

## **Paper III: RESEARCH METHODOLOGY AND STATISTICS IN EDUCATION**

### **1. Nature and Scope of Educational Research**

- Scientific inquiry, scientific method, nature and sources of knowledge.
- Meaning, Nature, Need and Scope of Educational Research.
- Fundamental, Applied and Action Research
- Some emerging trends in educational research.

### **2. Formulation Of Research Problem**

- Criteria and Sources for identifying research problem
- Delineating and operationalising variables
- Review of Related Literature: Importance and various sources including internet.
- Hypothesis: Concept, characteristics of a good hypothesis, sources and types of hypothesis.

### **3. SAMPLING**

- Concept of population and sample
- Steps and characteristics of a good sample
- Sampling errors and how to reduce them
- Various methods of sampling : Probability and non-probability

### **4. TOOLS AND TECHNIQUES**

- Characteristics of a good research tool
- Types, characteristics and uses of research tools: Questionnaire, Interview, Observation

### **5. Descriptive Statistics**

- Nature of educational data, Scales of measurement
- Measures of Central Tendency: Mean, Median and Mode
- Measures of Dispersion: Range, Quartile Deviation, Average Deviation, Standard Deviation
- Measures of Relative Position: Percentiles and Percentile Ranks

### **6. Major Approaches to Research**

- Descriptive research, Ex-post facto research
- Historical research
- Experimental research: Experimental Designs
- Brief description of Qualitative Research: Scope and areas of application.

### **7. Research Report**

- Developing a research proposal (synopsis)
- Research Report: Characteristics and Steps in report writing.

## **8. Measures of Relationship and NPC**

- Meaning, Assumption, Computation and Uses of:
  - Product Moment Correlation
  - Rank Difference Correlation
- Normal probability Curve: Meaning and Characteristics, Skewness and Kurtosis

## **9. Inferential Statistics**

- Null Hypothesis, Type I and Type II errors, one and two tailed tests
- Standard error, Confidence limits.
- t-test: Significance of difference between Means, proportions and percentages (Independent samples)
- F-test- One- way ANOVA – Concept, assumption, computation and uses

## **10. Non Parametric Tests**

Chi – square Tests of Equality and Independence: Concept, Computation, and uses.

# **Syllabus of Research Methodology for Ph.D. Entrance Examination GPTR-2018**

(For English/Applied Linguistics and Political Science & International Relations Disciplines)

**Nature and Purpose of Research:** Meaning of research, aim, Nature and scope of research, Prerequisites of research, Types of research: Exploratory, Descriptive and Experimental.

**Research Problem:** Types of research problems, Characteristics of a good research problem, Hypothesis: Meaning and types of hypothesis, Research proposal or synopsis.

**Research Methods:** Qualitative and Quantitative

**Review of Literature:** Purpose of the review, Identification of the literature, organizing the literature.

**Data Collection and Analysis:** Types of data, Methods of data collection, Sample and Population, Sampling Techniques, Characteristics of a good sample, Tools of Data Collection: Observation method, Interview, Questionnaire, various rating scales, Characteristics of good research tools.

**Descriptive Statistics:** Organization, and Tabulation and Graphical Representation of Quantitative data, Data analysis, Hypothesis Testing, Generalization and Interpretation.

**Research Report:** Structure and Components of Research Report, Types of Report, Characteristics of Good Research Report, Bibliographical Entries, Research Ethics.