Subject Code : N2O4

V – MICROBIAL AND PLANT BIOCHEMISTRY.

UNIT – I

Photosynthesis : Chloroplast structure and function – carbon dioxide fixation by C3, C4 and Corn plants – photosynthesis, Hill's reaction, photorespiration, photophosphorylation.
Nitrogen metabolism, transport and storage of nitrogen.
Trace elements in plant nutrition – translocation of inorganic and organic substances.
Plant pigments, isoprenoids, anthocyanines and secondary metabolites. e.g. flavanoids, alkaloids, phenolics, tannins and lectins.

UNIT – II

Classification of bactra, fungi and algae.

Viruses: Morphology, structure, reproduction and mode of infection.

Microbial Growth: Nutritional patterns among organisms, physical and chemical requirements for growth, culture media, mixed and pure cultures, preservation of cultures – phases of growth, measurements of microbial growth, control of microbial growth – conditions influencing control, physical and chemical methods of microbial control.

Macroscopical examination of bacteria, yeast, algae and protozoa. Staining techniques.

UNIT – III

Industrial productin of lactic acid, ethanol, acetone, riboflavin, vitamin B_{12}, penicillin, streptomycin, tetracycline, amylase, cellulase.

Aquatic microbiology of sewage treatment: Fresh water microbial flora, sea water microbial flora, effects of pollution, chemical pollution – test for water purity, water treatment, water born diseases –sewage treatment – primary treatment, BOD – secondary treatment – Sludge digestion, septic tank oxidation ponds, tertiary treatment.

Soil microbiology : Components of soil – microorganisms and biochemical cycle – nitrogen, carbon and sulfur cycles, symbiotic and non-symbiotic nitrogen fixation – degradation of pesticides and other synthetic chemicals.
Mycotoxicosis : Mycotoxins of food contaminants like A.flavus, P.rubrum, P.citrinum, A.candidus and Stachybotraya citra.

UNIT – IV

Germination changes in composition and enzyme activities, factors affecting germination.

Structure and functions of plant hormones., e.g.Auxins, gibberlins, absicic acid.

UNIT – V

Plant pathogens: Common plant pathgens of interest of India, portals of entry, transmission of diseases, resistance to infection – plant diseases caused by bacteria, fungi and viruses, their effects on respiration, photosynthesis and water uptake.

Text Books:

1. Plant Biochemistry :Delin.
2. Text Book of Microbiolgoy : William Burrow
3. The Microbial World :RY Stanier and others
4. Diseases of Crop Plants :G Rangaswamy
5. Plant Pathology : JC Walker.

References:

1. Biology of Microganisms :ST Lyles.
2. Fundamentals of Microbiology :Frobishe.