B.Com.: (CBCS)
Semester- II
CC203 : BUSINESS MATHEMATICS AND STATISTICS (6 Credit)

Marks: 100 (Internal Assessment 20+ Term-end 80)
Lectures: 60 Tutorials: 5

Objective: The objective of this course is to familiarize students with the applications of mathematics and statistical techniques in business decision-making.

Notes:
1. Use of simple calculator is allowed.
2. Proofs of theorems / formulae are not required.
3. Trigonometric functions are not to be covered.

Part – A:Business Mathematics **23L+3T**

Unit I: Matrices

Definition of a matrix. Types of matrices; Algebra of matrices. Calculation of values of determinants up to third order; Adjoint of a matrix; Finding inverse of a matrix through ad joint; Applications of matrices to solution of simple business and economic problems

Marks: 10

Unit II: Differential Calculus

Mathematical functions and their types – linear, quadratic, polynomial; Concepts of limit and continuity of a function; Concept of differentiation; Rules of differentiation – simple standard forms. Applications of differentiation – elasticity of demand and supply; Maxima and Minima of functions (involving second or third order derivatives) relating to cost, revenue and profit.

Marks: 10

Unit III: Basic Mathematics of Finance

Simple and compound interest Rates of interest – nominal, effective and continuous – their inter relationships; Compounding and discounting of a sum using different types of rates.

Marks: 12

Part – B:Business Statistics **37L+2T**

Unit I: Uni-variate Analysis

Measures of Central Tendency including arithmetic mean, geometric mean and harmonic mean: properties and applications; mode and median. Partition values - quartiles, deciles, and percentiles.

Measures of Variation: absolute and relative. Range, quartile deviation and mean deviation; Variance and Standard deviation: calculation and properties.

Marks: 16

Unit II: Bi-variate Analysis

Simple Linear Correlation Analysis: Meaning, and measurement. Karl Pearson's co-efficient and Spearman's rank correlation.
Simple Linear Regression Analysis: Regression equations and estimation. Relationship between correlation and regression coefficients.

Marks: 16

Unit III: Time-based Data: Index Numbers and Time-Series Analysis
Meaning and uses of index numbers; Construction of index numbers: Aggregative and average of relatives – simple and weighted, Tests of adequacy of index numbers, Construction of consumer price indices.

Components of time series; additive and multiplicative models; Trend analysis: Finding trend by moving average method and Fitting of linear trend line using principle of least squares.

Marks: 16

Suggested Readings:
1. Mizrahi and John Sullivan. *Mathematics for Business and Social Sciences*. Wiley andSons.
2. Budnick, P. *Applied Mathematics.* McGraw Hill PublishingCo.
3. N. D. Vohra, *Business Mathematics and Statistics,* McGraw Hill Education (India) PvtLtd
4. J.K. Thukral, *Mathematics for Business Studies,* Mayur Publications
5. J. K. Singh, *Business Mathematics,* Himalaya PublishingHouse.
6. J. K. Sharma, *Business Statistics,* PearsonEducation.
7. S.C. Gupta, *Fundamentals of Statistics,* Himalaya PublishingHouse.
8. S.P. Gupta and Archana Gupta, *Elementary Statistics,* Sultan Chand and Sons, NewDelhi.
9. Richard Levin and David S. Rubin, *Statistics for Management,* Prentice Hall of India, New Delhi.
10. M.R. Spiegel, *Theory and Problems of Statistics,* Schaum's Outlines Series, McGraw Hill PublishingCo.
(Note: Latest edition of text books may be used.)