Biochemistry BVOCCT-104

**Unit I**

**Chemistry of Cell & Chemistry of Carbohydrates,** **Proteins, Lipids &Nucleotides-**Cell- Structure & Function of Cell Membrane, Subcellular Organelles and their Functions. Carbohydrates- Definition, Classification & Biological importance of carbohydrates, Derivatives of Monosaccharides.Proteins- Definition & Classification of amino acids & Proteins, Biologically important peptides Plasma proteins, Immunoglobulins. Lipids- Definition, Classification & Biological importance and Functions of Lipids. Structure and functions of Cholesterol, types and functions of Lipoproteins. Nucleotides- Structure and Functions of DNA & RNA. Biologically important nucleotides.

**Unit II**

**Enzymes & Acid base balance**, Enzymes- Definition and Classification. Factors affecting enzyme activity. Coenzymes and Cofactors. Enzyme inhibition & Regulation of enzyme activity, Acid Base balance- Acids, Bases & Body Buffers, Regulation of pH, Acid base disorders.

**Unit III**

**Vitamins & Minerals,** Vitamins-Classification, Sources, RDA, Functions( in brief), deficiency manifestations and hypervitaminosis. Minerals- Classification, Sources, RDA, Functions (in Brief), deficiency manifestations of the following: calcium, phosphorous, iron, copper, iodine, zinc, fluoride, magnesium, selenium, sodium, potassium and chloride.

**Unit IV**

**Nutrition, Blood chemistry & Urine Chemistry** Nutrition- Nutrients, Calorific value of food, BMR, SDA, respiratory quotient and its applications, Balanced diet based on age, sex and activity, biological value of proteins, nitrogen balance, Protein energy malnutrition, Total parenteral nutrition, dietary fibers. Blood chemistry- Biochemical components & their reference ranges in normal & diseased states. Urine chemistry- Biochemical components & their reference ranges in normal & diseased states.

**Unit V**

**Clinical Biochemistry-**Specimen Collection- Blood,Urine and Body fluids. Preanalytical, analytical and postanalytical errors Clinical Biochemistry- Parameters to diagnose Diabetes & Cardiovascular diseases. Diagnostic enzymology, Assessment of arterial Blood gas status and electrolyte balance, Point of Care Testing. Renal Function tests( in brief), Liver function tests(in brief), Biomedical Waste Management.

**Practicals:**

1. General Reactions of Carbohydrates.

2. Color reactions of Proteins.

3. Reactions of Non Protein nitrogenous substances.

4. Demonstration of pH meter, Colorimeter and spectrophotometer.

**Recommended books Recent edition**

1. Textbook of Biochemistry -D.M.Vasudevan

2. Biochemistry -Pankaja Naik

3. Clinical Biochemistry-Principles and Practice-Praful.B.Godkar

4. Textbook of Biochemistry-Chatterjea and Shinde

5. Textbook of Clinical Chemistry-Norbert W Teitz