Subject Code : P8MCA10

Core Course – X - Discrete Mathematics

Unit I

Sets, Relations & Functions: Property of binary relations, equivalence, compatibility, partial ordering relations, Hasse diagram, functions, inverse functions, compositions of functions, recursive functions.

Unit II

Mathematical logic: Logic operators, Truth tables, Theory of inference and deduction, mathematical calculus, predicate calculus, predicates and qualifiers.

Unit III

Groups & Subgroups: Group axioms, permutation groups, subgroups, cosets, normal subgroups, semi groups, free semi-groups, monoids, sequential machines, error correcting codes, modular arithmetic grammars.

Unit IV

Lattices & Boolean Algebra: Axiomatic definition of Boolean algebra as algebra as algebraic structures with two operations , basic results truth values and truth tables, the algebra of propositional functions, Boolean algebra of truth tables.

Unit V

Combinatorics & Recurrence Relations: Disjunctive and sequential counting, combinations and permutations, enumeration without repetition, recurrence relation, Fibonacci relation, solving recurrence relation by substitution, solving non- recurrence relation by conversion to linear recurrence relation.

Text Book(s)

1. Trembly. J.P & Manohar. P., “Discrete Mathematical Structures with Applications to Computer Science” McGraw Hill.
2. Kolman, Busy & Ross “Discrete Mathematical Structures”, PHI
3. K.D Joshi, “Foundations of Discrete Mathematics”, Wiley Eastern Limited.

References

1. Seymour Lipschutz & March Lipson Tata Mc Graw Hill.
2. C.L.Liu “Elements of screte mathematics “ Tata McGraw Hill.