

### SEMESTER-III

**COURSE CODE** :- **C 6**  
**COURSE TITLE** :- **GRAPH THEORY**  
**CREDIT** :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75      Duration: 3 hrs

Pass Marks: 34

This paper consists of 50 marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

**Module-1** Introduction: What are Graph, Application of Graphs, Finite and Infinite Graphs, Incidence and Degree, Isolated Vertex, Pendant Vertex and Null Graph?

**Module-2** PATHS AND CIRCUITS: Isomorphism, Sub graphs, Walks, Paths and Circuits, Connected Graphs, Disconnected Graphs and Components,

**Module-3** Euler Graphs, Operations on Graphs, Hamiltonian Paths and Circuits, The Travelling Salesman Problem.

**Module-4** TREES AND FUNDAMENTAL CIRCUITS: Trees, Some Properties of Trees, Pendent Vertices in a Tree, Distance and Centers in a Tree, Spanning Trees, Fundamental Circuits, Finding all Spanning Trees of a Graph, Spanning Trees in a Weighted Graph.

**Module-5** CUT-SETS AND CUT VERTICES: Cut Sets, Some Properties of a Cut-Set, All Cut Sets in a Graph, Fundamental Circuits and Cut-Sets,

**Module-6** Connectivity and Separability, Network Flows, 1-Isomorphism, 2-Isomorphism. (Statements and applications of Theorems only, no proofs).

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#### Books Recommended:

Graph Theory: NursingDev

#### PRACICAL:- JOB Training-I

One Month On-Job Training in Latest Technology

**( DEPARTMENT OF INFORMATION TECHNOLOGY )**