

PhD Admission Test-2022
Biotechnology
Syllabus

Biochemistry, Molecular & Cell Biology, Genomics

Bio molecules, Metabolism, Enzyme Kinetics, Biochemical Calculations, Membrane transport, Structure and regulation of prokaryotes and eukaryotes genes, Transcription, Translation, Post-transcriptional and Translational modifications, Molecular markers, Genetic and physical mapping, Gene interaction; Population genetics, Recombinant DNA technology, Functional elucidation technologies, PCR, Blotting techniques, Gene transfer technologies, Protein-protein interactions, Mass spectrophotometer, Signal transduction pathways.

Microbial & Plant Biotechnology

Microbial taxonomy and diversity (bacteria, fungi, virus); Microbial nutrition, growth and control; Microbial metabolism; Microbial genetics; production and characterization of fermented foods, industrial enzymes; Enzyme immobilization; Types of bioreactors; Bio separation techniques, Numerical related to Bioprocess technology; Principals of thermodynamics, Mass Balance calculations, Concept of plant cellular totipotency; Clonal propagation; Organogenesis and somatic embryogenesis, artificial seed, somaclonal variation, embryo culture, *in vitro* fertilization; Plant products of industrial importance; Plant-microbe interactions.

Medical Biotechnology

Infectious diseases: Microbial (viral, bacterial, fungal), Life style diseases, Cell & developmental biology, Human physiology, Stem cells and Cancer biology, Immunotechnology, Vaccines, molecular and immune-diagnostics methods and their applications, Cell culture technologies, Regenerative medicine, Hypersensitivity and autoimmune diseases, Toxicology, Drug development and Clinical Phases.

Environmental Biotechnology

Biotransformation, biodegradation Bioremediation; Biofertilizers; waste management, Metagenomics, Environmental pollution, GMO's and related ethical issues, Bioterrorism, sustainability, Role of biotechnology in energy production.

Bioinformatics

Bioinformatics resources and databases (NCBI, EBI, ExPASy); Sequence analysis, Phylogeny, Comparative genomics; Molecular modelling and simulations. Basics of database management and programming.