

CORE COURSE XI - MICROBIAL BIOTECHNOLOGY

UNIT- I

Microbial Biotechnology: Scope and applications -horizons of Microbial Technology. Microbes: Living factories for macromolecules-Production of proteins in Bacteria and yeast; recombinant and synthetic vaccines; microbial enzymes- application in starch processing , textile designing, detergents, cheese making, polysaccharides and polyesters. – immobilization of cells and enzymes.

UNIT -II

Microorganisms in fermentation-Ethanol from feed stocks to fermentable sugars, from sugars to alcohols, Clostridial fermentation, lactic acid fermentation, acetic acid production and industrial production of various milk products.

UNIT -III

Metabolites from microorganisms-amino acids; antibiotics-antibacterial agents (β -lactams, tetracyclines, peptides, amino glycosides), antifungal agents, anti-tumor antibodies; Biotechnological potential of micro algae – food – fuel production – pharmaceutically valuable compounds of micro algae. SCP, Mycoprotein.

UNIT -IV

Biopesticides; Bio control of insects – microbial insecticides (*Bacillus.thuringiensis*, *B.spaerinus*, *B.papilliae* and Baculo-Viruses). Biofertilizers (nitrogen fixing Bacteria, mycorrhiza and phosphate solubilizing Bacteria)- genetically engineered organisms.

UNIT -V

Bioremediation, Biosorption, Environmental clean-up by microbes: Application of microbial biotechnology in sewage and wastewater treatment, degradation of xenobiotics, mineral recovery, removal of heavy metals from aqueous effluents. Public concerns about the microbial biotechnology and Economics of microbial biotechnology.

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5. Prave, P., Faust, U. Sitting, W. Suktasch D. A. 1987. Fundamentals of Biotechnology. VCH verlasgetell Schafor MBH, Weinhkeim, Germany.
6. Glazer, A.N. and Nikaido, H. 1995. Microbial Biotechnology. W.H.Freeman & Co.,New York
7. Encyclopedia of Microbiology. 1992. Vols.1-4. Academic Press, London.
8. Stanbury, P.F. Whittaker, A, Hall, S.J. 1995. Principles of Fermentation Technology Butterworth Heinemann, London.