

MS&E 135 Networks – Problem Set 2 – Due 4/21

Stanford University, Spring 2016, Prof. Johan Ugander

Change history: v1.1. If errors are spotted they will be corrected and announced on Canvas.

Instructions Please answer the following questions concisely, drawing illustrations where appropriate. The assignments should be submitted at the start of class on Thursday 4/21, or before the start of class in the MS&E135 submission box in the Huang basement.

Discussing the assignment with classmates is permitted, but each student must submit their own solution set, and you should be writing your solutions independently. Please list the names of people you have discussed the problem set with (if any) at the top of your submission. “E&K” refers to Easley & Kleinberg, the course text, which can be accessed in full as a searchable PDF from the course homepage.

E&K Chapter 5, Problem 1 (10 pts)

E&K Chapter 5, Problem 4 (10 pts)

E&K Chapter 6, Problem 4 (10 pts)

E&K Chapter 6, Problem 6c (10 pts)

E&K Chapter 6, Problem 15 (25 pts)

E&K Chapter 8, Problem 1 (15 pts)

E&K Chapter 9, Problem 1 (10 pts)

Question 1 (10 pts) Coupa Cafe is holding a sealed-bid second-price auction for a coupon worth one month of free coffee. You spend \$50 per month on coffee, so your (private) value for the coupon is exactly \$50. However, you learn that a large group of students are planning to collude in the auction: they will bid only 10% of their true values for the coupon in an attempt to drive prices down. Given this knowledge, what should you bid? Explain.