Economics 385: Midterm 1

14 February, 2007

This test is closed book. It is marked out of 100. You have 60 minutes. Good luck.

The following questions all concern Akerlof's model of trade with asymmetric information. As in the lecture, a competitive equilibrium is a price and set of traded qualities where: (a) the price equals the buyers willingness to pay; and (b) a seller trades if and only if their valuation for the object is less than the market price.

Question 1 (35 points)

Consider Akerlof's model with three types of sellers.

- If quality is low, the buyers' and sellers' values are $v_B^L = 5$, $v_S^L = 2$.
- If quality is medium, the buyers' and sellers' values are $v_B^M = 10$, $v_S^M = 7$.
- If quality is high, the buyers' and sellers' values are $v_B^H = 15$, $v_S^H = 12$.

Suppose that, in the population, 1/2 of the sellers have low quality cars, 1/4 have medium quality and 1/4 have high quality.

Describe the competitive equilibria (or equilibrium) of this model. For each equilibrium, be sure to state (i) which types trade and (ii) the resulting price.

Question 2 (30 points)

Consider Akerlof's model with a continuum of types. Each seller has a good of quality $\theta \sim U[1, 11]$. As in the lecture, a good of quality θ is valued at θ by the buyers and $r(\theta)$ by the seller. Suppose $r(\theta) = \frac{3}{4}(\theta - 1)$.

Describe the competitive equilibria (or equilibrium) of this model. For each equilibrium, be sure to state (i) which types trade, (ii) the resulting price and (iii) the fraction of sellers that trade.

Question 3 (35 points)

Consider Akerlof's model with equal numbers of high and low quality sellers

- If the quality is low, the buyers' and sellers' values are $v_B^L = 10$, $v_S^L = 6$.
- If quality is high, the buyers' and sellers' values are $v_B^H = 16$, $v_S^H = 12$.

(a) Describe the pure strategy competitive equilibria (or equilibrium) of this model. For each equilibrium, be sure to state (i) which types trade and (ii) the resulting price.

(b) Does the model have a mixed strategy equilibrium? If so, describe (i) the probability with which each type of seller trades and (ii) the resulting price.