PAPER I RESEARCH METHODOLOGY AND BASICS OF COMPUTER APPLICATION

RESEARCH METHODOLOGY

1. 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

2. Defining the Research Problem 2 What is a Research Problem? Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem .

3. Research Design - Meaning of Research Design, Need for Research Design ,Features of a Good Design ,Important Concepts Relating to Research Design ,Different Research Designs, Basic Principles of Experimental Designs.

4. Methods of Data collection and Sampling Techniques

5 Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design, Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs, How to Select a Random Sample? Random Sample from an Infinite Universe, Complex Random Sampling Designs Conclusion

6. Analysis and Interpretation of Data & Measurement in Research, Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling, Meaning of Scaling, Scale Classification Bases, Important Scaling Techniques, Scale Construction Techniques.

7. Processing and Analysis of Data 4 Measures of Central Tendency, Measures of Dispersion, Measures of Asymmetry (Skewness), Measures of Relationship, Simple Regression Analysis, Multiple Correlation and Regression, Partial Correlation.

8. Testing of Hypotheses-I - What is a Hypothesis? Basic Concepts Concerning Testing of Hypotheses, Procedure for Hypothesis Testing Flow Diagram for Hypothesis Testing, Measuring the Power of a Hypothesis Test, Tests of Hypotheses, Important Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples, Hypothesis Testing of proportions, Hypothesis Testing for Difference between Proportions, Hypothesis Testing for Comparing a Variance to Some Hypothesized Population Variance, Testing the Equality of Variances of Two Normal Populations, Hypothesis Testing of Correlation Coefficients, Limitations of the Tests of Hypotheses.

9. Analysis of Variance and Covariance 4 Analysis of Variance (ANOVA),What is ANOVA? The Basic Principle of ANOVA, ANOVA Technique, Setting up Analysis of Variance Table, Short-cut Method for One-way ANOVA, Coding Method, Two-way ANOVA ,ANOVA in Latin-Square Design, Analysis of Co-variance (ANOCOVA), ANOCOVA Technique, Assumptions in ANOCOVA.

10. Testing of Hypotheses-II (Nonparametric or Distribution-free Tests) 2 Important Nonparametric or Distribution-free Test. Relationship between Spearman's r and Kendall's W. Characteristics of Distribution-free or Non-parametric Tests.

11. Multivariate Analysis Techniques 2 Growth of Multivariate Techniques. Characteristics and Applications. Classification of Multivariate Techniques. Variables in Multivariate Analysis.

12. Interpretation and Report Writing 4 Meaning of Interpretation. Why Interpretation? Technique of Interpretation. Precaution in Interpretation. Significance of Report Writing. Different Steps in Writing Report . Layout of the Research Report . Types of Reports. Oral Presentation. Mechanics of Writing a Research Report. Precautions for Writing Research Reports

Statistics & Computer applications:

Computer fundamentals: Definition, classification and components, Application of computer in research, Use of word processing, spreadsheet and database software. Plotting of graphs in Microsoft Excel, Use of graphical software, Presentation Tools - Features and functions, Creating presentation, printing handouts. Introduction to Internet, Uses of Internet: Email & WWW, Using search engine like Google etc. Use of Web-2 tools for research, Use of multimedia tools.

Statistics: Significant digits and rounding of numbers, data collection, Measures of central tendency, measures of dispersion, Mean, Median, Mode, Range, Standard deviation, Mean deviation, Quartile deviation, Coefficient of Range, Coefficient of QD & QV, Coefficient of Variation, Skewness, Dispersion, Probability and events, probability distributions, Elements of binomial and poisson distribution, Normal distribution curve and properties, Karl Pearson Coefficients of Correlation or covariance, Rank Correlation Methods, Regression, Properties of Regression Coefficients, Curve Fitting (Method of Least Square), Chi-Square Test, t-Test.