Research Methodology Syllabus for Qualifying Examination for PhD Submission

Research Methodology: An Introduction
Meaning of Research, Objectives of Research, Motivation in Research, Types of Research, Research Approaches, Significance of Research, Research Methods versus Methodology, Research and Scientific Method, Importance of Knowing How Research is Done, Research Process, Criteria of Good Research, Problems Encountered by Researchers in India.

Defining the Research Problem
What is a Research Problem?, Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem, An Illustration, Conclusion.

Research Design

Design of Sample Surveys

Measurement and Scaling

Data Collection
Introduction, Experiments and Surveys, Collection of Primary Data, Collection of Secondary Data, Selection of Appropriate Method for Data Collection, Case Study Method.

Data Preparation

Descriptive Statistics
Measure of Central Tendency, Measures of Central Dispersion, Measures of Skewness, Kurtosis, Measures of Relationship, Association in Case of Attributes, Other Measures.

Sampling and Statistical Inference
Parameter and Statistic, Sampling and Non-Sampling Errors, Sampling Distribution, Degree of Freedom, Standard Error, Central Limit Theorem, Finite Population Correction, Statistical Inference.

Testing of Hypothesis
Two Mean, Difference of Two Proportions, Difference of Two Variances, P-Value Approach, Power of the Test, Limitations of Tests of Hypothesis.

**Chi-square Tests**
Test of Difference of more than Two Proportions, Test of Independence of Attributes, Test of Goodness of Fit, Caution in using Chi-Square Tests.

**Analysis of Variance**
The Anova Technique, The Basic Principle of ANOVA, One Way ANOVA, Two Way ANOVA, Latin-Square Design, Analysis of Covariance (ANOCOVA)

**Other Nonparametric Methods**

**Linear Regression Analysis**
Dependent and Independent Variables, Simple Linear Regression Model, Multiple Linear Regression Model, Problem of Multicolinearity, Qualitative Explanatory Variables, Using SPSS.

**Factor Analysis**
The Mathematical Basis, Important Methods of Factor Analysis, Rotation in Factor Analysis, R-Type and Q-Type Factor Analysis, Merits and Demerits of Factor Analysis, Using SPSS.

**Discriminant Analysis**
Introduction, Two Group Discriminant Analysis, Multiple Discriminant Analysis.

**Cluster Analysis**
Introduction, Distance Measures, Clustering Algorithms, Agglomerative Clustering.

**Other Multivariate Techniques**
Characteristics and Applications, Classification of Multivariate Techniques, Some Multivariate Techniques, Conclusions.

**Interpretation and Report Writing**

**Text Book**