

# VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## M.Sc. Biotechnology (Five years integrated course)

### Semester - II

#### **IBT: 201**

#### **Course Title: Biochemistry – I**

#### **Unit – I (7 hrs.)**

Introduction to molecules of life, their elemental composition, Laws of thermodynamics

#### **Unit – II (7 hrs.)**

Aqueous solutions: Properties of water, water as solvent proton mobility

Acid-Base reactions, concept of pH & pH scale, Henderson-Hasselbalch equations

Buffer concept and pK, equilibrium constant

#### **Unit – III (7 hrs.)**

Chemical interactions: Ionic, covalent, polar, non-polar, H- bonds, hydrophilic and hydrophobic interactions, oxidation – reduction reactions, free radicals, carbonium and carbanion ion, electrophilic and nucleophilic substitutions

#### **Unit-IV (7 hrs.)**

Chemistry of carbohydrates: Nomenclature and structure of monosaccharides, disaccharides and polysaccharides.

Isomerism- concept of chiral, asymmetric carbon atom, structural and stereoisomerism

#### **Unit-V (7 hrs.)**

Chemical properties of alcohol, aldehydes, ketones, amines, thiols, esters and ethers

#### **Unit – VI (7 hrs.)**

Chemistry of amino acids

Types and classification of amino acids

Common properties of amino acids and unusual amino acids

#### **References:**

1. Physical Biochemistry by Freifelder, W.H.Freeman
2. Physical chemistry by P.W.Atkins
3. Biochemistry by Lehninger