

Problem Set 3—DO NOT TURN IN

(22) **Problem 1.** Use network flows to find an efficient solution for the following problem:

a) In a computer network there are n processors P_1, P_2, \dots, P_n , and m communication lines C_1, C_2, \dots, C_m . Each processor i has the ability to test t_i lines per day and there is a list L_i which contains the communication lines that processor i is able to test. Subject to these constraints we would like to be able to test all the communication lines every day. A testing schedule determines for each processor the lines it should test. Find a testing schedule or determine that no schedule can test all lines in a single day.

b) Same as a) but find the minimum number of days to test all lines (and a schedule which achieves it).

(12) **Problem 2.** Problem 7-5, page 416.

(22) **Problem 3** Problem 7-18 page 424

(22) **Problem 4** 7-39 page 440