

ECON 100A FALL 2006
University of California, Berkeley

Answers to Practice Questions for Final Exam

1.1 Your economics professor has decided that your class will not be graded on a curve but on an absolute scale. Therefore, it is possible for every student in the class to get an "A." Your grade will not depend in any way on your classmates' performance. Based on this information, you decide that you should study economics three hours each day, regardless of what your classmates do. In the language of game theory, your decision to study three hours each day is:

- a) **a dominant strategy.**
- b) a minimax strategy.
- c) a maximin strategy.
- d) a Prisoner's dilemma.
- e) a coordination game

1.2 Which oligopoly model(s) have the same results as the competitive model?

- a. Cournot.
- b. Bertrand.**
- c. Stackelberg.
- d. Both Cournot and Stackelberg.

1.3 In which oligopoly model(s) do firms earn zero profit?

- a. Cournot.
- b. Bertrand.**
- c. Stackelberg.
- d. Oligopoly firms always earn positive economic profits.

1.4 In the _____, one firm sets its output first, and then a second firm, after observing the first firm's output, makes its output decision.

- a. Cournot model
- b. model of monopolistic competition
- c. Bertrand model
- d. none of the above**

1.5 Which of the following is true for both perfectly competitive and monopolistically competitive firms in the long run?

- a) $P=MC$.
- b) $MC=ATC$.
- c) $P>MR$.
- d) Profit equals zero.**

1.6 Which of the following is true in long run equilibrium for a firm in monopolistic competition?

- a) $MC=ATC$.
- b) $MC>ATC$.
- c) **$MC<ATC$.**
- d) Any of the above may be true.

1.7 A strategy A is "dominant" for a player X if

- a. strategy A contains among its outcomes the highest possible payoff in the game.
- b. irrespective of any of the possible strategies chosen by the other players, strategy A generates a higher payoff than any other strategy available to player X.
- c. **strategy A is the best response to every strategy of the other player.**
- d. strategy A is the best response to the best strategy of the other player.
- e. every outcome under strategy A generates positive payoffs.

1.8 The asset beta in the Capital Asset Pricing Model is a moderate number that measures

- a) **how sensitive the asset's return is to market movements.**
- b) how sensitive the asset's discount rate is to changes in inflation.
- c) the risk premium on the stock market.
- d) the risk premium on an individual stock.

1.9 The "Capital Asset Pricing Model" measures the risk premium for a capital investment by comparing the expected return on that investment with the

- a) average return on other investments of similar risk.
- b) average return on the past several years' investments made by the firm.
- c) **expected return on the entire stock market.**
- d) expected return on the government bond market.
- e) expected return on the corporate bond market.

1.10 If the rate of return on the stock market is r_m and the rate of return on a risk-free asset is r_f , then

- a) **$r_m - r_f$ measures the risk, all of it nondiversifiable, one has to accept in the stock market.**
- b) $r_m - r_f$ measures the risk, all of it diversifiable, one has to accept in the stock market.
- c) $r_m + r_f$ measures the risk, all of it nondiversifiable, one has to accept in the stock market.
- d) $r_m + r_f$ measures the risk, all of it diversifiable, one has to accept in the stock market.
- e) $r_m r_f$ measures the stock market's total risk.

In Questions 1.11 – 1.13 Consider the game below

		Player C		
		Q=50	Q=100	Q=150
Player R	Q=50	37, 37	30, 40	20, 37
	Q=100	40, 30	32, 32	15, 25
	Q=150	37, 20	25, 15	0, 0

(This is the same game as in your homework)

- 1.11 If, in the above presented game, R moves first, C will respond with
- Q = 50.**
 - Q = 100.
 - Q = 150.
 - a mixed strategy over the three choices that includes some positive likelihood for each Q.
 - a mixed strategy over the choices Q = 50 and Q = 100.

(37, 20) will be an equilibrium

- 1.12 In the above presented game, relative to a simultaneous-move situation, the loss to firm C from having to move second would be
- 37.
 - 20.
 - 12.**
 - 8.
 - 5.

With simultaneous moves, the equilibrium is (32, 32). When C moves second, the equilibrium is (37,20)

- 1.13 If in the above presented game, player R moves first, equilibrium will
- not be different from what it is in the simultaneous-move scenario.
 - be to R's detriment because it will not be able to react to C's choice.
 - be one in which R chooses 50 and C chooses 150.
 - be one in which R chooses 100 and C chooses 50.
 - be one in which R chooses 150 and C chooses 50.**

When R moves first (i.e., C moves second), the equilibrium is (37,20).

- 1.14 The game
- is Stackelberg if both players move at the same time; Cournot if one player moves first.
 - is Cournot if both players move at the same time; Stackelberg if one player moves first.**
 - Stackelberg no matter what the timing of moves.
 - Cournot no matter what the timing of moves.
 - is neither Stackelberg nor Cournot.

1.15 Suppose that the perfectly competitive soybean industry in the United States is monopolized. Under perfect competition, the equilibrium price was \$2 and quantity was 100,000. The monopolist raises price to \$5 and restricts quantity to 70,000. Assume that the monopolist is maximizing profits and that the monopolist faces a linear, upward-sloping marginal cost curve that begins at the origin. Also assume that this marginal cost curve is the industry supply curve under perfect competition. What is the loss in consumer surplus that the monopolist captures in the form of profit?

- a. \$500,000
- b. \$350,000
- c. \$300,000
- d. \$210,000**

The monopoly profit is $(5-2)*70,000=210,000$, and it is exactly the loss of consumer surplus that monopolist captured.

1.16 An industry has two firms, a leader and a follower. The demand curve for the industry's output is given by $p = 208 - 4q$, where q is total industry output. Each firm has zero marginal cost. The leader chooses his quantity first, knowing that the follower will observe the leader's choice and choose his quantity to maximize profits, given the quantity produced by the leader. The leader will choose an output of

- a. 26.**
- b. 17.33.
- c. 13.
- d. 52.
- e. None of the above.

$$\Pi_2 = (208 - 4(q_1 + q_2)) q_2$$

$$\frac{\partial \Pi_2}{\partial q_2} = 208 - 4q_1 + 8q_2 = 0 \Rightarrow q_2 = (208 - 4q_1)/8 = 26 - q_1/2$$

$$\Pi_1 = (208 - 4(q_1 + q_2)) q_1 = [(208 - 4(q_1 + 26 - q_1/2))] q_1 = [(208 - 4(26 + q_1/2))] q_1$$

$$\frac{\partial \Pi_1}{\partial q_1} = [(208 - 4(q_1 + q_2)) q_1]' = 208 - 4*26 - 4q_1 = 0 \Rightarrow q_1 = (208 - 4*26)/4 = 26$$

1.17 Two firms decide to form a cartel and collude in a way that maximizes industry profits. Each firm has zero production costs and each firm is given a positive output quota by the cartel. Which of the following statements is *not* true?

- a. Each firm would want to produce more than its quota if it knew that the other would continue to produce at its quota.
- b. The price elasticity of demand will be -1 at the output level chosen.**
- c. Output would be lower than if the firms behaved as Cournot firms.
- d. Output would be lower than if the firms behaved as competitors.
- e. All of the other statements are false.

1.16. An industry has two firms. The inverse demand function for this industry is $p = 263 - 6q$. Both firms produce at a constant unit cost of \$29 per unit. What is the Cournot equilibrium price for this industry?

- a. \$29
- b. \$31
- c. \$107**
- d. \$53.50
- e. None of the above.

$$\Pi_1 = (263 - 6(q_1 + q_2)) q_1 - 29q_1$$

$$\Pi_2 = (263 - 6(q_1 + q_2)) q_2 - 29q_2$$

$$MR_1 = 263 - 12q_1 - 6q_2 - 29 = 0 \Rightarrow$$

$$\Pi = 263 - 12q_2 - 6q_1 - 29 = 0 \Rightarrow q_1 = q_2 = 13 \Rightarrow p = 263 - 6*26 = 103$$

1.17 An industry has two firms. The inverse demand function for this industry is $p = 74 - 4q$. Both firms produce at a constant unit cost of \$26 per unit. What is the Cournot equilibrium price for this industry?

- \$21
- \$29
- \$42**
- \$26
- None of the above.

$$\Pi_1 = (74 - 4(q_1 + q_2)) q_1 - 26q_1$$

$$\Pi_2 = (74 - 4(q_1 + q_2)) q_2 - 26q_2$$

$$\frac{\partial \Pi_1}{\partial q_1} = 74 - 8q_1 - 4q_2 - 26 = 0 \Rightarrow 4q_2 = 48 - 8q_1$$

$$\frac{\partial \Pi_2}{\partial q_2} = 74 - 8q_2 - 4q_1 - 26 = 0 \Rightarrow q_1 = q_2 = 48/12 = 4 \Rightarrow p = 74 - 4 \cdot 8 = 42$$

1.18 There are two major producers of corncob pipes in the world, both located in Herman, Missouri. Suppose that the inverse demand function for corncob pipes is described by $p = 160 - 4q$, where q is total industry output, and marginal costs are zero. What is the Cournot reaction function of firm 1 to the output, q_2 , of firm 2?

- $40 - 4q_2$
- $160 - 4q_2^2$
- $20 - .5q_2$**
- $160 - 4q_2$
- $164 - 8q_2$

$$\Pi_1 = (160 - 4(q_1 + q_2)) q_1$$

$$\frac{\partial \Pi_1}{\partial q_1} = 160 - 8q_1 - 4q_2 = 0 \Rightarrow q_1 = 160/8 - 4q_2/8 = 20 - .5q_2$$

1.19. Two firms decide to form a cartel and collude in a way that maximizes industry profits. Each firm has zero production costs and each firm is given a positive output quota by the cartel. Which of the following statements is *not* true?

- Each firm would want to produce more than its quota if it knew that the other would continue to produce at its quota.
- The price elasticity of demand will be -1 at the output level chosen.
- Output would be lower than if the firms behaved as Cournot firms.
- Output would be lower than if the firms behaved as competitors.**
- All of the other statements are false.

1.20 A duopoly faces the demand curve $D(p) = 30 - .5p$. Both firms in the industry have a total cost function given by $C(q) = 4q$. Suppose that firm 1 is a Stackelberg leader in choosing its quantity first. Firm 1's profit function can be written as

- $q_1 = 14 - .5q_2$.
- $q_2 = 14 - .5q_1$.
- $28q_1 - q_1^2$.**
- $56q_1 - q_1^2$.
- $60q_1 - q_1^2$.

$$\Pi_1 = (60 - 4(q_1 + q_2)) q_1 - 4q_1$$

$$\Pi_2 = (60 - 4(q_1 + q_2)) q_2 - 4q_2$$

$$\frac{\partial \Pi_2}{\partial q_2} = 60 - 8q_2 - 4q_1 - 4 = 0 \rightarrow q_2 = \frac{56}{4} - \frac{q_1}{2}$$

$$\rightarrow \Pi_1 = 28q_1 - q_1^2$$

1.21 The demand for a monopolist's output is $6,000/(p + 7)^2$, where p is its price. It has constant marginal costs equal to \$5 per unit. What price will it charge to maximize its profits?

- a. \$33
- b. \$12
- c. \$26
- d. \$17**
- e. \$5

1.22 A monopolist faces the demand curve $q = 90 - p/2$, where q is the number of units sold and p is the price in dollars. He has quasi-fixed costs, C , and constant marginal costs of \$20 per unit of output. Therefore his total costs are $C + 20q$ if $q > 0$ and 0 if $q = 0$. What is the largest value of C for which he would be willing to produce positive output?

- a. \$3,200**
- b. \$2,560
- c. \$4,800
- d. \$20
- e. \$3,840

$$\Pi = qp - C - 20q = 180q - 2q^2 - C - 20q$$

$$p = 2(90 - q)$$

$$MR = MC$$

$$(180 - 20) - 4q = 0 \Rightarrow q = 40 \text{ and } p = 100$$

$$\rightarrow \Pi = 100 \cdot 40 - 20 \cdot 40 - C > 0 \rightarrow C < 80 \cdot 40 = \$3,200$$

1.23 The demand for Professor Bongmore's new book is given by the function $Q = 2,000 - 100p$. If the cost of having the book typeset is \$7,000, if the marginal cost of printing an extra copy is \$4, and if he has no other costs, then he would maximize his profits by

- a. having it typeset and selling 800 copies.
- b. having it typeset and selling 1,000 copies.
- c. not having it typeset and not selling any copies.**
- d. having it typeset and selling 1,600 copies.
- e. having it typeset and selling 400 copies.

1.24 In the insurance market, "moral hazard" refers to the problem that

- a. insurers can't tell high-risk customers from low-risk customers.
- b. high-risk customers have an incentive to give false signals to make themselves look like low-risk customers.
- c. companies may unfairly lump individuals together by race, sex, age or other characteristics in an attempt to use demographic data to pinpoint high-risk populations.
- d. individuals are willing and able to pay different amounts for insurance, but must all be charged the same amount.
- e. **individuals may change their behavior after the insurance is bought, so that they behave in a more high-risk manner than they did before.**

1.25 Which of the following would be LEAST likely to contribute to a moral hazard problem among drivers?

- a. Provide medical coverage to all drivers, their passengers, and any and all individuals involved in the accident, no matter who was at fault.
- b. Provide medical coverage and car repair/replacement coverage to drivers, their passengers, and any and all individuals involved in the accident, no matter who was at fault.
- c. **Modify all cars to remove the driver's seat belt and the steering wheel air bag.**
- d. Pass a law limiting the amount of damages that juries may award in accident cases.
- e. Make automobile insurance mandatory for all drivers.

Ch. 10: Problem 19, 21, 22 (pp. 208 -209) and multiple choice questions: 18, 19, 20, 23, 24, 25, 27, 28, 33 (pp. 210 -211)

Note: There is an error in the answer to Problem 22: $P = (a + c) / 2$ (not $b = (a + c) / 2$)

Ch. 11: Problem 13 (p. 235), 15, 16 (p. 236) and multiple choice questions: 19, 20, 24, 25, 29, 30 (pp. 248 -249)

Ch. 12: Problems ## 10, 11, 12 (p. 263); multiple choice questions: 16, 17, 18, 19, 20, 21, 23, 24, 25 (pp. 264 – 265)

Ch. 13: Problems ## 1, 4, 13, 14, 15, (p. 289); multiple choice questions: 18, 19, 20, 21, 25, 26, 27, 28 (pp. 290 -292)

Ch. 15: Problem # 13 (p. 327); multiple choice question 20 (p. 329)

Ch. 17: # 5, 7, 8, 11 (pp. 361 – 362); multiple choice questions: 13, 14, 15, 18, 19, 20, 21, 22, 24 (pp. 363 – 365)

Ch. 18: multiple choice questions: ## 17 –23 (pp. 381 -392)