# Practice Problem Set 10
## Asymmetric Information (C.38)

Question 10.1

You are the CEO of a private school and your school hires many instructors. There are two kinds of instructors: good instructors, who generate $3000 in revenue, and average instructors, who generate $2500 in revenue. The workforce at large has equal numbers of good and average instructors. You are willing to pay a good instructor $3000, and an average instructor $2500. You cannot tell a good instructor from an average one by their looks, but you would like to identify them. So you design a test, and promise to pay an instructor $3000 if they get 60 answers right. Studying for the test is costly for the instructors: a good instructor and an average instructor suffer utility losses equivalent to $5 and $10, respectively, to answer each question right in the test.

(a) Can the test lead to a separating equilibrium? How many answers would good and average instructors answer correctly in the test?

(b) Suppose instead that a good instructor and an average instructor suffer utility losses equivalent to $5 and $8, respectively, to answer each question right in the test. Do your answers in (a) change?

Question 10.2

Consider the principal-agent model with two effort levels and risk-neutral agent in the lecture notes. Suppose the cost of exerting high effort is 2000 (instead of 20).

(a) What is the first-best effort level? What is the expected net profit for the principal in the first best? What is the expected wage for the agent?

(b) Suppose the principal "sells the firm to the agent", that is, the principal pays the agent the entire profit less a fee. How much should the fee be? Verify that the effort choice, the expected net profit, and the expected wage are the same as in part a).