MM616SEC1

Syllabus for B.A/B.Sc., Mathematics, Semester - VI

Course Name: Graph Theory and Boolean Algebra (4 credits)

Course No: BMM-SEC-16601

Unit-I

Introduction to graphs, paths and cycles, operations on graphs, bipartite graphs and Konig's Theorem, Euler graphs and Euler's Theorem, Konigsberg bridge problem, Hamiltonian graphs, degree sequences.

Unit-II

Tress and their properties, centers in tress, binary and spanning trees, cut vertex and cut edge in graphs, incidence and adjacency matrix in graphs, directed graphs.

Unit-III

Definition, examples and basic properties of ordered sets, maps between ordered sets, duality principle, maximal and minimal elements, lattices ordered sets, complete lattices, lattices as algebraic structures, sublattices, products and homomorphisms.

Unit-IV

Definition, examples and properties of modular and distributive lattices, lattices, Boolean Algebras, Boolean polynomials, minimal forms of Boolean polynomials, Quinn-McCluskey method, Karnaugh diagrams, switching circuits and applications of switching circuits.

Books recommended:

1. S.Pirzada, *An Introduction to Graph Theory*, Universities Press, Orient Blackswan, 2012.
2. Narsingh Deo, *Graph Theory with Applications to Engineering and Computer Science*, Prentice Hall.
3. B.A.Davey and H.A.Priestley, *Introduction to lattices and Order*, Cambridge University Press, Cambridge, 1990.
4. Rudolf Lidl and Gunter Pilz, *Applied Abstract Algebra*, 2nd Ed., Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004.

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