
UKA TARSADIA UNIVERSITY
5 Year Integrated M.Sc. Biotechnology (SEM I)

060020110: DSE 1 BIOTECHNOLOGY AND HUMAN WELFARE

Unit I:

Overview and definition
History of Biotechnology
Scope of Biotechnology
Branches of Biotechnology (Red biotechnology, Green Biotechnology, Blue Biotechnology, White Biotechnology, Brown Biotechnology, Silver Biotechnology)

Unit II:

Problems of biologically active biotechnology products
Public perception of Biotechnology
Safety in Biotechnology

Unit III:

Industry: protein engineering; enzyme and polysaccharide synthesis, activity and secretion, alcohol and antibiotic formation

Agriculture: N₂ fixation: transfer of pest resistance genes to plants; interaction between plants and microbes; qualitative improvement of livestock

Environments: e.g. chlorinated and non-chlorinated organ pollutant degradation; degradation of hydrocarbons and agricultural wastes, stress management, development of biodegradable polymers such as PHB.

UNIT IV:

Forensic science: e.g. solving violent crimes such as murder and rape; solving claims of paternity and theft etc. using various methods of DNA finger printing

Health: e.g. development of non-toxic therapeutic agents, recombinant live vaccines, gene therapy, diagnostics, monoclonal in *E.coli*, human genome project.

REFERENCES:

1. *Biotechnology: The Biological Principles*, by M. D. Trevan, S. Boffey, K. H. Goulding and P. Stanburry. TATA McGraw Hill Publications, New Delhi
2. *Biotechnology*, by John E. Smith. 2nd Edition. Cambridge Press
3. *Modern Concepts of Biotechnology*, by H.D. Kumar. Vikas Publishing House
4. *Elements of Biotechnology*, by P. K. Gupta. Rastogi Publications
5. *Recombinant DNA Technology*, by J. D. Watson, J. Gilman, J. Witkwski and M. Zoller. 2nd Edition. Scientific American Books. New York
6. *Biotechnology*, by Keshav Trevan
7. *Biotechnology: Fundamentals and Applications*, by S. S. Purohit