

**SARDAR PATEL UNIVERSITY**  
**Programme: BSC (GENETICS)**  
**Semester: VI**  
**Syllabus with effect from: November 2013**

<b>Paper Code:</b> US06CGEN01	<b>Total Credit: 3</b>
<b>Title Of Paper:</b> Biological Chemistry and Metabolism	

<b>Unit</b>	<b>Description in detail</b>	<b>Weighting (%)</b>
<b>1</b>	<b>VITAMINS</b> Vitamins: Definition, Overview of General characteristics, Properties, Metabolism, Effects of deficiencies of water soluble & fat soluble vitamins, Vitamin related co-enzymes and chemical reactions.	
<b>2</b>	<b>ENZYMES</b> Definition, Nomenclature and Classification of enzymes, Introduction to Allosteric enzymes, Inhibitors, Active site, Enzyme kinetics- Derivation of Michaelis-Menten equation, Km and its significance, line-weaver Burk plot and its limitations. Hydrolysis of ATP & energy rich compounds, Biological oxidation-reduction reactions and Redox potential, ATP synthesis.	
<b>3</b>	<b>LIPIDS</b> Lipids: Definition, Overview of [Importance, Nomenclature, General Structure of Fatty acids (Saturated, Unsaturated, Hydroxy and Cyclic)], Biological Roles of Lipids, Lipid metabolism ( $\beta$ , $\alpha$ , $\omega$ oxidation, lipolysis, , fatty acid synthesis)	
<b>4</b>	<b>METABOLISM</b> Carbohydrate metabolism (Glycolysis, Krebs's cycle) Introduction to other pathways of carbohydrate metabolism. Nucleic acid metabolism: <i>de novo</i> synthesis and degradation of purines and pyrimidines Proteins: General features of Trans-amination, Trans-deamination and Urea cycle.	

**Basic Text & Reference Books:**

- Biochemistry - J. M. Berg, John L. Tymoczko, Lubert Stryer W. H. Freeman & Co.
- Essentials of Biochemistry- David Lee Nelson, Albert L. Lehninger, Michael M. Cox . W. H. Freeman & Co.
- Principles and Techniques of practical biochemistry - Keith Wilson, Cambridge University Press.
- Principles of Anatomy and Physiology- Gerard J. Tortora & B. H. Derrickson, John Wiley & Sons.
- Outlines of biochemistry-Conn & Stumpf 5<sup>th</sup> Ed, John Wiley & Sons,
- Biochemistry - U. Satyanarayana. 2<sup>nd</sup> Ed, New Central Book Agency (p) Ltd.
- Medical Biochemistry - Chhaterjee and Ranashinde. 7<sup>th</sup> Ed, Jaypee Publishers
- Fundamentals of Biochemistry: Life at the Molecular level- Voet Donald, John Wiley & Sons.

