

UNIT–I INTRODUCTION**9**

Graphs – Introduction – Isomorphism – Sub graphs – Walks, Paths, Circuits – Connectedness – Components – Euler Graphs – Hamiltonian Paths and Circuits – Trees – Properties of trees – Distance and Centers in Tree – Rooted and Binary Trees.

UNIT–II TREES,CONNECTIVITY,PLANARITY**9**

Spanning trees – Fundamental Circuits – Spanning Trees in a Weighted Graph – Cut Sets – Properties of Cut Set – All Cut Sets – Fundamental Circuits and Cut Sets – Connectivity and Separability – Network flows – 1-Isomorphism – 2-Isomorphism – Combinational and Geometric Graphs – Planer Graphs – Different Representation of a Planer Graph.

UNIT–III MATRICES,COLOURING AND DIRECTED GRAPH**9**

Incidence matrix – Submatrices – Circuit Matrix – Path Matrix – Adjacency Matrix – Chromatic Number – Chromatic partitioning – Chromatic polynomial – Matching – Covering – Four Color Problem – Directed Graphs – Types of Directed Graphs – Digraphs and Binary Relations – Directed Paths and Connectedness – Euler Graphs – Adjacency Matrix of a Digraph.

UNIT–IV ALGORITHMS**9**

Algorithms: Connectedness and Components – Spanning tree – Finding all Spanning Trees of a Graph – Set of Fundamental Circuits – Cut Vertices and Separability – Directed Circuits.

UNIT–V ALGORITHMS**9**

Algorithms: Shortest Path Algorithm – DFS – Planarity Testing – Isomorphism.

TOTAL : 45 PERIODS**TEXT BOOK:**

Narsingh Deo, "Graph Theory: With Application to Engineering and Computer Science", Prentice Hall of India, 2003.

REFERENCE:

R.J. Wilson, "Introduction to Graph Theory", Fourth Edition, Pearson Education, 2003.