STATISTICS

Unit - I

Probability (20 percent weight) :

Event and sample space, Classical and axiomatic definition of probability, Total and compound probability - theories with examples, Conditional probability, Statistical independence, Bayes theorem, Random variables discrete and continuous probability, mass functions, and probability density function, Distribution function, Expectation of sum and product of independent random variables, Tchebychaff's inequality, Weak law of large number, Simple form of central limit theorem, Bermoulli theorem, Binomial, Poison, Normal exponential, Uniform, Gamma, Beta, Distributions, Moment generating and probability generating functions.

Standard error, Sampling distribution of mean from a normal universe, Sampling distribution of t, X^2 & F and their interrelation and tests of significance based on them, S.E. of functions of statistics, Independence of attributes by X^2 test.

Unit - II

Statistical Methods (20 percent weight) :

Classification, tabulation and graphical representation of statistical data, Statistical population, Random sample, Various frequency curves, Measures of location and dispersion, Raw moments, central moments and cumulants, Sheppard's correction for moments and cumulants, Skewness and Kurtosis, Measures of association and contingency, Correlation and cogression involving two variable, Rank correlation & fittings of polynomial by the method of least square.

Unit - III

Statistical Inference (20 percent weight) :

Properties of estimates - consistency, unbiasedness efficiency and sufficiency, Maximum likelihood and Minimum X^2 methods of estimation.

Two types of erros in testing of hypothesis, power function, Idea of confidence interval, Run test, Sign, test and Kolmogorov test.

Unit - IV

Sampling theory and Design of Experiments : (20 percent weight)

Principles of sampling, frames and sampling, units sampling and non-sampling errors, Simple random stratified random sampling and systematic sampling, Drawing of simple random samples.

Analysis of variance with equal number of observation per cell in one and two way classifications, Concept of local control in CRD, RBD and LSD designs, Missing plot design (with observation missing), Factorial experiments - 2^2 & 2^3 & confounding.

Unit - V

The Series and quantitative economics : (10 percent weight)

Concept of Time-series, Additive and multiplicative models of time series, Components of time-series, trend and its measurement.

Definition, construction, interpretation and limitations models of index numbers, Uses of index numbers, Criteria of good index numbers, cost of living index numbers.

Theory and analysis of consumers demand, Demand and Supply functions, Elasticity of demand and supply, Engel's Law, Pareto Law of income, distribution, concentration curve.

Unit VI

Demography and Educational Statistics :

(10 percent weight)

Demographic data - Scope and limitation of vital rates, Crude fertility, Specific fertility, Gross and net reproduction rates and standarized rates, Population projection, Growth Curves.

Scaling of test items, Scores, Standard scores, Normal scores, T.C. and X Scaling, Percentile Scale, Reliability and Validity of test, Index of reliability and validity.