

Second Quiz: Review
Managerial Economics: Eco 685

The quiz covers long run costs, pricing, and sections I and II of strategy (pure strategies). The pages in the notes are 33 to 58. We skipped section VI of Cost Theory and section IV of Pricing, All questions come from the class notes. The chapters in the book are 9 (Long run costs only), 3, 13, and 12. Additional study materials: study guide, list of definitions, homework 3, and this review sheet. Note: this review covers only material since the last homework. The following equations are provided.

$$\pi = TR - TC$$

$$\frac{\partial bL^c}{\partial L} = bcL^{c-1}, \quad \frac{\partial a + bL^c}{\partial K} = 0, \quad \frac{\partial \text{objective}}{\partial \text{decisions}} = 0 \text{ at the maximum}$$

$$e_p = \left(\frac{P}{Q}\right) \left(\frac{\partial Q}{\partial P}\right) = \frac{\text{percent change in } Q}{\text{percent change in } P}$$

$$P = \frac{1}{\frac{1}{e_p} + 1} MC, \quad \text{Markup} = \frac{P - \text{cost}}{\text{cost}}$$

$$\text{Optimal Mark up} = \frac{-1}{e_p + 1}$$

$$e_I = \frac{\partial Q}{\partial I} \frac{I}{Q} = \frac{\text{percent change in } Q}{\text{percent change in } I}$$

Shorter Questions

Question 1

Explain how a small firm may have an advantage over a large firm in the price cutting game.

Question 2

Give one advantage and one disadvantage of pricing a good at \$9.99 rather than \$10.

Question 3

A car manufacturer estimates that the cost of all parts and raw materials of a car are \$20,000 per car. The company uses cost plus pricing with a 10% markup. The company also estimates it takes \$4000 of labor costs per car to assemble the car. The price elasticity is equal to -6.

- Calculate the cost plus price.
- If the company wants to earn a 10% return on each vehicle produced, what price should the company charge?
- Calculate the optimal price. Explain why the optimal price differs from (a) and (b).

Longer Questions

Question 4

A maker of a particular chemical that has use both in the dental (d) industry and to consumers (c) wishes to price discriminate. Demand in the two markets and total costs are:

$$P_d = 210 - 10Q_d \quad (1)$$

$$P_c = 110 - 5Q_c \quad (2)$$

$$TC = 100 + 10(Q_d + Q_c) \quad (3)$$

- Suppose the company price discriminates between dental customers and retail (consumer customers). Calculate the optimal price and quantity in each market.
- Calculate the price elasticity in each market. Which type of customer is more price sensitive and how is that reflected in the price?
- Give one possible reason why price discrimination might not work in this case.

Question 5

Two firms, A and B, are thinking of entering a new market.

		B	
		Enter	Don't Enter
A	Enter	10,10	20,14
	Not Enter	14,20	8,8

Table 1: Profits in millions of dollars

- Calculate all (if any) Nash Equilibria.
- Calculate all (if any) dominant strategies by each firm.
- Rank all Nash equilibria according to profit for Firm A. Is there an advantage to firm A moving first?
- Explain one problem that can occur for the two firms in this type of game.

Question 6

A union is considering a strike. If management does not resist the strike, the union gets high wages while management earns a relatively low profit. If the union strikes and management resists, then the union will earn little wages and profits will be low. Conversely, if the union does not strike and management is cooperative (does not resist) then the union can get some increase in wages and management earns some profits. Finally, if the union does not strike and management is not cooperative (resists), union wages are low but profits are high. Thus:

		Management	
		Don't Resist	Resist
Union	Don't Strike	6,6	0,10
	Strike	10,0	1,1

Table 2: Profits in millions of dollars

- Calculate all (if any) dominant strategies.
- Calculate all (if any) Nash equilibria. For each calculate the profits for the Firm and Union.
- Calculate the matrix of social benefits (ie the social benefit for each combination of strategies). Does the Nash Equilibrium correspond to the highest social benefit? Explain why or why not.

- d. Suppose the union introduces in its bylaws an automatic strike if management resists. Similarly, the firm adopts a policy to automatically resist given a strike. Calculate the new payoff matrix and repeat (a) and (b).