

Final Exam  
Economics 100A  
Fall 2010  
Professor Justin Marion

Instructions: You may not use any materials aside from the economics department blue book and something to write with. You have 180 minutes to complete the exam. Read each question carefully. Credit will be given based largely on your explanation. Credit will not be given to an answer with an incorrect, missing, or unclear explanation.

**1. Short answer questions (30 points)**

- a. Taqueria Vallarta (TV) and Taqueria Santa Cruz (TSC) are simultaneously considering opening new Westside locations. If TV opens and TSC also opens, TV has profits of 12 while TSC has profits of 4. If TV doesn't build, and TSC does, TV has profits of 15 and TSC has profits of 6. If TV builds and TSC doesn't, TV receives profits of 20 and TSC 3. Lastly, if TV does not build and TSC also does not build, they have profits of 18 and 5, respectively. Write down the payoff matrix. Does either player have a dominant strategy? Find the Nash equilibrium.
- b. True/False/Uncertain. A shift outward in demand does not lead to an increase in price in the long-run competitive equilibrium.
- c. The cost curve of a firm is given by  $C(Q) = 10 + Q^2$ . What is the firm's supply curve in the short-run?
- d. Richard is a ski instructor and gives hour long ski lessons. As the amount the resort compensates him per lesson increases, Richard wants to give more lessons.
- e. Utility is given by  $U = x_1^2 x_2$ . True/False/Uncertain. The consumer would be willing to trade a unit of good 1 for a unit of good 2.
- f. What are the three types of price discrimination?

**2. Long answer question (15 points)** Preferences for  $x_1$  and  $x_2$  are given by  $U = 2\ln(x_1) + \ln(x_2)$ . Prices for  $x_1$  and  $x_2$  are given initially by  $p_1=2$  and  $p_2=2$ . The income available to allocate across these two goods is given by \$m.

- a. Draw the budget set, carefully labeling the axes. Find the marginal rate of substitution. Are these well-behaved preferences?
- b. What is the level of consumption of  $x_1$  and  $x_2$  that maximizes utility?
- c. Suppose the price of good 2 declines to  $p_2 = 1$ . Draw the new budget set. In separate graphs, depict the income and substitution effects of the price change (you don't actually have to find them). Without actually doing any calculations, using information from your answer in part b do you suspect that the price decline of good 2 leads to an increase in consumption of good 2?

**3. Long answer question (15 points)** Suppose the production function for a firm in an industry is given by  $y = x_1^{3/4} x_2^{1/4}$ .

- a. Does this production function exhibit constant, decreasing, or increasing returns to scale?

- b. Suppose the factor prices are given by  $w_1 = 15$  and  $w_2 = 5$ . What are the conditional factor demand functions for inputs 1 and 2?
- c. Use the factor demand curves to find the firm's total cost function. If this cost function is typical for firms in this industry, what price would you expect to see in the market?

4. **Long answer question** (15 points) The industry supply curve is given by  $Q_S(P) = 10 + 2p$ . Market demand is given by  $Q_D(P) = 50 - 2p$ .

- a. What is the equilibrium price and quantity?
- b. What is the consumer and producer surplus associated with the competitive equilibrium you found in part a?
- c. Suppose the government set a price floor of \$15. What is the quantity sold? Represent the price floor in a graph using supply and demand curves, and show in the graph what is the new producer and consumer surplus. Calculate the deadweight loss associated with the price floor.