

Economics 326: Midterm 2

8 March, 2006

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

Question 1 (30 points)

Consider Spence's signalling model where there are two types $\theta \in \{10, 20\}$ and $\Pr(\theta = 20) = 1/2$. Workers can obtain one of three levels of education: $e \in \{e_1, e_2, e_3\}$. Agents get utility $u(w, e|\theta) = w - c(e, \theta)$, where wages must obey $w \in [10, 20]$. The cost is given by

$$\begin{aligned}c(e_1, 10) &= 0 & c(e_1, 20) &= 0 \\c(e_2, 10) &= 7 & c(e_2, 20) &= 4 \\c(e_3, 10) &= 14 & c(e_3, 20) &= 8\end{aligned}$$

- (a) What are the separating equilibria in this model? [Your description of any equilibrium should include a supporting wage function].
- (b) What are the pooling equilibria in this model? [Again, your description of any equilibrium should include a supporting wage function].

Question 2 (35 points)

Consider the information disclosure model. There are equal numbers of three types of sellers, $\theta \in \{10, 20, 40\}$. As in class, agents can either reveal or hide their information, but cannot lie. Buyers are competitive, so the price is bid up to the seller's type (if the seller reveals) or the expected type of the sellers who hide (if the seller chooses to hide).

- (a) Argue that, in equilibrium, all agents will fully disclose their information (except possibly the lowest type).
- (b) Suppose there is cost 8 to revealing information (e.g. the cost of the mechanic's report). Describe the equilibria of this game. [Hint: there are two of them].

Question 3 (35 points)

Consider Spence's signalling model where there are two types $\theta \in \{\theta_L, \theta_H\}$ and $\Pr(\theta = \theta_H) = \lambda$. Workers can obtain education $e \geq 0$. The agents utility function is $u(w, e|\theta) = w - c(e, \theta)$, where $c(e, \theta) = \sqrt{e}/\theta$.

- (a) Verify the $c(e, \theta)$ satisfies the three conditions in the lecture. That is (i) cost is zero when $e = 0$, (ii) cost is increasing in e and (iii) the single crossing condition.
- (b) What education levels are chosen in the least-cost separating equilibrium?
- (c) What education levels are chosen in the most-cost separating equilibrium?
- (d) What education levels are chosen in the least-cost pooling equilibrium?
- (e) What education levels are chosen in the most-cost pooling equilibrium?