**B.COM.**

**SEMESTER I**

**Commercial Arithmetics – I (CC 4)**

**(100 marks - 60 Lectures)**

**Objectives:**

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

**Unit I Mathematical Logic and Set Theory**

1. **Mathematical Logic (10marks - 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)
2. **Set Theory (10marks - 6 Lectures)**
   * Quadratic equation, Solution of general quadratic equation ax2 + bx + c = 0
   * Sets: Definition, Representation of sets
   * Types of sets: Finite and infinite sets, null sets, singleton set, examples
   * Venn diagrams
   * Subset, Complement of a set, Union, Intersection and Difference of sets, Power sets
   * De Morgan’s Law, Verification by examples and Venn diagrams
   * Number of elements of a set, Results involving number of sets (upto three sets) and problems based on these results

**Unit II Permutations and Combinations (20marks - 15 Lectures)**

* + Fundamental Principle – examples
  + Factorial notation
  + Definition of Permutation
  + Number of permutations of *n* different things taken *r* at a time
  + Permutations with repetition
  + Definition of Combination
  + Number of combinations of *n* different things taken *r* at a time (no proof for results)

**Unit II Progressions and Mathematics of Finance**

1. **Progressions ( 20marks - 10 Lectures)**

* Arithmetic Progression (A.P.)
* Definition of A.P.
* Formula for nth term of an A.P.
* Sum of the first n terms of an A.P.
* Business applications of A.P.
* Geometric Progression (G.P.)
* Definition of G.P.
* Formula for nth term of a G.P.
* Sum of the first n terms of a G.P.
* Business applications of G.P.

1. **Mathematics of Finance (25marks - 12 Lectures)**

* Simple Interest
* Compound Interest – compounded annually, six monthly, quarterly, monthly and daily
* Nominal and Effective rate of interest
* Present and future value
* Ordinary annuity, Present value of ordinary annuity
* EMI using Interest on reducing balance and Flat Interest rate

**Unit IV Determinants and Matrices (15marks - 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
* Applications to Business Problems