6. A.L.Gupta and N.R.Gupta, Principles of Real Analysis, Pearson Education, (Indian print) 2003.

7.Measure theory and integration by G. De. Barra (willey estern ltd)

# **15 MMCC 103 DISCRETE MATHEMATICS (3-1-0)**

### Module-I : (13 Hours)

Propositional logic operations, First order logic, basic logical Operations Propositional Equivalence, Predicates and Universal & Existential Quantifiers, Nested Quantifiers,

Rules of Inference, Proof methods and Strategies, Sequences and Summations, Mathematical Induction, Recursive definition and structural induction, Program Correction

Recurrence relation, Solution to recurrence relation, Generating functions, Principle of Inclusion and exclusion, Application of Inclusion and Exclusion Principle,

Set Theory, Relation and their properties, Partitions, Closure of Relations, Warshall, s Algorithm, Equivalence relations, Partial orderings, .

### Module-II : (14 Hours)

Introduction to graph theory, Graph terminology, Representation of graphs, Isomorphism, Connectivity, Euler and Hamiltonian paths, Shortest path problems, Planar graph, Graph coloring,

Introduction to trees, Application of trees, Tree Traversal, Minimum Spanning tree.

# Module-III : (13 Hours)

Matrix representation of a graph: Basic ideas of Incidence matrix, sub matrix, circuit matrix fundamental circuit matrix, cut set matrix, path matrix and adjacency matrix, Coloring :Chromatic number, chromatic partitioning ,chromatic polynomial,matching ,covering

Algebraic systems, Lattices, Distributive and Complemented Lattices, Boolean Lattices and

Boolean Algrebra, Boolean Functions and Boolean Expressions.

# **Text Books:**

1. Kenneth H. Rosen, "Discrete Mathematics and its Applications", Sixth Edition, 2008, Tata McGraw Hill Education, New Delhi.

Chapters: 1, 2(2.4), 4, 6(6.1, 6.2, 6.4-6.6), 7, 8, 9

2. C. L. Liu and D. Mohapatra, "Elements of Discrete Mathematics", Third Edition, 2008, Tata McGraw Hill Education, New Delhi

Chapters: 10 (10.1-10.10), 11(11.1-11.7)

# **Reference:**

1. J. L. Mott, A. Kandel, T. P. Baker, "Discrete mathematics for Computer Scientists & Mathematicians", Second Edition, PHI. Chapters : 1,2,3,4(4.1-4.5), 5, 6(6.1-6.5) Chapters: 10 (10.1- 10.10), 11(11.1 – 11.7)