

**DEPARTMENT OF BIOCHEMISTRY**  
**FACULTY OF LIFE SCIENCES**  
**A.M.U., Aligarh**

**Syllabus for Ph.P Admissions Test 2022-2023 onwards**

**Section B**

**Advanced Molecular Biology:** Structural aspects of genetic material; replication and transcription; post-transcriptional processing; translation; regulation of gene expression in prokaryotes and eukaryotes; DNA repair.

**Proteins and Proteomics:** Protein sequencing; dihydryl angles and Ramachandran plot; hydrophobicity plots; stokes radius; diffusion coefficient and intrinsic viscosity of proteins; protein domains and motifs; protein interaction mapping; protein arrays and protein chips.

**Advanced Enzymology:** Nature and kinetics of enzyme catalyzed reactions; kinetics and mechanisms of multi-substrate reactions; mechanism of enzyme action. Enzyme regulation and enzyme inhibition; enzyme immobilization.

**Metabolism and its Integration:** Carbohydrate metabolism; lipid metabolism; amino acid metabolism; nucleic acid metabolism; bioenergetics.

**Molecular Cell Biology:** Cell communication; neurobiology and neurochemistry; cell cycle and programmed cell death; cell differentiation and cancer.

**Biotechnology:** Construction of recombinant DNA; applications of recombinant DNA technology; gene transfer in yeast, plant and mammalian cells; secondary metabolites.

**Plant Biochemistry:** Plant cell wall and cell membrane; photosynthesis; nitrogen fixation.

**Molecular Immunology:** Humoral and cell mediated immune responses; complement, MHC and its relation to transplantation immunity; hypersensitivity; autoimmunity and immune deficiencies; AIDS.

**Bioinformatics and Research Methodology:** Research methodology and technical writing; database searches; analysis of nucleic acid and protein sequences.

**Molecular Genetics:** Chromosome mapping; classical, biochemical and developmental genetics; bacterial, viral and yeast genetics.