CLUSTER UNIVERSITY SRINAGAR

BIOCHEMISTRY
Semester - I
(Credits: Theory-4, Practicals-2)
THEORY

UNIT –I: BIOMOLECULES-I (Amino Acids and Proteins)
Structure and Classification of Amino Acids, Stereoisomerism and RS system, Optical Isomerism, Proteins: Classification, composition and functions, Peptide Bond, Polypeptide Chain (Amino acid sequence) determination, Levels of Protein architecture and forces stabilizing Tertiary/Quaternary Structure.

UNIT-II:. BIOMOLECULES-II (Carbohydrates)
Introduction, Classification of Carbohydrates, Monosaccharides: Open & Ring Structure, Anomeric forms, Mutarotation, Reactions of monosaccharides (reference to Glucose), Structure & functions of Disaccarides, Polysachharides, Proteoglycans, Lipopolysachharides, Mucopolysaccharides.

UNIT-III: BIOMOLECULES-III (Lipids)
Fatty Acids: Nomenclature, Classification, Structure and Properties, Saturated & Unsaturated Fatty Acids, Essential fatty Acids, Hydrolysis, Saponification value, Reichert-Meissel number, Iodine Number, Rancidity, Triacylglycerols and Cholesterol, Phospholipids, Sphingolipids, Prostaglandins & Leucotrienes.

UNIT-IV: BIOMOLECULES-IV (Nucleic Acids & Vitamins)
Composition of DNA & RNA, features of DNA Double Helix, Central Dogma of Molecular Biology.
Vitamins: Fat-soluble & Water-soluble, Deficiencies of Vitamin B_1, Vitamin B_6, Vitamin C, Vitamin D.

PRACTICALS

1. Standardization of Buffers and determination of pH of solutions.
2. Qualitative tests for Amino Acids & Proteins.
3. Qualitative tests for Carbohydrates.
4. Qualitative tests for Lipids.
5. Estimation of Ascorbic acid.

Books Prescribed:

1. Principles of Biochemistry by Lehninger et. al.
2. Laboratory Manual for Biochemistry and Biotechnology by Syed Eazaz Hussain.
3. An Introduction to Practical Biochemistry by Plummer.
4. Bioanalytical Chemistry by Syed Eazaz Hussain Rizvi