ELECTIVE-II
GRAPHY THEORY
CODE: MAME311

UNIT-I

Definition of a Graph, Paths and Circuits: Isomorphism,Sub graphs,walks,andcircuits, Connected graphs,disconnected Graphs and components,Euler Graphs,Operations on Graphs,more on Euler Graphs,Hamiltonian Paths and circuits,the Traveling salesman Problem,the Degree of Vertex, Sub graphs, Degree Sequences, Cut-Vertices and Bridges, Special Graphs, Digraphs, Properties of Trees, Depth FirstSearch and Breadth First Search.

UNIT-II

Eulerian Graphs and their characterization,HamiltonianProperties of Planar Graphs,Vertex- Colouring and Chromatic Polynomial.Trees: definition and properties, rooted trees, tree traversals- preorder, inorder,postorder, binary trees,labeled trees, spanning trees, cut sets, Graph traversals-BFS And DFS, minimum cost spanning trees-Prim and Kruskal's algorithm,shortest paths in weighted graphs-
Dijkstra's algorithm

UNIT-III

Vector spaces of a Graph:sets with one operation,sets with two operations,Modular Arithmetic and Galois Fields, vectors and vector spaces,vector space Associated with a Graph,Basis vectors of a Graph,circuit and cut-set subspaces,orthogonal vectors and spaces,intersection and join of W and W^S .Matrix Representation of Graphs:Incidence Matrix, submatricesA (G), circuit Matrix,fundamental circuit Matrix and Rank,cut-set Matrix,Relationship among A_f ,B_f and C_f,path Matrix

Text Book:

1. GRAPH THEORY with applications to Engineering and Computer Science BY NARSINGH DEO