

THEORY SYLLABUS • MICROBIAL BIOCHEMISTRY & METABOLISM (MBT- 201)

UNIT • I

No. of hours: 10

Outline classification and general characteristics of carbohydrates (monosaccharides, disaccharides and polysaccharides). General characteristics of amino acids and proteins. Structure of nitrogenous bases, nucleotides, nucleic acids. Fatty acids (saturated and unsaturated) lipids (spingolipids, sterols and phospholipids).

UNIT • II

No. of hours: 08

Principle and applications of – Colorimetry, Chromatography (paper, thin-layer and column), Spectrophotometry (UV & visible), Centrifugation and Gel Electrophoresis.

UNIT • III

No. of hours: 10

Properties and classification of Enzymes. Biocatalysis - induced fit and lock and key models. Coenzymes and Cofactors. Factors affecting catalytic activity. Inhibition of enzyme activity- competitive, noncompetitive, uncompetitive and allosteric.

UNIT • IV

No. of hours: 10

Microbial Nutrition: Nutritional requirements and uptake of nutrients by cells. Nutritional groups of microorganisms- autotrophs, heterotrophs, mixotrophs. Growth media- synthetic, complex, selective, enrichment and differential media. Microbial Growth- different phases of growth in batch cultures, Synchronous, continuous, biphasic growth. Factors influencing microbial growth. Methods for measuring microbial growth – Direct microscopy, viable count estimates, turbidometry and biomass.

UNIT • V

No. of hours: 10

Aerobic respiration - Glycolysis, HMP path way, ED path way, TCA cycle, Electron transport, oxidative and substrate level phosphorylation. Anaerobic respiration (Nitrate). Fermentation - Alcohol and lactic acid fermentations. Outlines of oxygenic and anoxygenic photosynthesis in bacteria.