

## CCDM Exam topics in Graph Theory and Combinatorics

### (1) Graph Theory Topics

Trees, paths, and cycles, matchings, connectivity, colorings and planar graphs.

Reference: "Introduction to graph theory" by D. West, Chapters 1-7.

### (2) Combinatorics Topics

Enumeration, (counting/bijective arguments, recurrence relations, generating functions, inclusion/exclusion), Posets and order, (Dilworth's theorem, Erdos--Szekeres theorem), Designs (Latin squares, projective planes, Steiner triple systems), Sets (Ramsey Theory, Erdos-Ko-Rado Theorem, Kruskal-Katona Theorem).

Reference: "Combinatorics" by Peter Cameron, most of Chapters 1-8 and Chapter 10, plus Dilworth's thm. in Chpt. 12 and projective planes and orthogonal latin squares in Chpt. 9.