

Pravara Institute of Medical Sciences
All India Ph.D. Entrance Test
PIMS -AIPET
Syllabus for Research Methodology–Paper - I

1. Foundation of Research: Meaning, Objectives, Utility, Concept of Theory, empiricism, deductive and inductive theory. Characteristics of scientific method- Understanding the language of research – Concept, Construct, Definition, Variable, Research Process.
2. Problem identification and Formulation – Research Question – investigation Question- Measurement issued- Hypothesis- Qualities of good Hypothesis – Null Hypothesis and Alternative Hypothesis. Hypothesis Testing- Logic and importance.
3. Research Design: Concept and importance in Research – Features of a good research design- Exploratory Research Design- concept, types and uses Descriptive Research Design- concept, types and uses. Experimental Design: Concept of Independent and Dependent variables.
4. Qualitative and Quantitative Research: Qualitative research – Quantitative research – concept of measurement, quality, generalization, replication, merging the two approaches.
5. Measurement and scaling technique: concept of measurement –what is measured? Problem in measurement in research- Validity and reliability-Nominal, Ordinal, Interval, Ratio.
6. Sampling fundamentals: Concepts of Statistical Population, Sample, Sampling Frame, Sampling Error, Sample Size, Non response. Characteristics of a good sample, Probability sample- Simple Random Sample, Systematic Sample, Stratified Random Sample and Multi-stage sampling. Determining size of the sample.
7. Data Analysis: Data preparation –Univariate analysis (frequency table, bar charts, pie charts, percentages). Bivariate analysis- Cross tabulations and Chi-square test including testing hypothesis of association, analysis of variance, convenience, Multivariate analysis.
8. Interpretation of data and paper writing – Lay out of Research Paper, Journal in Computer Science, Impact factor of journals, When and where to publish ?. Ethical issues related to publish, Plagiarism and Self-Plagiarism.
9. Computers and its role in research. Methods to search required information effectively, Reference Management Software like Zotero/Mendeley, Software for paper formatting like LaTeX/MS office, software for detection of Plagiarism.