

Mathematics & Statistics (Commerce) (88)

Introduction

Mathematics is inseparable part of human life and is perhaps the only subject that merits this distinction.

Higher Secondary is a launching stage, from where students may join courses like C.A., I.C.W.A., Computer Science, Information Technology, Actuarial Science, Accounting and Finance, Banking and Insurance etc. Thus, it is utmost important to make the study of Mathematics more meaningful by acquainting the students with many branches of Mathematics. This will help them in developing Mathematical skills and tools as well as statistical techniques required for higher education.

The proposed syllabus has been designed in accordance with National Curriculum Framework – 2005 and as per guidelines given in Focus group on Teaching of Mathematics 2005.

Motivating topics from real life situations and other subject areas as well as major thrust on applications of various concepts is the need for present.

Objectives

To enable students

1. to create an aptitude for Mathematics and Statistics in those who are interested in higher studies.
2. to equip themselves with tools in Mathematics and Statistics that are needed in handling various situations in Commerce.
3. to acquire knowledge, critical understanding of basic concepts, facts,

principles, terms, symbols and mastery of underlying process and skills.

4. to inculcate the positive attitude to think, reason, analyze and articulate logically.
5. to develop awareness for the need for national integration, protection of an environment, observance of small family norms, removal of social barriers, elimination of sex biases.
6. to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.
7. to acquaint the students with emerging trends in Mathematics and Statistics, if possible.

Std. XI : PART - 1

1. **Sets, Relations and Functions –**
 - 1.1 Review
 - 1.2 Power set and Cartesian Product
 - 1.3 Relations
 - 1.4 Functions
 - 1.5 Operations on functions
 - 1.6 Graphs of functions
2. **Complex Number**
 - 2.1 Definition of complex number -
 - 2.2 Algebra of complex numbers
 - 2.3 Geometrical representation of a complex number
3. **Sequences and Series**
 - 3.1 Revision of A.P.
 - 3.2 Geometric Progression
 - 3.3 Harmonic Progression
 - 3.4 Special Series



- 4. Angle and its measurement**
 - 4.1 Revision
 - 4.2 Measurement of angles
 - 4.3 Systems of measurement of angles
- 5. Trigonometric Functions**
 - 5.1 Trigonometric Functions
 - 5.2 Trigonometric functions of compound angles (All formulae without proof)
 - 5.3 Inverse trigonometric functions
- 6. Plane Co-ordinate Geometry**
 - 6.1 Locus
 - 6.2 Line
- 7. Circle and Conics**
 - 7.1 Circle
 - 7.2 Conics
- 8. Equations –**
 - 8.1 Equations
- 9. Determinants**
 - 9.1 Revision
 - 9.2 Determinant of order 3
 - 9.3 Applications of Determinants
- 10. Limits**
 - 10.1 Standard Limits
- 11. Differentiation –**
 - 11.1 Derivative
 - 11.2 Rules of differentiation
 - 11.3 Derivatives of particular functions
 - 11.4 Derivatives of composite function
- 2.3 Independence of attributes**
- 2.4 Association of attributes**
- 3. Partition Values**
 - 3.1 Partition values
- 4. Measures of Dispersion**
 - 4.1 Measures of Dispersion
- 5. Moments**
 - 5.1 Moments
- 6. Skewness and Kurtosis**
 - 6.1 Skewness
 - 6.2 Kurtosis
- 7. Permutations and Combinations**
 - 7.1 Permutations
 - 7.2 Combinations
- 8. Probability**
 - 8.1 Types of events
 - 8.2 Addition Theorem
 - 8.3 Conditional probability
- 9. Index Numbers**
 - Introduction
 - 9.1 Types of Index Numbers
 - 9.2 Uses of Index Numbers
 - 9.3 Some specific Index Numbers
 - 9.4 Cost of living Index Numbers, Uses of cost of living Index Number
- 10. Time Series**
 - Introduction
 - 10.1 Mathematical Models
 - 10.2 Measurement of Trend

PART - 2

- 1. Logarithms**
 - 1.1 Introduction and Definition
 - 1.2 Laws of logarithms
 - 1.3 Characteristics and Mantissa
- 2. Theory of Attributes**
 - 2.1 Introduction, notation and class frequencies
 - 2.2 Consistency of data
- 1. Graphs of standard functions**
- 2. Complex Numbers**
- 3. Sequences and Series**
- 4. Trigonometry – I**
- 5. Trigonometry – II**
- 6. Locus and straight lines, Circle and Conics**
- 7. Equations and Determinants**

Std. XI : LIST OF PRACTICALS



8. Limits and Differentiation
9. Logarithms
10. Theory of Attributes
11. Partition Values
12. Measures of Dispersion-I
13. Measures of Dispersion-II
14. Moments
15. Skewness and Kurtosis
16. Permutations and Combinations
17. Probability-I
18. Probability-II
19. Index Numbers
20. Time Series

Std. XII : PART - 1

- 1. Mathematical logic**
 - 1.1 Statements
 - 1.2 Logical Connectives
 - 1.3 Statement patterns and logical equivalence
 - 1.4 Algebra of statements
 - 1.5 Venn diagrams
- 2. Matrices**
 - 2.1 Definition and types of matrices
 - 2.2 Algebra of matrices
 - 2.3 Inverse of a matrix
 - 2.4 Solution of equations
- 3. Continuity**
 - 3.1 Continuity of a function at a point
- 4. Differentiation**
 - 4.1 Derivative of Inverse function
 - 4.2 Logarithmic Differentiation
 - 4.3 Derivative of implicit function
 - 4.4 Derivative of parametric function
 - 4.5 Second order derivative
- 5. Applications of Derivative**
 - 5.1 Increasing and decreasing functions
 - 5.2 Maxima and minima

- 6. Indefinite Integration**
 - 6.1 Definition of an integral
 - 6.2 Integral of standard functions
 - 6.3 Rules of Integration
 - 6.4 Methods of Integration
 - 6.5 Integration by parts
- 7. Definite Integrals**
 - 7.1 Definite Integral
 - 7.2 Properties
 - 7.3 Applications

PART - 2

- 1. Ratio, Proportion and Partnership**
 - 1.1 Ratio, proportion and partnership
- 2. Commission, Brokerage and Discount**
 - 2.1 Commission and Brokerage
 - 2.2 Discount
- 3. Insurance and Annuity**
 - 3.1 Insurance
 - 3.2 Annuity
- 4. Demography**
 - 4.1 Introduction, Definition
 - 4.2 Uses of vital statistics
 - 4.3 Measurements of Mortality
 - 4.4 Life tables
- 5. Bivariate Data and Correlation**
 - 5.1 Bivariate frequency distribution
 - 5.2 Karl Pearson's coefficient of correlation
 - 5.3 Rank correlation
- 6. Regression Analysis**

Introduction

 - 6.1 Equation of line of regression
 - 6.2 Regression coefficients and their properties
- 7. Random Variable and Probability Distribution**



- 7.1 Definition and types of random variables
- 7.2 Probability Distribution of a Discrete Random Variable
- 7.3 Probability Distribution of a Continuous Random Variable
- 7.4 Binomial Theorem
- 7.5 Binomial Distribution
- 7.6 Poisson Distribution
- 7.7 Normal Distribution
- 8. Management Mathematics**
- 8.1 Inequations
- 8.2 Linear Programming Problem
- 8.3 Assignment Problem
- 8.4 Sequencing
- Std. XII : LIST OF PRACTICALS**
1. Mathematical Logic
 2. Matrices-I
 3. Matrices-II
 4. Differentiation
 5. Applications of Definite Integrals
 6. Commercial Arithmetic-I
 7. Commercial Arithmetic-II
 8. Measurements of Mortality
 9. Construction of Life Table
 10. Correlation for Bivariate Ungrouped Data
 11. Correlation for Bivariate Grouped Data
 12. Spearman's Rank Correlation Coefficient
 13. Regression Analysis
 14. Probability Distribution
 15. Binomial Distribution
 16. Poisson Distribution
 17. Normal Distribution
 18. Linear Programming Problem
 19. Assignment Problem
 20. Sequencing

