

FIRST ALLIED COURSE – II (AC) - DISCRETE MATHEMATICS

Unit I

Set Theory: Basic concepts – Natural numbers – Notation – Inclusion and equality – Power set

Unit II

Operations – Nenn Diagrams – identifiers Cartesian products – relations and ordering - Functions – composition – inverse binary and n- array operation

Unit III

Mathematical Logic: Statements and notation – connectives – negation – conjunction – disjunction – Statement formulas and truth tables – conditional and bi-conditional – well formed formulae – Tautologies – equivalence of formulae – duality law – disjunctive normal form – conjunctive Normal form.

Unit IV

Graphs – Sub-graphs – connected graphs – operations on graphs – paths, circuits, Euler graphs – Hamiltonian paths – Traveling salesman problem

Unit V

Trees – properties of trees – pendent vertices – Distance and centers in a Tree – Rooted and Binary Trees – Spanning Trees – Fundamental circuits – spanning Trees and weighted graphs – Shortest spanning trees – Kruskal algorithm

Text Book:

1. J.P. Tremblay, R. Manohar, “Discrete Mathematical structure with Applications to Computer Science” McGraw Hill International Editions (Revised) (Unit 1.2 & 3)
2. Nauring Deo “Graph Theory with Applications to Engineering and Computer Science”, PHI, Private Ltd., (Latest Edition) Unit 4 & 5

Reference:

1. Bernard Kolman & Robert C. Busby “Discrete Mathematical Structure for Computer Science” 9Revised) PHI
2. F. Hamary “Graph Theory” Addison wesley Publishing company 9Revised Edition)