

Statistics

DEGREE STANDARD

UNIT I

Uses, Scope and limitation of Statistics, Collection Classification and tabulation of data, Diagrammatic and Graphical representation, Measures of location, dispersion, Skewness and Kurtosis.

UNIT II

Probability - Addition, multiplication and Bay's Theorems and their application. Tchebychev's inequality. Random variables - Univariate and Bivariate - probability distributions - Marginal and conditional distributions - Expectations - Moments and cumulants generating functions Discrete distributions - Binomial, poisson, Geometric and Hypergeometric. Continuous distributions - Uniform, exponential and normal.

UNIT III

Curve Fitting - Linear and Quadratic equation by the method of least squares. Correlation and regression.

UNIT IV

Population and sample - Parameter and statistic, sampling distributions and standard error, student's 't' Chi-square and F statistic - distributions and their applications.

UNIT V

Estimation - Point estimation - properties of estimates Neyman - Fisher Factorization theorem (without proof) Cramer - Rao inequality, Rao - Blackwell theorem - MLE and method of Moments estimation - Interval estimation - for population mean and variance based on small and large samples.

UNIT VI

Tests of Hypothesis - Null and Alternative - Types of errors - Power of test, Neyman - Pearson lemma, UMP and Likelihood ratio tests, Test procedures for large and small samples - Independence of attributes, Chi-square test - Goodness of fit.

UNIT VII

Simple random sample - stratified, systematic, Cluster (Single stage) Estimation of mean and variance in SKS - Sample Survey - Organisation - CSO and NSSO - Sampling and Non-Sampling errors.

UNIT VIII

Analysis of Variance - Principles of design CRD, Rbd and LSD - Factorial experiments 2², 2³ and 3² (Without confounding) Missing plot techniques.

UNIT IX

Concept of SQC - Control Charts - X, R, p and C-Charts Acceptance sampling plan - single and double - oc curves Attributes and Variables plan, Reliability.

UNIT X

Time series - Different Components - Trend and Seasonal Variations - Determination and elimination.

UNIT - XI

Index Numbers - Construction and uses - Different kinds of simple and weighted index numbers - Reversal tests - construction and use of cost of living index numbers.

UNIT-XII

OR Models - Linear Programming problems - Simplex method Dual - Primal, Assignment problems, Network - CPM and PERT.

Statistics

UNIT XIII

Basic programming - variables, constants and strings, flow charts - Basic expression and control statements, standard Library functions, subscripted variables DIM and DATA statements simple programming problems. Birth and death rates - Crude and standard death rates, Fertility rates - Life table construction and uses.