

Objective - The main objective is to learn about the major features of growth and metabolism of microorganisms including determination of growth curve environmental influence on the microbial growth and primary and secondary metabolism, and microbial relationships.

- UNIT - 1 Microbial nutrition, cultivation, isolation and preservation:** requirements for growth- physical requirement, chemical requirements, culture media-chemically defined media, complex media, anaerobic growth media, selective media, enrichment culture, Culture methods of microbes- cultivation of aerobes and anaerobes, microbial growth- growth in population, bacterial growth, measurement of growth in bacteria, factors affecting growth in microorganisms.
- UNIT - 2 Enzyme Regulation:** enzymes and their regulation, chemical and physical properties of enzymes, Regulation and Control of Metabolism in Bacteria-Bacterial Adaptation to the Nutritional and Physical Environment, Conditions Affecting Enzyme Formation in Bacteria, Regulation of Enzyme Reactions, Enzyme Repression, Enzyme Induction.
- UNIT - 3 Microbial metabolism:** Introduction, Types, Heterotrophic microbial metabolism, Fermentation, Special metabolic properties, Aerobic respiration, anaerobic respiration, Chemolithotrophy, Phototrophy, Nitrogen fixation, Bacterial genetics- conjugation, transformation, transduction.
- UNIT - 4 Microbial utilization of energy and Biosynthesis:** transport of nutrient 1^o by bacteria, biochemical mechanism of generation of ATP, synthesis of amino acid- glutamate, lysine, glutamine, serine, arginine family, structure and bio synthesis of peptidoglycan, carbohydrates and phospholipids.

Recommended Books:

- Burton's microbiology for the health science, the science of laboratory diagnosis,
- C.P Baveja, "A Textbook of Basic and Applied Microbiology" by K R Aneja
- PRESSCOT