



B.Sc. PLANT BIOLOGY & PLANT BIOTECHNOLOGY

Paper 1b ENVIRONMENTAL BIOTECHNOLOGY

B.Sc. va (Candidates admitted from the academic year 2008-2009)

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Special Theory

UNIT I

Environmental Pollution: Review and summary of soil, water and air pollution; Remedial measures and pollution abatement.

Key words: Pollutant, Primary and secondary, biodegradable/ nonbiodegradable Pollutants, biomagnification, bioaccumulation.

UNIT II

Bioremediation: What is bioremediation? Examples and case study; Role of bioreactors in Bioremediation; Treatment of liquid and solid wastes - role of biotechnology. SCP and Biomass from waste.

Key words: Bioremediation, bioreactor.

UNIT III

Heavy Metal and Pesticide Pollution: Role of biosorption - removal of heavy metals and pesticides; case study and examples. Microbial Enhanced oil remediation - oil spills and hydrocarbon degrading bacteria.

Key words: Biosorption, heavy metal/pesticide pollution, Pseudomonas 'super bug'.

UNIT IV

Xenobiotics and biodegradation: Phenol, Pentachlorophenol and Polychlorinated Biphenyls (PCBs); Methane / hydrogen biosynthesis and production - role of microalgae and bacteria.

Key words: PCBs, Biopolymer, biodegradable plastic, biofuels. Biofilter.

UNIT V

Phytoremediation: Types; Role of transgenic plants in phytoremediation - examples and case study; Transgenic plants and environment.

Key words: Phytoremediation, Transgenic Plant, GMO / LMO, GM Foods, Biopesticide. Bt gene technology.

UNIT VI

Scope and future prospects of biotechnology in relation to environment: Advantages, constraints and remedies. Environmental protection and Biodiversity conservation. Role of molecular markers in the identification of endangered plants and animals: DNA fingerprinting.

Key words: Biotechnology, vermiculture, vermitechnology, biocomposting , LACONES.

Suggested Reading

BATTACHARYYA AND RINTU BANERJEE. 2007. Environmental Biotechnology. Oxford University Press.

GARETH M. EVANS AND JUDITH C FURLONG. 2002. Environmental Biotechnology. John Wily & Sons.

JANS JOACHIM JORDENING AND JOSEF WINTER. 2006. Environmental Biotechnology: Concepts and Applications.

JOGDAND, S.N.2006. Industrial Biotechnology (Approach to clean technology); Himalaya Publishing House.

MILTON WAINWRIGHT. 1999. An Introduction to Environmental Biotechnology. Kluwer Academic Press.

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