

FMCC 101 Discrete Mathematics (3-1-0)

Module-I : (13 Hours)

Propositional logic operations, truth , 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)

Semi groups, Monoids, Groups, Subgroups, Cosets, Lagrange theorem, Permutation
groups,

Group codes ,Isomorphism, Homomorphisms, Normal subgroups, Rings, Integral
Domain and

Fields.

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

Boolean Algebra, Boolean Functions and Boolean Expressions.

Text Books:

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)

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

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

Reference Books:

1. Gosset " Discrete Mathematics "Second Edition, Wiley.

2. Discrete Mathematical structures, Kolman, Busby & Ross, Pearson.