

XIV – GENETIC ENGINEERING AND BIOTECHNOLOGY

UNIT – I

Introduction, basic techniques, cutting and joining DNA molecules.

Plasmids as cloning vehicles for use in E.Coli; bacteriophages and cosmid for E.coli. cloning strategies, gene libraries and cDNA cloning; recombinant selection and screening; expression in E.coil of cloned DNA molecule; analysis of DNA sequences.

UNIT – II

Cloning in bacteria other than E.Coil; cloning in Saccharomyces cerevisiae and other microbial eukaryotes; Gene transfer into plants; Tiruchirappalli - 620 024, introducing genes into animal cells; mammalian expression vectors; transferring genes into oocytes, eggs, embryos and specific animal tissues; transgenics.

UNIT – III

Microbial production of vaccines, antibodies, interferons, somatostatin. Fermentation technology.

Bacterial leaching and bio mining. Biological nitrogen fixation – Nif gene cloning.

UNIT – IV

Plant and animal cell and tissue culture. Improving crop plants by introduction of isolated foreign genes.

PCR technology, site directed mutagenesis, immobilized enzymes and their application. Protein engineering.