

## **BASIC BIOTECHNOLOGY**

### **Unit 1 Fermentation Biotechnology**

Basic principles of microbial growth. The bio reactor– types and operation. Fermentation culture medium. Downstream processing.

### **Unit 2 Food and enzyme technology**

Biotechnology in food industry– food fermentation, fermented foods and milk products. Immobilised cells methods of immobilisation, properties and applications. Production of industrial enzyme- Amylase.

### **Unit 3 Energy and Environmental Biotechnology**

Biological fuel generation– Ethanol and methane from biomass. Waste water and sewage treatment. Bioremediation– oil spill clean up. Microbial mining.

### **Unit 4 Recombinant DNA technology**

Gene organisation and flow of genetic information (elementary details only). Basic principles of cloning: restriction endonucleases, cloning vectors, introduction into host by electroporation and microinjection, selection and screening of recombinants.

### **Unit 5 Plant and Animal Biotechnology**

Applications of rDNA technology in agriculture and animal husbandry: development of transgenic plants and animals– basic principles and applications. The human genome project (elementary details only).

#### References

1. Biotechnology J.E. Smith Cambridge Univ. Press, 1996.
2. An introduction to genetic engineering – D.S.T. Nicholl, 2nd edn. 2002, Cambridge Univ. Press.
3. An Engineering introduction to Biotechnology Fitch J.P. Prentice Hall, New Delhi 2004.
4. Elements of Biotechnology P.K. Gupta, Rastogi. Pub. 1998.
5. A text book on biotechnology. H.D. Kumar 2nd Ed. East West Press 1998.