

PLANT AND ANIMAL BIOTECHNOLOGY

UNIT I

Concept of gene cloning – Cloning vectors: Plasmids, Phages, Cosmids, Phasmids, YAC – DNA manipulative enzymes: Restriction endonuclease and Ligase.

UNIT II

Principles and techniques of Nucleic acid hybridisation – Proteins and Nucleic acids –Southern, Northern and Western blotting techniques – PCR – RFLP – RAPD.

UNIT III

Recombinant DNA Technology: Principles and methods of genetic engineering and gene targeting – Applications in agriculture, health and industry.

UNIT IV

Plant Tissue Culture: Culture media – Primary culture – Cell line – Cell clones – Callus culture – Somoclonal variation – Micro propagation – Somatic embryogenesis – Protoplast fusion – Cybrids –Artificial seeds – Gene transfer methods in plants – Transgenic plants.

UNIT V

Animal Tissue Culture: Culture media – Embryonic stem cell culture – Tissue culture methods – Production of Transgenic animals - Biochip Technology – Monoclonal antibody production.

Reference books

1. Dubey, R.C., *Textbook of Biotechnology*, S.chand & co., 1995.
2. Gupta, P.K., *Elements of Biotechnology*, Rastogi Publications, Meerut, 1997.
3. Kumar, H.D., *A textbook on Biotechnology*, East West Affiliated Press Ltd., 1993.
4. Balasubramania, D., *Concepts in Biotechnology*, Unversity Press (India) ltd., Hyderabad, 1996.
5. Dharmarajan, M., *Genetic Engineering*, S.Viswanathan & co., 1989.
6. Glick, B.R. J.J. and Pastermak, *Molecular Biotechnology*, SSM Press, Washington, 1998.
7. Jogdand, S.N., *Advances in Biotechnology*, Himalaya Publishing, New Delhi, 1999.
8. Primrose, S.M., *Modern Biotechnology*, Blackwell scientific publishers, Oxford, 1990.