**Mathematics & Statistics**

**UNIT – I**

**Sets**

Definition of sets

Representation of sets

Type of sets

Operations on sets

Sub sets

Power set

Universal set

Complement of a set

Union and Intersection of two sets

Venn diagrams

Principles of Inclusion and Exclusion

**Relations**

Cartesian product of sets

Definition of relation

Types of relations

Reflexive

Symmetric

Anti-symmetric

Transitive

Equivalence

**Functions**

Definition

Domain & Range of a functions

One to one and onto functions

Bijective functions

Composite functions

Inverse of functions

**UNIT – II**

**Logic and Proofs**

Proposition

Conjunction

Disjunction

Negation

Compound proposition

De Morgan’s laws

Tautology and Contradiction

**Matrices**

Definition and Types of Matrices

Addition

Subtraction

Multiplication

Noncommutatively of multiplication of matrices

Scalar Multiplication

Transpose of a Matrix

**Determinant**

Determinant of a square matrix (up to 3x3 matrices)

properties of determinants

minors

cofactors

expansion of determinants

application of determinants in finding the area of a triangle

Adjoint and Inverse of a matrix

Solution of system of linear equations by Cramer’s Rule

**UNIT –III**

**Statistics**

Data collection methods

Data classification

Frequency Distribution

Graphical representation of frequency distribution

**Measures of Central Tendency**

Mean

Median

Mode

Measures of Dispersion

Mean Deviations

Standard Deviations

Variance

**UNIT –IV**

**Correlation Analysis**

Correlation

Types of Correlations

Methods of Studying Correlations

Measure of Karl Pearson’s coefficient of correlation

Rank Correlation Coefficient

**Regression Analysis**

Regression

Use of regression analysis

Difference between Correlation and Regression Analysis

Regression Lines Equations

Properties of regression lines