

CSE548/AMS542 Fall 2007 Analysis of Algorithms

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Due in class on Wednesday, Dec. 5st. Each problem (including the extra credit problem) has a maximum of 10 points. (i) You write down the solution clearly. If we can not recognize your writing then you may lose points. (ii) Avoid too many details. A succinct and clean proof is the best. You may use the algorithms we covered in class without referring to the details. (iii) If you discuss some of the problems with other fellow students (at most 3 students per group), write down their names and the problems. If you consult any books/webpages, cite them.

Homework 6

1. Textbook (Kleinberg & Tardos), page 506, problem 5, 9, 20, 24, 29, 39.
2. (Extra credit) (Kleinberg & Tardos), page 506, problem 41. The problem is not in the photocopy. So I copy the problem here: Given a directed graph G , a cycle cover is a set of node-disjoint cycles so that each node of G belongs to a cycle. The cycle cover problem asks whether a given directed graph has a cycle cover.
 - (a) Show that the cycle cover problem can be solved in polynomial time. (Hint: use bipartite matching).
 - (b) Suppose we require each cycle to have at most three edges. Show that determining whether a graph G has such a cycle cover is NP-complete.

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