School of
Postgraduate Studies

Subject-specific Entrance Test
Table Of Specification
PhD (Biochemistry)

S.#	Themes	Topics
1	**Molecular Biology**	Structure of DNA, RNA and Proteins
		Replication, transcription, and translation
		Cell signaling
		Concept of genome
		Cell cycle
2	**Medical genetics**	Single-Gene Disorders
		Population Genetics
		Cytogenetics
		Genetics of Common Diseases
		Recombination Frequency
		Genetic Diagnosis
3	**Proteomics**	Clinical Proteomics Totality and structural proteomics Expression and chemical proteomics Pharmaco and toxic proteomics Proteomics Technology
4	**Bioinformatics and Genomics**	Functional genomics Clinical Genomics Pharmaco and toxico genomics Bioinformatics Microarray – Gene expression on a genomic scale Gene bioinformatics Protein bioinformatics Drug discovery and personalized medicine Gene ontology

5.	**Intermediary Metabolism**	Basic principles of Metabolism Energy Flow Within the cell Electron Transport Chain & Oxidative Phosphorylation Regulation of Carbohydrate Metabolism Carbohydrate Metabolism in Well-fed and Starved State Abnormalities of Carbohydrate Metabolism Lipid Transport and Storage Lipid Metabolism in Well fed and Starved State Abnormalities of Lipid Metabolism Amino Acid Catabolism/ Reactions and Amino acid Conversions Nitrogen Balance ,Urea Cycle, and its Defects Hemoglobin, Porphyrins and Bile Pigments
6.	**Neurosciences & cell to cell signaling**	Synaptic transmission and cell signaling Acetylcholine and its disorders Catecholamines and their disorders Serotonin and stress disorders Amino acids, peptides, and growth hormone Intracellular Signaling Second messenger systems
7	**Advanced Enzymology**	Introduction to enzyme families, nomenclature, and structure Concepts in Molecular Recognition Mechanism of action and activity of enzymes Regulation of Enzyme Activity and Compartmentalization of Enzymes Clinical and therapeutic Enzymology
8	**Nutrition and Clinical Biochemistry**	Introduction to Nutrition, balanced diet, and glycemic index Significance of alkaline diet Changes in nutritional values of nutrients related to food processing methods Methods of nutritional assessment Nutritional metabolic disorders Significance of dietary patterns in various environmental and disease states Preventive and medical nutrition therapy
9	**Water and mineral metabolism**	Water Metabolism, Hydrogen Ion Homeostasis and Bicarbonate Ions Sodium, Potassium and Chloride metabolism Iron Metabolism Calcium, Phosphate, and magnesium Metabolism