

ELECTIVE – III (ANY ONE)

FMCE903 ALGEBRAIC GRAPH THEORY (3-1-0)

Module-I : (14 Hours) LINEAR ALGEBRA IN GRAPH THEORY .

The spectrum of a graph, Regular graphs and Line graphs, Cycle & Cuts, Spanning trees and associated structures, The tree number, Determinant expansions, Vertex partitions and the spectrum.

Module-II : (14 Hours) COLOURING PROBLEMS.

The chromatic polynomial, Subgraph expansions, The multiplicative expansion, The induced subgraph expansion, The Tutte polynomial, Chromatic polynomial and spanning trees.

Module-III : (12 Hours) SYMMETRY AND REGULARITY .

Automorphisms of graphs, Vertex transitive graphs, Symmetric graphs, Symmetric graphs of degree three, The covering- graph construction, The Matching problem, Distance-transitive graphs, Feasibility of intersection array, Imprimitivity, Minimal regular graphs with given girth.

TEXT BOOK –

1. ALGEBRAIC GRAPH THEORY by Norman Biggs, London School of Economics, Cambridge University Press.
2. Graph Theory with applications to engineering and computer science by Narsingh Deo, , PHI.

REFERENCE BOOK –

1. ALGEBRAIC GRAPH THEORY, by C.D.Godsil ,Gordan Royle, Springer.
2. Introduction to Graph Theory by Douglas B. West, 2nd edition, PHI.