Paper 7a  BIOTECHNOLOGY, TISSUE CULTURE AND CROP IMPROVEMENT
M.Sc. va (Candidates admitted from the academic year 2008-2009)

Core Theory
UNIT I

Introduction to Biotechnology: Definition, history, current demands from biological resources for food, fodder, feed, timber, oil, perfumes, pigments, biofertilizers, therapeutic agents, fermentation products etc. Bioprospecting. Ethical issues in biotechnology and safety and consumer issues of LMO/GMO.

UNIT II

Fermentation Biotechnology: Principles of fermentation, media requirements, culture, separation of products. Industrial processes for production of food, beverages, antibiotics, acid and ethanol. Fermentors and bioreactors in fermentation biotechnology. Economic aspects of fermentation.

Protein and Enzyme Biotechnology: Basic concepts, isolation, purification, production and package of enzymes. Immobilisation of enzymes, industrial enzymes, therapeutic uses of enzymes.

UNIT III

Introduction to Recombinant DNA Technology: Restriction enzymes, vectors, cloning, gene library, reverse transcription and cDNA. Artificial chromosome, DNA probes. DNA delivery systems.

UNIT IV


UNIT V

Protoplast Culture: Isolation of protoplast, somatic cell hybridization, selecting desired hybrids and their regeneration into plants. Use of protoplast in genetic engineering.

Embryo and Anther Culture: Embryo rescue technique. Isolation of sperms and egg cells. Culture of zygote/endosperm obtained through *in vitro* fertilization. Production of haploid plants through anther and pollen culture.

UNIT VI

Suggested Reading


