

SARDAR PATEL UNIVERSITY
Programme: BSC (MICROBIOLOGY)
Semester: V
Syllabus with effect from: June 2013

Paper Code: US05CMIC03	Total Credit: 3
Title Of Paper: Microbial Physiology and Enzymology	

Unit	Description in detail	Weighting (%)
1	Membrane Transport: Membrane structure: fluid mosaic model, Nutrient Transport across the Membrane : Simple diffusion, Porins facilitated diffusion, Porter molecules, Active transport, Sodium-potassium pumps, Group translocation. Siderophores (metal transport), Signal sequence - protein secretion.	
2	Concept of chemotherapy: Nature of target site/biochemical system affected by antimicrobial agents Antibiotics inhibiting growth of microorganisms: Penicillin, Bacitracin, Streptomycin, Tetracycline. Chloramphenicol, Polymixin, Amphotericin - B. Acyclovir, Zidovudine, (AZT) and Sulphonamides. Mechanism of resistance to antibiotics (penicillin and streptomycin) Sporulation and Germination of bacterial endospore. Mechanism of Flagellar movement.	
3	Enzymology - I Structure, Properties and specificity of enzymes, Active site and Allosteric site, Mechanism of enzyme action Factors affecting on enzyme action. IUB system of enzyme Classification. Strategies for purification of enzymes and Case study (UMP Synthase) Introduction to Zymogen and Isoenzymes	
4	Enzymology - II Kinetics of first and zero order reaction. M-M equation-Determination of Km, Vmax and Kcat. Double reciprocal plots. Mechanism of Enzyme inhibition and its kinetics. Multisubstrate reaction (Random orders, sequential and pingpong). Role of vitamins as co-enzymes. Allosteric enzyme and its regulation. Covalent modification, Glycogen phosphorylase	

Basic Text & Reference Books:

- Principles of Biochemistry - Lehninger ,Nelson and Cox ,4th 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 & Dagainawala
- Biochemistry - S. Satyanarayana

