

**SARDAR PATEL UNIVERSITY**  
**Programme: B.Sc**  
**Semester: IV**  
**Syllabus with effect from: November - 2012**

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|--|------------------------|
| <b>Paper Code: US04CBCH01</b>                            | <b>Total Credit: 3</b> |
| <b>Title of Paper: Biochemistry of Biomolecules - II</b> |                        |

| Unit       | Description in detail  | Weightage (%) |
|------------|--|---------------|
| <b>I</b>   | <p><b>Protein</b><br/>           Functions of protein. Chemistry of peptide linkage. Structure of protein: Primary, Secondary, Tertiary and Quaternary structure of protein with reference to hemoglobin. Classification of protein: Fibrous, globular, Simple, conjugated and derived proteins. Solubility criteria, salting in and salting out of protein precipitation and denaturation of protein.</p>   | <b>25%</b>    |
| <b>II</b>  | <p><b>Lipids</b><br/>           Bloor's classification of lipids: Simple. Complex: classification, structure, properties- Phospholipids, sphingolipids; glycolipids, sulfolipids, gangliosides, proteolipids, Types and importance of lipoprotein. Triacylglycerides and waxes<br/>           Fatty acids, definition, classification, chemical formulae, physical (taste, odour, solubility, melting point, specific gravity, surface tension) and chemical properties (hydrolysis, Rancidity, hydrogenation and halogenation, auto oxidation, saponification). Chemical analysis of fat to check quality of oil: acid value, saponification number, iodine number, peroxidation number, RM value.<br/>           Structure and properties of animal sterols- Cholesterol<br/>           Amphipathic lipids, bilayer membrane and Micelles.</p> | <b>25%</b>    |
| <b>III</b> | <p><b>Nucleic Acid</b><br/>           Nucleic acid as genetic material- Hershey and Chase experiment, Avery and Mac-Cleod, McCarty experiment.<br/>           Structure and types of RNA: Secondary &amp; tertiary structure of DNA.<br/>           Basic concepts about the secondary structure of nucleic acid 5' - 3' direction, antiparallel strand base composition, base equivalence, base pairing &amp; Chargoff's rule. Types of Plasmids. Definition - gene, genome, chromosome. Concept of organization of gene in eukaryotes and prokaryotes.</p>   | <b>25%</b>    |
| <b>IV</b>  | <p><b>Enzymes</b><br/>           Introduction of enzyme and coenzymes. Classification of coenzymes. Classification of enzyme with examples. Specificity of enzymes. Factors affecting enzyme action.<br/>           Definition - substrate, isoenzyme, oligomeric enzyme, multienzyme, endo enzyme, exo-enzyme, catalytic site.</p>  | <b>25%</b>    |

**Basic Text & Reference Books:**

- Harper illustrated biochemistry by Robbert Murray.
- Lehinger's principles of biochemistry by David L. Nelson and M.M. Cox CBS (4<sup>th</sup> edition)
- Text book of medical Biochemistry by Rana Shindey and Chattergy.
- Out line of biochemistry Conn & Stump.

