

**EXAMINATION 3 VERSION A**  
**“Antitrust Policy”**  
**April 6, 2017**

**INSTRUCTIONS:** This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Mobile phones or other wireless devices are NOT permitted. Fractional answers are acceptable. Decimal answers, if rounded, must be correct to at least three significant digits. Points will be subtracted for illegible writing or incorrect rounding. Point values for each question are noted in brackets.

**I. Multiple choice:** Please circle the one best answer to each question. [1 pt each, 18 pts total]

- (1) Suppose a automobile manufacturer merged with another automobile manufacturer. This would be an example of a
- horizontal merger.
  - vertical merger.
  - conglomerate merger for product extension.
  - conglomerate merger for market extension.
  - pure conglomerate merger.

- (2) Suppose a automobile manufacturer merged with a motorcycle manufacturer. This would be an example of a
- horizontal merger.
  - vertical merger.
  - conglomerate merger for product extension.
  - conglomerate merger for market extension.
  - pure conglomerate merger.

- (3) The Procter and Gamble-Clorox case (1967) showed the Supreme Court’s
- reluctance to interfere with horizontal mergers.
  - concern for potential competition.
  - willingness to stop mergers even involving small market shares.
  - interest in applying the HHI measure of concentration.
  - tendency to define markets very narrowly.
  - tendency to define markets very broadly.

(4) Suppose a firm has the following costs:

Computers	Mobile phones	Total cost
1,000	1,000	\$325,000
1,000	0	\$300,000
0	1,000	\$50,000

- This firm enjoys
- economies of scale.
  - diseconomies of scale.
  - economies of scope.
  - natural monopoly.
  - upward-sloping supply.

- (5) Which statute requires prior notification of mergers to the Federal Trade Commission and the Antitrust Division of the Department of Justice?
- Sherman Act Section 2.
  - Hart-Scott-Rodino Act.
  - Clayton Act.
  - Federal Trade Commission Act.
  - Celler-Kefauver Act.

- (6) According to the DOJ-FTC *Horizontal Merger Guidelines*, the ability of a hypothetical monopolist to impose a "small but significant and nontransitory increase in price" should be used to
- compute a merged firm’s Lerner index.
  - define the extent of a market.
  - decide whether a merger should be opposed.
  - compare with any cost savings.
  - regulate price in a market.
  - distinguish vertical, horizontal, and conglomerate mergers.

- (7) Typically, if the definition of the market is broadened to include more products believed to be close substitutes, then
- the Hirschman-Herfindahl index (HHI) will increase.
  - the HHI will decrease.
  - The HHI is not usually affected by market definition.

(8) The view that vertical mergers are generally not a problem, because simple models show that either they are unprofitable or they do not decrease welfare, is called the

- a. Traditional or Harvard School view.
- b. Chicago School view.
- c. Post-Chicago view.
- d. Supply-side view.

(9) Suppose there are only two makers of a particular part which is used in flat-screen televisions. The market for parts is therefore not perfectly competitive. If one parts maker merges with a television maker, the *other* television makers' costs will

- a. increase.
- b. decrease.
- c. not be affected because they did not merge.
- d. Cannot be determined from information given.

(10) Suppose the manufacturer of a product wants to induce retailers to provide marketing services, like showrooms and personalized sales. There are several ways a manufacturer can do this, but they do *not* include

- a. setting a minimum retail price.
- b. setting a maximum retail price.
- c. giving retailers exclusive territories.

(11) Suppose Grade-It Inc. makes test-scoring software and has some market power. Grade-It Inc. requires its customers to buy only its own brand of answer sheets for use with its test-scoring software. If the explanation for this tying practice is price discrimination, then we would expect Grade-It Inc.'s brand of answer sheets to be priced

- a. at cost.
- b. above cost.
- c. below cost but not free.
- d. free.

(12) To be convicted of violating the Sherman Act Section 2, firms must possess monopoly power and

- a. enjoy above-normal profit.
- b. have lower cost than any potential rival.
- c. show intent to monopolize a market.
- d. have higher cost than any potential rival.

(13) The Supreme Court stated that "the law does not make mere size an offense" in its decision in

- a. Standard Oil v. U.S (1911).
- b. U.S. v. U.S. Steel (1920).
- c. U.S. v. Alcoa (1945).
- d. U.S. v. United Shoe Machinery (1953).
- e. Utah Pie v. Continental Baking (1967).
- f. Berkey Photo v. Kodak (1979).

(14) Predatory pricing can be profitable only if predation is followed by a period of

- a. competition.
- b. recoupment.
- c. price discrimination.
- d. accommodation.
- e. losses.

(15) According to the Areeda-Turner (1975) rule, a firm should be presumed to be engaging in predatory pricing if its price is less than its

- a. average variable cost.
- b. average fixed cost.
- c. average total cost.
- d. marginal cost

(16) According to the "essential facilities" doctrine, a company is guilty of monopolization if one can show all of the following, *except*

- a. control of the facility by a monopolist.
- b. a difference in price between the monopolist and the competitor.
- c. the competitor's inability to duplicate the facility.
- d. denial of use of facility to the competitor.
- e. the feasibility of providing the facility to the competitor.

(17) Under first-degree price discrimination (also called "perfect price discrimination") the total quantity produced is

- a. zero.
- b. the same as under single-price monopoly.
- c. the same as under Cournot duopoly.
- d. the same as under competition.

(18) Suppose demand for books is *less elastic* among walk-in customers than online customers. The bookstore wants to maximize profit. If the bookstore can set different prices for each market segment, then

- a. walk-in customers should get the lower price.
- b. online customers should get the lower price.
- c. both segments should get the same price, because the marginal cost is the same.
- d. cannot be determined from information given.

**II. Problems:** Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [HHI and merger guidelines: 12 pts] Suppose the market shares in an industry are as follows.

Firm	#1	#2	#3	#4	#5
Market share	30%	30%	20%	10%	10%

- a. Compute the current value of the Hirschman-Herfindahl index.
- b. Under the 2010 DOJ-FTC *Horizontal Merger Guidelines*, would this industry be classified as “unconcentrated,” “moderately concentrated,” or “highly concentrated”?


Now suppose Firm #3 were to merge with Firm #4.

- c. Compute the postmerger value of the Hirschman-Herfindahl index.
- d. Under the 2010 DOJ-FTC *Horizontal Merger Guidelines*, would this industry now be classified as “unconcentrated,” “moderately concentrated,” or “highly concentrated”?
- e. On the basis of these concentration calculations alone, would the government likely oppose this merger, according to the *Guidelines*? (Answer yes or no.)
- f. Why or why not?


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(2) [Successive monopolies with fixed proportions: 26 pts] Suppose an upstream monopoly firm produces a proprietary sauce that is used by a downstream industry to make pizzas. The upstream firm has constant marginal cost (equal to average cost) of  $MC_S = \$1$ . Each pizza requires exactly one unit of sauce and \$3 of other inputs in fixed proportion. Therefore the downstream industry has constant marginal cost (equal to average cost) of \$3 plus the price of sauce,  $P_S$ , which is set by the upstream monopolist. The key assumptions are

Marginal and average cost of sauce:	$MC_S = AC_S = \$1.$
Marginal and average cost of pizzas:	$MC_P = AC_P = \$3 + P_S$
Demand for pizzas:	$P_P = 12 - (Q/100).$

- a. [2 pts] Find the equation for the marginal revenue curve for pizzas. [Hint: If demand is linear, marginal revenue has the same vertical intercept, but twice the slope, as the demand curve.]

$MR_P =$
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[Question continues on next page.]

Now compare market outcomes under two scenarios: (i) upstream and downstream markets are both monopolized, and (ii) upstream and downstream are served by a vertically-integrated monopoly.

(i) First suppose both upstream and downstream markets are both monopolized. This is the scenario of "successive monopolies" or "double marginalization."

b. [2 pts] Find the equation for the derived demand curve for sauce. [Hint: Set the marginal cost of the pizzas equal to  $MR_P$  and solve for  $P_S$ .]

$$P_S =$$

c. [2 pts] Find the equation for the marginal revenue curve for sauce. [Hint: For linear demand curves, marginal revenue has the same vertical intercept, but twice the slope, as the demand curve.]

$$MR_S =$$

Now compute the quantity of sauce (and thus pizzas) sold  $Q$ , the price of sauce  $P_S$ , the upstream sauce monopolist's profit, the price of pizzas  $P_P$ , and the downstream pizza monopolist's profit. Insert your answers in column (i) in the **Table of Results** on the next page.

(ii) Second, assume the upstream and downstream industries are served by a vertically-integrated monopoly. The marginal cost of pizzas for the vertically-integrated monopoly is therefore  $MC = \$1 + \$3$ .

Now compute the quantity of pizzas, the price of pizzas  $P_P$ , and the integrated monopolist's profit. Insert your answers in column (ii) of the Table of Results below.

<b>Table of Results</b> [18 pts]	<b>(i) Successive monopolies</b>	<b>(ii) Vertically integrated monopoly</b>
Q = quantity of sauce (and pizzas)		
$P_S$ = price of sauce	\$	
Profit of upstream firm	\$	
$P_P$ = price of pizzas	\$	\$
Profit of downstream firm	\$	
Total upstream + downstream profits	\$	\$

d. [2 pts] Suppose this industry were initially organized as successive monopolies. Then suppose the upstream firm proposed to merge with the downstream firm. Should the government try to block the merger? Why or why not?

(3) [Tying: 14 pts] Suppose a monopoly cable TV service believes that representative households A, B, and C are willing to pay the following amounts for premium channels.

	Household A	Household B	Household C
Comedy channel	\$25	\$15	\$5
Action channel	\$10	\$50	\$15
Sports channel	\$5	\$5	\$25

Suppose that each channel were priced separately, and suppose the cable TV service wishes to maximize revenue.

- a. What price should be charged for the comedy channel?
- b. What price should be charged for the action channel?
- c. What price should be charged for the sports channel?
- d. How much revenue would the cable TV service receive in total for all three channels and all three customers?

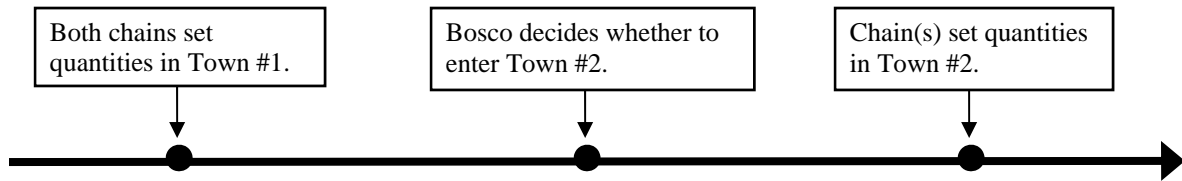
Suppose instead that all three channels were bundled and priced as a “premium package,” and not sold separately. Again assume the cable TV service wishes to maximize revenue.

- e. What price should be charged for the package of three channels?
- f. How much revenue would the cable TV service receive in total for all three customers?
- g. Should the cable TV service sell the channels *separately* or as a *package*?

(4) [Monopoly price discrimination: 4pts] Suppose the elasticity of demand for football tickets by students is -5, and the elasticity of demand by the general public is -1.5. Suppose the football stadium has a marginal cost of \$6 per spectator.

- a. Compute the profit-maximizing price for tickets sold to students.
- b. Compute the profit-maximizing price for tickets sold to the general public.

(5) [Predatory pricing: 22 pts] Two drugstore chains (Allgreen and Bosco) both have stores in Town #1. In addition, Allgreen already has a store in Town #2. Bosco may decide to put a store in Town #2, but entry will cost Bosco some start-up costs (for advertising, etc.). The time line for the firms' interaction is as follows.



The demand curve for each town is  $P = 20 - (Q/20)$ . For both companies, marginal cost is constant and equal to average cost. For Bosco, marginal cost is \$5. However, Bosco is unsure whether Allgreen's marginal cost is \$5 or \$11.

If both firms' marginal costs are \$5, then the symmetric Cournot duopoly equilibrium is  $q_A = q_B = 100$ .

- a. Compute the Cournot duopoly price in this case. 

\$
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- b. Compute Bosco's profit in Town #2 in this case, ignoring start-up cost. 

\$
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If instead Allgreen's marginal cost is \$11, then the asymmetric Cournot duopoly equilibrium is  $q_A = 20$  and  $q_B = 140$ .

- c. Compute the Cournot duopoly price in this case. 

\$
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- d. Compute Bosco's profit in Town #2 in this case, ignoring start-up cost. 

\$
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Suppose Bosco believes there is a 50% chance that Allgreen's marginal cost is \$5, and a 50% chance that Allgreen's marginal cost is \$11.

- e. Compute Bosco's expected profit in Town #2, ignoring start-up cost. 

\$
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- f. If the start-up costs of entering Town #2 are \$800, should Bosco enter Town #2 if it is uncertain of Allgreen's marginal cost? Answer "Yes" or "No."

Now in fact, Allgreen's marginal cost is \$11, though Bosco does not know this.

- g. Compute Allgreen's total combined profit in both towns from simply playing each town as an asymmetric Cournot duopoly. 

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Suggest an alternative strategy for Allgreen that will generate higher total profit.

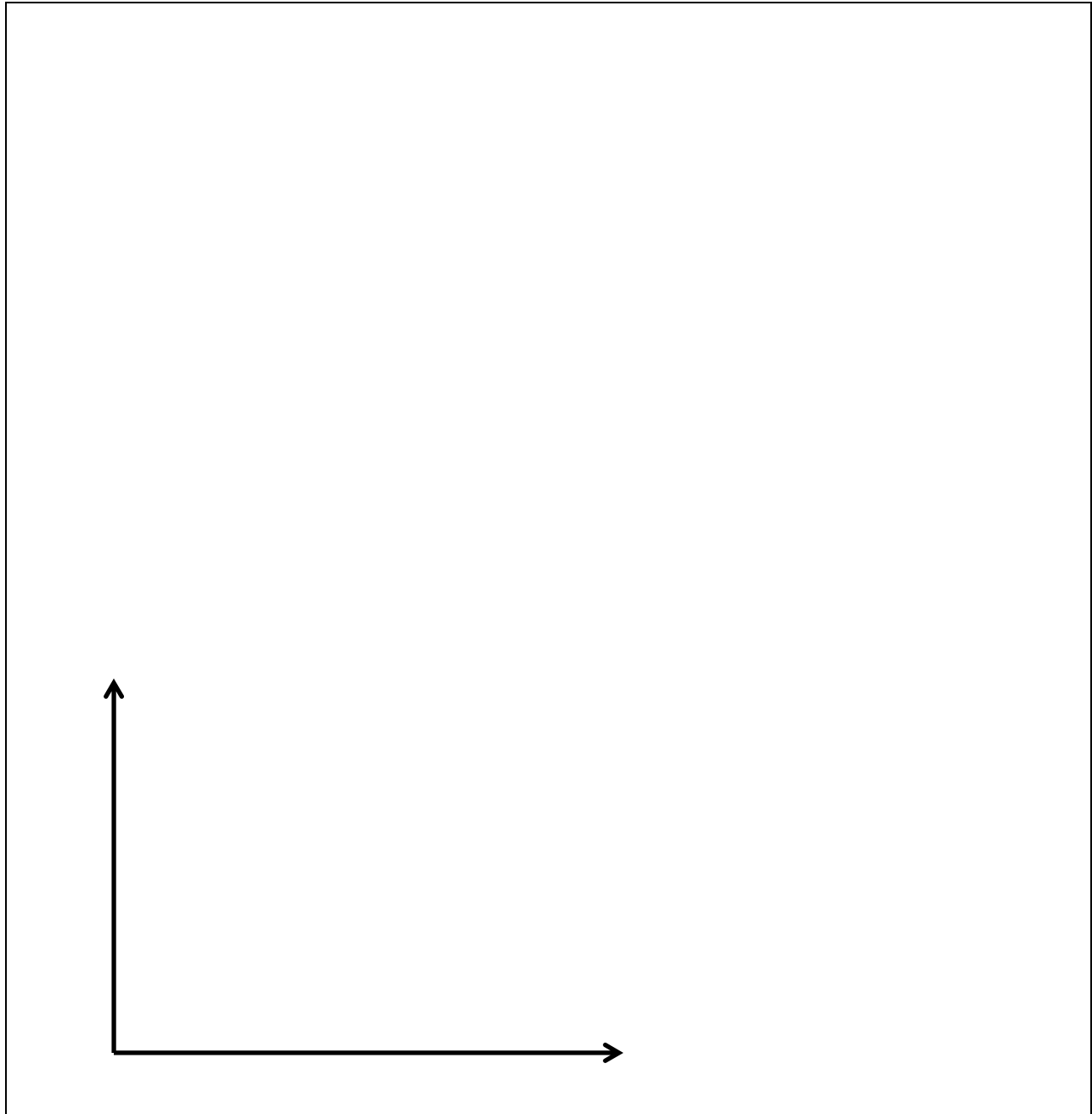
- h. What quantity should Allgreen set in Town #1—20 or 100?
- i. What quantity should Allgreen set in Town #2?
- j. Compute Allgreen's total combined profit in both towns. 

\$
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- k. Explain why your suggested strategy works.

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**III. Critical thinking:** Write a one-paragraph essay answering *just one* question below (your choice). Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling. [4 pts]

- (1) Supreme Court Justice Potter Stewart said that the Court should not make the mistake of “protecting competitors, instead of competition.” Explain the difference using concepts of economic welfare analysis. (Ignore the graph.)
- (2) Suppose a horizontal merger would cause the price to rise by \$5, the quantity to fall from 250 to 200, and average cost to fall by \$0.50. Would this merger increase or decrease social welfare? Show your work and circle your final answer. Illustrate your reasoning using a graph (label all curves and axes).



[end of exam]