BES –C-802 **Environmental Biotechnology**

UNIT – I

Environmental biotechnology: Introduction, scope of environmental biotechnology; Application of biotechnology in environment, Basic concept of genetic engineering of plants and its applications. Biotechnology strategies in forestry and wasteland management. Biotechnology in biodiversity conservation: gene banks, germplasm conservation and DNA Banks. Genetically modified organisms.

UNIT – II

Biofertilizer technology: Introduction, Role of microorganisms in production of biofertilizers, Rhizobium culture, Blue-green algae culture, *Azolla* culture, and *Micorrihizea* culture. Benefits and significance of biofertilizers in agriculture.

UNIT – III

Fermentation technology. Introduction, types of fermenters, Role of microorganisms in production of alcohol, and pharmaceutical products, biomass (Spirulina culture) production and bio-fuel production.

UNIT – IV

Bioremediation technology: Introduction, types of remediation, biotransformation, bioconversion, bioremediation, phytoremediation technology, Bioremediation of metal contaminated soils, chemical and oil pollution control using microorganisms. Phytoremediation of wastewater.

UNIT – V

Bioenergy technology: Introduction, bioethanol and biogas technology, plant design, construction, operation, biogas form organic wastes, water weeds, landfills, microbiology of anaerobic fermentation, Liquid waste treatment and energy recovery.