

Course Code (BIT-203)

Semester-II

Course Title: Applied Mathematics-II

Total Credits: =06

UNIT-I Probability

Introduction to Probability, Definitions, Random Experiment, sample space, probability of events, compound event, conditional probability, simple applications, Bayes theorem

UNIT-II Graph Theory

Introduction, Basic terminology in graph theory such as vertices, edges, loops, isolated vertex, incidence, and multiple edges. Concept of path, simple path, circuits, walk, multi-graphs, sub-graphs. Degree of vertex, isomorphic graphs, homomorphic graphs. Connectivity, closed path, Euler's path, complete graphs, regular graphs, bipartite graphs, Hamiltonian graphs, Eulerian graphs, Finite graph, Representations of Graphs, Graph Traversals, BFS, DFS

UNIT-III Trees

Introduction, properties of trees, Binary trees, complete and extended binary trees, spanning trees and minimum spanning trees, Binary search tree, AVL trees, Red-Black Trees, Tree traversals, Representation of trees in memory, Path Lengths, Huffman's Algorithm

UNIT-IV Permutation, Combination and Binomial Theorem

Introduction, fundamental principles of counting, sum-rule principle, Product Rule Principle, Factorial Notation, Elementary study of Permutations and Combinations, values of ${}^n P_r$ and ${}^n C_r$, The Pigeon-hole principle, simple applications. Binomial theorem and applications, Principle of Mathematical Induction-Simple examples.

SUGGESTED READING:

- 5) Mathematics Text Books for class XI and XII (J&K BOSE)
- 6) Discrete Mathematics-Swapan Kumar Sarkar (S.Chand)
- 7) Discrete Mathematics-Semyour Lipschutz & Mark Lipson (Tata Mcgraw Hill)
- 8) Discrete Mathematical Structures-Kolman, Busby, Ross, 6th Edition (Pearson)

