Table of Specifications

PhD Entrance Test Pathology (Microbiology)

Sr. No	Topics	MCQs
	Level of Difficulty	**Application**
1	**Bacterial cell structure including following topics**: o Structure of cell wall and its components. o Cytoplasmic structures o Nucleus **Pathophysiology of bacterial growth and disease including following topics**: o Bacterial growth phases o Bacterial cell metabolism o Bacterial normal flora o Virulence factors	10
2	**Sterilization & Disinfection principles applicable in Microbiology** o Autoclave use and principle o Monitoring of autoclave o Disinfectants types and uses **Sample collection for microbiology including following topics** o Recommended Blood culture collection technique o Recommended Urine culture collection technique o Recommended respiratory specimen culture collection technique o Recommended CSF culture collection technique o Other body fluids	15
3.	**Types of culture media and their use including** • **Liquid and solid media** • **Basic, enriched, differential and selective media** • **Transport media** **Specimen dealing for culture and susceptibility** • **Recommended guidelines for each specimen** • **Clinical laboratory standard institute (CLSI)**	12
4.	**Staining techniques used in Microbiology**: o Gram stain and its principle o ZN stain and its principle o Albert's stain **Common instruments used in Microbiology** • Centrifuges • Water bath • Incubators • ELISA	10

	• Media pouring machines • Automated culture like BACTEC	
5.	**Classification of bacteria and biochemical tests for identification**: a. Gram positive bacteria and common biochemical tests b. Gram negative bacteria and common biochemical tests c. Analytical profile Index (API)	10
6.	**Microbiology specific Laboratory Management** o Biosafety and biosecurity principles o Quality control procedures in microbiology o Principles of infection control in hospital o Laboratory information management system (LIMS)	08
7.	**Mycology including classification of yeasts and moulds** Mycobacteriology including modalities of TB diagnostics specific to microbiology	05
8.	**Molecular Biology** o DNA: Structure and Function o RNA: Structure and Function & Types o Protein: Structure and Function o DNA regulatory sequences and regulatory protein o DNA Replication, Damage and Repair o Transcription/ Translation in Prokaryotes& Eukaryotes	10
9	**Techniques** o PCR types and procedure o DNA/RNA Extractions o Restriction Endonucleases o Recombinant DNA technology Gel Electrophoresis	05
10.	o Research Methodology o Biostatistics/Analytical o Medical writing/Bioethics	15
Total		**100**