

## STATISTICS

### 1. Correlation Analysis

Meaning of Correlation, Types of Correlation - Positive, Negative, Zero. Methods of studying Correlation – Scatter diagram, coefficient of correlation, Karl Pearson's coefficient of correlation, Spearman's Rank correlation( non repeated only ).

### 2. Regression Analysis

Concept of Regression, Regression Lines, Equation of Regression lines, Properties of regression coefficients.

### 3. Elementary Calculus

First derivative and Second derivative of simple linear functions. Integration of simple functions. Definite integrals.

### 4. Random Variables

Random Variables- Discrete and Continuous. Discrete Random Variables -Probability mass function (pmf), Cumulative Distribution Function (cdf). Mean, Variance and their properties. Continuous Random Variables - Probability density function (pdf), properties of pdf.

### 5. Discrete Probability Distributions

Binomial Distribution-pmf, mean and variance. Poisson Distribution-pmf, mean and variance.

### 6. Normal distribution

Normal Probability Density function, Mean and Variance, Normal curve and its properties. Standard Normal Distribution, Z – transformation and Z – score, Standard Normal Tables, simple problems based on Standard Normal Tables.

### 7. Sampling Distributions

Parameter and Statistic, Sampling Distribution, Determination mean of sample mean (SRSWOR).

### 8. Estimation of parameters.

Statistical inference, Estimation of Parameters, Point Estimation, Properties of a Good Estimator -Unbiasedness, Consistency, Sufficiency and Efficiency.

### 9. Testing of Hypothesis

Statistical Hypothesis, Test statistic and Critical Region, Type I and Type II Errors, Level of Significance and Power of Test, Test for significance of Single Mean ( large sample only).

### 10. Analysis of Variance

Causes of variations, Assumptions underlying ANOVA, One way classification by using ANOVA Table.

### 11. Statistical Quality Control

Meaning of Quality, Causes of variations, Variable Control Charts ( $\bar{x}$  chart only)

### 12. Time Series Analysis

Components of Time series, Trend analysis- Method of semi averages, moving averages.

### 13. Index Numbers

Types of Index numbers- Simple Index Number (Simple AM), Simple Aggregate Method, Weighted Index number (Laspeyre's, Paasche's, Fisher's Index Numbers). Uses of Index Numbers.