

2. Discrete Mathematics (CS-102)

(4-0-0)

Number System: Decimal Number Systems, Binary Number Systems, Hexadecimal Number Systems, Octal Number Systems, Binary Arithmetic. Propositions and Logical Operations: Notation, Connections, Normal forms, Truth Tables, Equivalence and Implications, Theory of interference for statement calculus, Predicate calculus, Rules of Logic, Mathematical Induction and Quantifiers. Sets, Relations and Digraphs: Review of set concepts, Relations and digraphs, Properties of relations, Equivalence relations, Computer representation of relations and digraphs, Manipulation of relations, Partially Ordered Sets (Posets). Recurrence Relations: Towers of Hanoi, Iterations, Homogeneous linear equations with constant coefficients, particular solution, difference table, finite order differences, Line in a plane in general position. Groups and Applications: Monoids, semi groups, Product and quotients of algebraic structures, Isomorphism, homomorphism, automorphism, Normal subgroups, Codes and group codes. Classification of Languages: Overview of Formal Languages-Representation of regular languages and grammars, finite state machines.

References:

1. J.P.Tremblay and R.Manohar, Discrete Mathematical Structures, Tata McGraw Hill, 2001.
2. Semyour Lipschutz and Varsha Pati, Discrete Mathematics, Second Edition, Schaum's Series, TMH

3. Kolman, Busby and Ross, Discrete Mathematical Structures, Third Edition, Prentice Hall India.
4. C.L. Liu, Elements of Discrete Structures, MacGraw Hill, 1986.
5. K. H. Rosen, Discrete Mathematics and Application, MacGraw Hill, 1999.