormones etc

UNIT VIII

Functional tests

Assessment of functions of various organs such as Liver, Kidney, Thyroid, Pancreas, GIT, Parathyroid, adrenals and Pituitary

UNIT IX

Principles of conventional and specialized laboratory investigations and Instrumentation

UNIT X

Investigations and Interpretations of results in Health and Disease