

Economics 326: Midterm 2

14 March, 2005

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

1. [20] Consider the second degree price discrimination model. Agent θ_i has utility $\theta_i q_i - t_i$ for good of quality q_i at price t_i . There are two types, $\theta_2 \geq \theta_1$, where π is the fraction of type θ_1 agents. The cost of producing quality q is given by a convex function $c(q)$. As shown in the lecture, the optimal qualities are given implicitly by

$$\begin{aligned} c'(q_1) &= \theta_1 - \frac{1-\pi}{\pi}(\theta_2 - \theta_1) \\ c'(q_2) &= \theta_2 \end{aligned}$$

What happens to the qualities offered as π increases? What happens as $\pi \rightarrow 0$ or $\pi \rightarrow 1$? What is the intuition?

2. [20] Consider a version of Spence's signaling model where θ denotes an agent's productivity. There are two types $\{\theta_L, \theta_H\}$, with equal numbers of each type. Assume the cost of education is the *same* for both agents, $c(e) = e$.

(a) Suppose the utility of agent θ who is paid wage w and undertakes education e is $\theta w - e$, so the high type is more desperate for money. Describe the separating equilibrium, if it exists.

(b) Suppose the utility of agent θ who is paid wage w and undertakes education e is $w/\theta - e$, so the low type is more desperate for money. Describe the separating equilibrium, if it exists.

3. [20] Consider Spence's signalling model. Suppose there are three types of agents $\theta_3 > \theta_2 > \theta_1$, where there are equal numbers of each type. The costs of education is $c(e, \theta_i) = e/\theta_i$. Is there an equilibrium where types θ_1 and θ_3 choose education level e_1 , while θ_2 chooses education level $e_2 \neq e_1$? If there is, please describe it. If not, please explain why.