Subject Code : P8MB1

Semester I Core Course I (CC) - General Microbiology

Unit I – Ultra structure and function:

Bacteria: Morphological types; cell wall – cell walls of Gram negative, Gram positive, halophiles. L-forms and Archaebacteria, Cell wall synthesis, capsule types composition and function. Structure and function of flagella, cilia and pili, gas vesicles, chlorosomes, carboxysomes, magnetosomes and phycobilisomes. Reserve food materials – polyhydroxybutyrate, polyphosphates, cyanophycin and sulphur inclusions. Nuclear material – bacterial chromosomes and bacterial plasmids.

Unit II – Classification:

Microbial Taxonomy - Definition and systematics, Nomenclatural rules and identification. Haeckel's three kingdom classification, Whittaker's five kingdom approach. Major characteristics used in taxonomy – morphological, physiological and metabolic, genetic and molecular. Classification and salient features of bacteria according to Bergey's Manual of Determinative Bacteriology (9th edition).

Unit III – Fungi

Fungi: Cell wall – chemical composition and functions, membranes and their function; Fine structure of flagella and somatic nuclei. Structure and life cycle of fungi – Ascomycetes (Aspergillus), Deuteromycetes (Candida), Zygomycetes (Mucor), Basidomycetes (Agaricus). Effect of environment on growth, prevention of fungal growth. Fungi and ecosystem: saprophytes, substrate groups. Parasitism, mutualism and symbiosis with plants and animals.

Unit IV – Algae and protozoans

Structure of algal cells – classification – reproduction and characteristics of Algae -Chlorophyta (Green algae), Diatoms, Rhodophyta (Red algae). Structure of Protozoa – classification – reproduction and characteristics of protozoa.

Unit V – Cultivation methods of microbes

Isolation of different types of bacteria - Fungi – Actinomycetes - Cyanobacteria - Protozoa. Preservation methods of microbes. Type culture collections. Physical, chemical methods for controlling microorganisms. A note on fossil microorganisms.

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