

**Eligibility:** M.Sc. in life Sciences /M.Pharm/M.Tech or equivalent

**Syllabus: PhD Entrance Exam (Human Genetics)**

**Cell Biology:** Membrane structure and function ; Structural organization and function of intracellular organelles (nucleus, mitochondria, Golgi bodies, lysosomes, endoplasmic reticulum, peroxisomes, plastids, vacuoles, structure & function of cytoskeleton and its role in motility); Organization of genes and chromosomes ;Cell division and cell

**Molecular biology:** DNA replication, repair and recombination; RNA synthesis and processing; Protein synthesis and processing

**Biochemistry:** Structure of atoms, molecules and chemical bonds; Composition, structure and function of biomolecules (carbohydrates, lipids, proteins, nucleic acids and vitamins); Stabilizing interactions (Van der Waals, electrostatic, hydrogen bonding, hydrophobic interaction, etc.).

**Genetics:** Mendelian principles and extensions of Mendelian principles; Pedigree analysis, karyotypes, genetic disorders; Polygenic inheritance, heritability and its measurements; Mutation: Types, causes and detection; Structural and numerical alterations of chromosomes.

**Immunology:** Cells and molecules involved in innate and adaptive immunity, antigens, antigenicity and immunogenicity; B and T cell epitopes, structure and function of antibody molecules; monoclonal antibodies; MHC molecules; humoral and cell mediated immune responses; congenital and acquired immunodeficiency, vaccines.

**Techniques:** Microscopy, Blotting Techniques, PCR, RT PCR, Sequencing techniques.