MSC (CA&IT) - Semester: I

(Effective from year 2023-24)

Course Code:	CAIT-104	Course Title:	Mathematical Foundation of Computer Science
Course Credits:	04	Hour of Teaching/Week:	04
Internal Assessment Marks:	50	External Exam Marks:	50
Exam Duration	2.5 Hrs		

Unit	Contents
1	Mathematical Logic: Propositional Calculus: Statement and Notation, Truth Values, Connectives, Truth Tables, Tautologies, Equivalence Formulas, Laws, GATEs, AND, OR, NOT, NOT, NAND and their network diagrams.
2.	Set Theory: Set, Types of Sets: Finite, Infinite, Singleton, Empty, Subset, Proper Subset, Power Set, Universal. Venn Diagram, Operations on Set: Union, Intersection, Compliment, Cartesian product, Difference of sets, De'Morgan's Laws, Examples of operations on set and laws.
3.	Matrices: Types of Matrices: Row, Column, Square, Diagonal, Unit, Triangular, Symmetric, Ske-symmetric, Transpose of a Matrix. Operations on Matrices: Addition, Subtraction, Scalar Multiplication, Multiplications Determinants of Matrix, Adjoin, Minor and Inverse of a Matrix
4.	Graph Theory: Graph related terminology, Types of Graph: Directed Graph, Undirected Graph, Simple Graph, Multi-Graph, Isomorphic Graph, Complete Graph, Regular Graph. Matrix Representation of Graph

Text Books and References/ Online Resources:

1. S.Lipschutz and Marc Lars Lipson : Discrete Mathematics, Schaum's series (Interational edition,1992).
2. Vinay Kumar: Discrete Mathematics (BPB Publication, First edition-2002)

External Exam Format : As per Table 1.1, 1.2 and 1.3