

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

<b>Paper Code:</b> US06CMIC03	<b>Total Credit: 3</b>
<b>Title Of Paper:</b> Microbial Biochemistry	

Unit	Description in detail	Weighting (%)
<b>1</b>	<b>Energy metabolism:</b> Introduction to metabolism, Methods of studying intermediary metabolism ATP (Structure, generation, & role, Modes of ATP generation in bacteria Oxidative phosphorylation - ETC - components and organization. Mechanism of Oxidative phosphorylation, ATP synthase Fermentation and substrate level phosphorylation Bacterial photophosphorylation	
<b>2</b>	<b>Carbohydrate metabolism</b> <b>Degradation:</b> EMP, PP & ED pathway of glucose catabolism. Reaction and energies of TCA cycle and its importance. Amphibolic nature of TCA, Anapleuretic reaction and glyoxylate cycle. - Regulation of glycolysis and TCA cycle. <b>Biosynthesis:</b> Gluconeogenesis. CO <sub>2</sub> fixation - Calvin Benson cycle.	
<b>3</b>	<b>Lipid metabolism :</b> <b>Fatty acid degradation:</b> Beta-oxidation of saturated fatty acid - palmitic acid and its energetics Oxidation of mono unsaturated fatty acids - olic acid. Oxidation of Polyunsaturated fatty acid - linoleic acid - $\alpha$ and $\omega$ oxidation of fatty acid <b>Biosynthesis of fatty acid:</b> Biosynthesis of saturated fatty acids Biosynthesis of mono unsaturated fatty acids - aerobic and anaerobic pathway Biosynthesis of poly unsaturated fatty acids - archidonic acid.	
<b>4</b>	<b>Biosynthesis of Amino acids:</b> Aspartate family and Aromatic family. <b>Biosynthesis of Peptidoglycan:</b> <b>Catabolism of Amino acids:</b> Transamination, oxidative deamination, - Urea cycle , Stickland reaction.	

**Basic Text & Reference Books:**

- Principles of Biochemistry - Lehninger ,Nelson and Cox ,4<sup>th</sup> edition
- Biochemistry - Zubay, G. L.
- Biochemistry - Stryer, L.
- General Microbiology - Stanier, R. Y.
- Principles of Microbiology - Ronald M. Atlas
- Biochemistry - Voett and Voett
- Microbiology - Prescott, L. M.
- Microbiology Vol. I & II - Powar & Daginawala
- Biochemistry - S. Satyanarayana

