B.Com
Semester – I
Commercial Arithmetic – I (CC-4)

Objective:

- To provide basic knowledge of mathematics and its application in the field of commerce and industry
- To acquire the students with wide ranging application of mathematical techniques to commerce, economics and practical situations.

- **Unit – I   Mathematical Logic and Set Theory (20 mrks – 13 Lectures)**
  - ❖ **Mathematical Logic**   **(10 mrks – 7   Lectures)**
    - Logical Statement, Truth Value, Compound statement, Negation, Conjunction, disjunction**,** Conditional and Bi-conditional statement
    - Truth tables, Logical equivalence, Tautology and Contradiction
    - Argument, Validity of an argument (using truth table for 2 statements only)
  - ❖ **Set Theory**   **(10 mrks – 6 Lectures)**
    - Quadratic Equation, soln of General quadratic equation $ax^2 + bx + c = 0$
    - Sets: Definition, Representation of sets, Types of sets: Finite and infinite, Null sets, Singleton set, examples, Venn diagrams, Subsets, complement of a set.
    - Union, Intersection and set differenceof sets, Power sets, De Morgan's Law, Verification by examples and Venn diagrams, Number of element of a set, Results involving number of sets (upto 3 sets) and problems based on it

- **Unit – II Permutation and combinations   (20 mrks – 15 Lectures)**
  - Fundamental Principles – examples, Factorial notations
  - Permutation : Definition of Permutation, Number of Permutations of n different things taken r at a time, Permutations with repetition
  - Combination: Definition of combination, Number of Combinations of n different things taken r at a time (no proof for statement)

- **Unit –III   Progression and Mathematics of finance (45 mrks – 22 Lectures)**
  - **Progression**
    - Arithmetic Progression (AP) : Definition, Formula for n[th] term, Sum of first n-terms, Business Application of AP
    - Geometric Progression (G.P.): Definition, Formula for n[th] term, Sum of first n-terms of GP, Business Application of GP
  - **Mathematics of Finance:**
    - Simple Interest, Compound Interest – compounded annually, six monthly, quarterly, monthly and daily, Nominal and effective rate of interest.
    - Present value and future value, Ordinary annuity, PV of an ordinary annuity.
    - EMI using interest on reducing balance and flat interest rate.

- **Unit – IV Determinant and Matrices   (15 marks – 10 Lectures)**
  - **Determinant:** Meaning, Order, Minor, co-factor, expansion (order 2 and 3)Cramer's rule
  - **Matrices:** Definition, Notation, Types of matrices, algebra of matrices-Negative, Transpose, Equality, addition and subtraction, Scalar multiplication, Matrix multiplication, application to business problem.