

Ph. D Written Test Format and Syllabus

Department of Pharmacy, Faculty of Pharmacy

Ph.D. Admission Test Format

The written test consists of two parts.

1. **Part A:** Research Methodology 25 questions.
2. **Part B:** Pharmaceutical Sciences 25 questions

Part A: Research Methodology Syllabus

Research Fundamentals:

Meaning of research; objectives of research; characteristics of good research, Research problem: Identification, selection, and techniques for defining research problem, Research process, Research outcomes, Review of Literature, Hypothesis: Definition and Types

Types of Research:

Types of research, fundamental and applied research, qualitative and quantitative. Research Design: Types of research design – Exploratory, Descriptive, Casual Analytical

Sampling, Data Collection and analysis:

Types and sources of data: Primary and secondary, Methods of collecting data: questionnaire, interview, observation, case study, experiments etc., Sampling and sampling methods, characteristics of good sample, sampling techniques, Statistical Methods for Data Analysis: measures of central tendency and dispersion

Research Report:

Main body of report, abstract and keywords, Referencing styles and bibliography. Journal and author indexing

Ethics in Research:

Biasing: Definition and Types, Plagiarism -Definition and forms, IPR, copyright infringement, AI Generated Content

Part B: Pharmaceutical Sciences

Pharmaceutical Analysis:

Principles, instrumentation, and applications of UV, IR, and NMR spectroscopy. Various chromatographic techniques including TLC, column chromatography, paper chromatography, HPLC, and Gas Chromatography. Concept of Normality, Molarity, PPM and PPB and Good Laboratory Practices (GLP).

Pharmaceutical Chemistry:

Basic concepts of Ligand mediated and carrier mediated targeting. Structure–Activity Relationship (SAR) of important types of drugs including Opioid analgesic, Cardiac Glycosides, Tropane Alkaloids, Azole derivatives and Sympathomimetic agents.

Pharmacology:

General pharmacological principles including pharmacokinetics and pharmacodynamics and receptor mechanism. Pharmacology of important classes of drugs including antifungal, anticancer, antidiabetic, and cardiovascular agents. Drug-Drug interaction and adverse drug reactions (ADRs).

Pharmacognosy:

Classification, Evaluation and adulteration of crude drugs and their detection by various methods. Standardization of raw materials and herbal products. Quantitative and qualitative powder microscopy of organized and unorganized drug and modern techniques used for the evaluation of crude drugs. Various types of extraction techniques. Importance of Primary and Secondary Metabolites like Alkaloids, Glycosides and terpene.

Pharmaceutics:

Basics of Preformulation studies. Formulation, Development and Evaluation of Tablets, Parenteral and Semisolid dosage forms. Basics of Sustained release and Targeted drug delivery systems. Bioavailability and bioequivalence studies, IVIVC studies.