

## **Syllabus for PET Examination - PhD (Pharmaceutical sciences)**

### **Research Methodology**

#### **1. Fundamentals of Research**

Meaning and scope of research, Applications and significance of research, Classification of research: types and approaches, Distinction between research methods and research methodology, Sequential steps in the research process

#### **2. Literature Review**

Role and importance of reviewing existing literature, Techniques and sources for conducting a literature survey, Critical evaluation of selected literature, Identifying research gaps and formulating research problems, developing hypotheses and research questions, building theoretical and conceptual frameworks, Writing a synopsis for a proposed Ph.D. program

#### **3. Research Proposal Writing**

Overview of research funding agencies and grant opportunities, preparing applications for funding: preamble, problem statement, objectives, hypotheses, study design, Methods of measurement and data analysis, Structuring and organizing the research report, and presenting data effectively using tables, graphs, and charts

#### **4. Data Collection and Analysis**

Primary and secondary data collection methods, Criteria for selecting appropriate data collection techniques: surveys, experiments, case studies, archival data, Statistical analysis: descriptive and inferential statistics, Introduction to advanced research tools and software: SPSS, Design Expert, Systat, Sigma Plot, Kinetica, MATLAB and others

#### **5. Research Ethics, Intellectual Property, and Scientific Communication**

Ethical principles in research; role of ethics committees (human and animal studies), Prewriting considerations and thesis preparation, Formats and styles of report writing, Designing posters for scientific presentations, Preparing and delivering oral presentations, Scholarly publishing: IMRAD structure, citation practices (APA, MLA, Vancouver, etc.) , acknowledgements, Issues of plagiarism, reproducibility, and accountability, Basics of intellectual property rights (IPR), patent drafting, and submission.