Tuesday 8th November, 2016 10:16

Test 3 topics

The third test will focus on the material listed below, but the material from the first two tests may appear. You should know to solve the problems on homework assignments 7 and 8 and quiz 4. I will pass out the solutions to homework 8 and quiz 4 on Monday.

(1) Integer programming and satisfiability
(2) Totally unimodular matrices (definition)
(3) Incidence matrix of graphs and directed graphs (definition)
(4) Theorem 13.3 (and proof)
(5) The incidence matrix of bipartite graphs and directed graphs are TUM (Theorem 13.3 Corollary)
(6) (Köning's theorem) Min vertex cover = max matching in bipartite graphs - via integer programming
(7) Relaxation of an integer linear program
(8) When the matrix associated with an LP is TUM, b is integer and the LP has a finite optimal solution, there exists an optimal solution that is integer. If c is integer, then the dual has an optimal solution that is integer
(9) If A is TUM and b is integer the basic feasible solutions of the LP in standard form are integer
(10) Branch and bound
(11) Network (definition)
(12) Max flow LP (first formulation - not section 4.3)
(13) shortest path and its dual (Section 3.4),
(14) circulation/flow/value of a flow (definitions) -
(15) A circulation is the sum of flows on cycles, and a (s,t)-flow is the sum of flows cycles and flows on (s,t)-paths
(16) revised simplex method and two phase revised simplex (section 4.1)