

AMBT24 PROTEIN BIOTECHNOLOGY

UNIT-1 PROTEIN STRUCTURE

Introduction, Overview of protein structure, Higher level structure, Protein post-translational modification, Protein stability and folding.

UNIT-2 PROTEIN SOURCES

Introduction, Microorganisms as sources of proteins, Proteins from plants, Animal tissue as a protein source, direct chemical synthesis, Conclusion.

UNIT-3 PROTEIN PURIFICATION AND CHARACTERIZATION

Introduction, Initial recovery of proteins, Removal of whole cells and cell debris Concentration and primary purification, Column chromatography, Protein inactivation and stabilization, Protein characterization.

UNIT-4 LARGE-SCALE PROTEIN PURIFICATION

Some general principles, Therapeutic protein production: some special issues, Range and medical significance of impurities potentially present in protein-based therapeutic products, Labelling and packing of finished products.

UNIT-5 THERAPEUTIC PROTEINS

Introduction, Blood products, Haemophilia A and B, Anticoagulants, Thrombolytic agents, Additional blood-related products, Vaccine technology, Vaccines for AIDS.

UNIT-6 THERAPEUTIC ANTIBODIES AND ENZYMES

Introduction, Antibodies for in vivo application, Therapeutic enzymes.

UNIT-7 HORMONES AND GROWTH FACTORS USED THERAPEUTICALLY

Introduction, Insulin, Glucagon, Gonadotrophins, Growth hormone, Erythropoietin, Other growth factors, Thyrotrophin, Corticotrophin, Prolactin, Peptide Regulatory Factors.

UNIT-8 INTERFERONS, INTERLEUKINS AND ADDITIONAL REGULATORY FACTORS

Regulatory factors; cytokines versus hormones, Interferons, Interleukins, Tumour necrosis factors, Colony stimulating factors, Cytokine toxicity.

UNIT-9 PROTEINS USED FOR ANALYTICAL PURPOSES

Introduction, Enzymes as diagnostic/analytical reagents, Biosensors, Antibodies as analytical reagents.

UNIT-10 NON-CATALYTIC INDUSTRIAL PROTEINS

Introduction, Functional properties of proteins, Milk and milk proteins, Animal and microbial proteins, Sweet and taste modifying proteins.

Reference Books

- 1 Proteins: Biochemistry and Biotechnology by Gary Walsh. (2002): John Wiley & Sons Ltd.
- 2 Fundamentals of Protein Biotechnology: Edited by Stanley Stein (1990): Marcel Dekker, Inc.

