

GRAPH THEORY (MATHEMATICS)

Unit 1. Introduction

1.1 What is a Graph?

1.2 Application of Graphs

1.3 Finite and Infinite Graphs

1.4 Incidence and Degree

1.5 Isolated Vertex, Pendant Vertex and Null Graph

Unit 2. Paths and Circuits

2.1 Isomorphism

2.2 Subgraphs

2.4 Walks, Paths, and Circuits

2.5 Connected Graphs, Disconnected Graphs, and Components

2.6 Euler Graphs

2.7 Operations on Graphs

2.8 More on Euler Graphs

2.9 Hamiltonian Paths and Circuits

2.10 The Traveling Salesman Problem

Unit 3. Trees and Fundamental Circuits

3.1 Trees

3.2 Some Properties of Trees

3.3 Pendant Vertices in a Tree

3.4 Distance and Centers in a Tree

3.5 Rooted and Binary Trees

3.6 On Counting Trees

3.7 Spanning Trees

3.8 Fundamental Circuits

3.10 Spanning Trees in a Weighted Graph

Unit 4. Cut-Sets and Cut-Vertices

4.1 Cut-Sets

4.2 Some Properties of a Cut-Set

4.3 All Cut-Sets in a Graph

4.4 Fundamental Circuits and Cut-Sets

4.5 Connectivity and Separability