

Ph.D. Entrance Examination : 2026 - 27

Part A : Research Aptitude Test

Syllabus

Unit I: Research Fundamentals

- Meaning, objectives, and types of research (basic, applied, action, analytical, descriptive, exploratory)
- Research process: problem identification, objectives, hypothesis
- Concepts, variables, and theory
- Deductive and inductive reasoning

Unit II: Research Design & Data Collection

- Research design and types (experimental, case study, cross-sectional, longitudinal)
- Sampling techniques (random, stratified, systematic, census)
- Data collection methods: primary and secondary data
- Tools: questionnaire, interview, observation

Unit III: Measurement & Statistical Analysis

- Measurement and scaling techniques (nominal, ordinal, interval, ratio, Likert scale)
- Measures of central tendency (mean, median, mode)
- Measures of dispersion (range, variance, standard deviation)
- Correlation and regression

Unit IV: Hypothesis Testing & Data Presentation

- Hypothesis: null and alternative
- Statistical tests: t-test, Z-test, chi-square, ANOVA
- Probability, normal distribution, skewness, kurtosis
- Data presentation: tables, charts, histogram, bar and pie diagrams

Unit V: Data Processing, Ethics & Research Reporting

- Data processing: cleaning, coding, tabulation, interpretation
- Software tools: SPSS, Excel, R; basics of big data and AI in research
- Research ethics: plagiarism, citation, confidentiality, informed consent
- Research report: abstract, literature review, findings

Recommended Text Books

1. Research Methodology: Methods and Techniques – C. R. Kothari & Gaurav Garg
2. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches – John W. Creswell
3. Fundamentals of Statistics – S. C. Gupta & V. K. Kapoor
4. Research Methodology: A Step-by-Step Guide for Beginners – Mark Saunders