

(13) Research Methodology

Unit I

- **Introduction** – Definition of research, qualities of researcher, components of research problem, various steps in scientific research. Importance of research in decision making.
- **Types of Research** – Research design, survey research – Case study research, research experiment-kinds, control group method, observation method – Merits and demerits of research methods.
- **Research Hypothesis** – Research purposes, research hypotheses, defining research problem and formulation of hypothesis, experimental design.

Unit II

- **Data Collection** – Sources of data: primary data, secondary data; methods and techniques of data collection, data collection procedure – Design of questionnaire, questionnaire pre-testing and compilation of data - Merit and demerits.
- **Data Presentation** – Data processing- Analysis and interpretation of data – Multivariate analysis of data-Statistical Measures of central tendency, range, mean and standard deviation, graphical methods of data presentation, bar and column charts, pie-charts and ogives.- model building and decision making.

Unit III

- **Sampling** – Census method, sampling theory, random sampling, sampling design, sampling errors – Type -I Error, Type II Error, Attitude measurement and scales. -
- **Hypothesis testing** – One sample & two sample Tests I Chi-Square test, association of attributes – students' 't' Test, 'z' test, Analysis of Variance (ANOVA) and 'F' test.

Unit IV

- **Introduction to Statistics** – Probability theories, conditional probability, distributions Poisson, binomial and properties of normal distribution.
- **Statistical Analysis** – Point and interval estimates, estimation of means and proportions; co-efficient of variations – Index number, time series analysis, decision tree analysis.

Unit V

- **Research Report** – Structure and components of research report, types of report, substance of good research report, pictures and graphical presentation of research results, research abstracts.