Problem Set 6—Due Tuesday , March. 13, 3PM
Hardcopy, 10PM electronic

NOTE: no late days on this assignment

(20) Problem 1.

a) Give an integer programming (IP) formulation for the set cover problem and its linear programming (LP)relaxation (where the variables can be between zero and 1 instead of just 0 or 1).

b) Describe how to use the solution of the LP version to create a solution to the IP.

c) Let C_{LP}, C_{IP}, C'_{IP} be the respective costs of the optimal LP and IP solutions, and the approximate solution found in part b). Prove a bound on C'_{IP} in terms of C_{IP}. Note: your bound will probably not be as good as the one we proved in 11.3, but should generally be better than a factor of m approximation,where m is the number of sets.

(25) Problem 2.

KT 11.6

(25) Problem 3. KT 11.11

(20) Problem 4. 13.1