

(MT-605) Discrete Structure and Graph Theory

Basic concepts, Connectivity, Cycles and cut sets, Matrix representation, min sum algebra

Graph Colouring: Graph colouring, Independent sets and cliques perfect graph.

Paths and Circuits: Euclidian paths and circuits, Hamiltonian paths and circuits, Basic concepts, Euler's formula, Kuratowski's theorem, Dual graphs, Shortest paths, Maximum flows, Minimum cost flows, communication networks, Difficult routing and assignment problems. Shible's Algorithm

Trees and Algorithm: Introduction to trees, Characterizing trees, Rooted trees, Binary trees, Spanning trees, Minimum spanning trees, Counting spanning trees, Shortage fault, Cycles, Edge cuts, Graph and vector spaces, Matroids and Greedy algorithms.

Inclusion-Exclusion Principle and Coding Theory: Principle of inclusion and exclusion, Rook polynomials, Hall's theorem, Optimal assignment problems, Introductory coding theory, Linear codes, Hamming codes, Finite state automata.

Deterministic and nondeterministic Automata and its Application

Reference Books:

1. Danh T.N, *Advanced Discrete Mathematics*, VNU of Ho Chi Minh City, 2004.
2. Susanna S. E, *Discrete Mathematics with Applications*, 3rd Edition, Thomson, 2004.
3. Rosen K.H, *Discrete Mathematics and its Application*, 5th Edition, Mcgraw Hill Co Inc, 2003.