School of
Postgraduate Studies

Subject-specific Entrance Test
Table of Specification
PhD (Medical Genetics)

S.#	Themes	Topics
1	**Structure and Function of Genes**	Structure of DNA, RNA and Proteins
		Replication, Transcription, and Translation
		Protein Coding Genes, RNA Genes, Pseudogenes
		Transposable Elements, Tandem Repeats
		Genetic Code, Gene expression
2	**Transmission Genetics**	Molecular Basis of Inheritance
		Mendelian Genetics (Classic Inheritance)
		Non-Classic Inheritance (Mitochondrial, Genomic Imprinting, Trinucleotide Repeat disorders)
		Inborn errors of Metabolism (Biochemical Genetics)
3	**Molecular Genetics**	Mutations and DNA repair
		Genetic Testing and Screening
		Polymerase Chain Reaction (Qualitative & Quantitative)
		Sanger Sequencing & Next Generation Sequencing
4	**Clinical Cytogenetics**	Chromosomal disorders showing Structural abnormalities
		Chromosomal disorders showing Numerical abnormalities
		Karyotyping, Fluorescent in situ Hybridization (FISH)
		Chromosomal Microarrays
5.	**Population Genetics and Genetic Diversity**	The Hardy –Weinberg Equilibrium
		Linkage and Crossing Over
		Single Nucleotide Polymorphisms
		Allele Frequencies in Populations
6.	**Genetic Therapeutics**	Gene editing technologies (CRISPR Cas-9)
		Gene therapy