

PBT3I104 MICRO BIOLOGY

Module-I

Introduction to Microbial Kingdom- Bacteria, Viruses, Fungi and Yeast; Classical and Modern approaches of microbial taxonomy; Classification of bacteria, fungi and Viruses; Methods of Microbiology- Culture media, Sterilization, Establishment of pure culture, Staining of bacteria (Gram's, Acid Fast, Capsule), Micrometry and Microscopy(Bright Field, Fluorescence, Phase Contrast and Electron).

Module-II

Microbial growth and metabolism: Pattern of bacterial growth, Growth kinetics, Monod's Equation, Synchronous Growth and its Kinetics, Continuous culture and its growth kinetics, Growth inhibitory substances. Metabolism of carbohydrate in bacteria, Enerdoudorf,s pathway and glyoxalate pathway, Energy transduction mechanism in bacteria, Cyanobacteria and nitrogen fixation, Anaerobic respiration.

Microbial genetics: Organization of bacterial and viral genome, Plasmids and Episomes, Genetic recombination in bacteria (Transformation, Conjugation and Transduction), Genetic analysis in bacteria, DNA repair mechanisms in bacteria, Transposons, Mutation in Microorganisms.

Module-III

Food Microbiology: Microbiology of foods, Types of microbes associated with food spoilage, Food preservation methods, Food poisoning, Microbiology of Milk and dairy products.

Medical Microbiology: disease causing bacteria, virus and fungi; Antimicrobial agents, Antibiotics, Disinfectants and Vaccines

Environmental Microbiology: Microbiology of water, Microbiology of Air, Bacteriological analysis of water & water treatment, Microbiology of extreme environments (Halobacteria, Methanogens, Thermofiles), Microbiology of sewage.

Text Books :

1. Text book of Microbiology by Stanier.
2. Microbiology by Pelczar
3. Brock Biology of micro-organisms
4. Microbiology by Prescott.
5. Microbial Genetics- Freifelder
6. Microbiology and Immunology by B K Patnaik, T.C. Kar, H.N. Thatoi, India-Tech publication. NewDelhi