

B.C.A. Part I Semester II
Paper V
DISCRETE MATHEMATICS – 2

UNIT - I :

Set Theory:

Set, Subsets operations on set, Venn diagram, algebra on sets, Cartesian product of sets, Binary relations, Properties of binary relation, Relation matrix and the graph of relation, Partial order relations, Equivalence relations, Equivalence Classes, Composition of relations.

UNIT - II :

Functions - definition, types of function, Invertible functions composition of functions.

Counting - Permutation, Combinations, The pigeonhole principle, recurrence relation, Mathematical Induction.

UNIT - III :

Algebraic Structures

Semi groups & groups: Binary operations, Semi groups, isomorphism and Homomorphism, Product and Quotient of semi groups, Groups, subgroups, products and Quotient of groups.

Lattices: - Lattice concepts, isomorphic Lattices, Properties of lattices, Finite Boolean algebras.

UNIT - IV :

Graph Theory: Basic concepts, types of graphs, Representation of graph in memory, Euler path and circuits, Hamiltonian Path and circuits.

Trees:- Basic concepts, Labeled trees, Undirected trees.

Reference Books:

1. Discrete Mathematical Structures with applications to computer Science By J.P.Tremblay & R. Manohar, (TMH)
2. Discrete Mathematical Structures by Kolman Busby and Ross (pearson)
3. Discrete Mathematics By Norman Biggs. (Oxford).
4. Logic and Discrete Mathematics : Grassmann, Tremblay (Pearson)
5. Introduction to Automata Theory, Languages, and computation :Hopcroft, Motwani and Ullman(Pearson)
6. An introduction to the theory of computer science , languages and machines : Sudkamp
7. Kenneth H Rosen Discrete Mathematics & it's Applications TMH