

EXAMINATION 3 “Antitrust Policy” April 17, 2018

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, 16 pts total]

(1) Suppose a gasoline distributor in the Midwest merged with a gasoline distributor in the South. 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 gasoline distributor merged with a bicycle 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 U.S. Supreme Court showed a concern for potential competition in the

- ALCOA* (1964) and *Continental Can* (1964) cases.
- Bethlehem Steel* (1958) and *Procter and Gamble-Clorox* case (1967).
- Brown Shoe* (1962) and *Von's Grocery* (1966) cases.

(4) Which statute required 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.

(5) 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.

(6) Suppose it costs a total of one million dollars for one firm to produce and market 100,000 baseballs and bats. Suppose it costs \$300,000 to produce and market this many baseballs alone, and another \$900,000 to produce and market this many bats alone. It follows that baseballs and bats are characterized by

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

(7) Assume Microsoft has a monopoly in the market for operating systems, which are always included in Intel-compatible computers. Assume the market for computers is competitive. If Microsoft were able to extend its monopoly into the market for computers themselves, the price of *computers* (with operating systems included) would probably

- rise.
- stay the same.
- fall.
- cannot be determined from the information given.

- (8) Examples of vertical restraints do *not* include
- tying.
 - predatory pricing.
 - territorial restraints.
 - exclusive dealing.
 - resale price maintenance.

- (9) Why might a manufacturer of a product require retailers to maintain a *minimum* retail price?
- To increase the quantity demanded by consumers.
 - To prevent “double marginalization.”
 - To encourage retailers to provide marketing services like showrooms and personalized sales.
 - To encourage discount retailers like Walmart to sell the product.

- (10) Suppose Firm X makes staple guns and has some market power. Now Firm X requires its customers to buy only its own brand of staples for those staple guns. If the explanation for this tying practice is price discrimination, then we would expect Firm X's brand of staples to be priced
- at cost.
 - above cost.
 - below cost.
 - cannot be determined from information given.

- (11) To be convicted of violating the Sherman Act Section 2, firms must possess monopoly power and
- enjoy above-normal profit.
 - have lower cost than any potential rival.
 - show intent to monopolize a market.
 - have higher cost than any potential rival.

- (12) The Supreme Court stated that “the law does not make mere size an offense” in its decision in
- Standard Oil v. U.S (1911).
 - U.S. v. U.S. Steel (1920).
 - U.S. v. Alcoa (1945).
 - U.S. v. United Shoe Machinery (1953).
 - Utah Pie v. Continental Baking (1967).
 - Berkey Photo v. Kodak (1979).

- (13) Predatory pricing can be profitable only if predation is followed by a period of
- competition.
 - recoupment.
 - price discrimination.
 - accommodation.
 - losses.

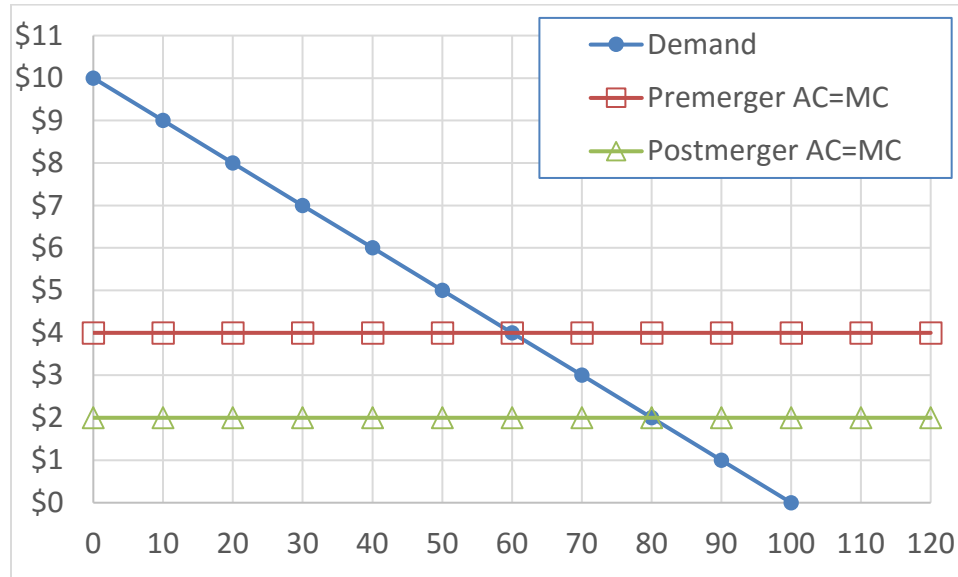
- (14) Under third-degree price discrimination (also called “market-segmenting price discrimination”) the market segment with the *more* elastic demand gets
- the lower price.
 - the higher price.
 - the same price as the other segment, assuming marginal costs are the same.
 - cannot be determined from information given.

- (15) Compared to single-price monopoly, market-segmenting price discrimination
- always increases social welfare.
 - always decreases social welfare.
 - results in no change in social welfare.
 - may increase or decrease social welfare.

- (16) The Supreme Court often makes the mistake of “protecting competitors instead of protecting competition,” according to Justice Potter Stewart's dissenting view in the case of
- Standard Oil v. U.S (1911).
 - U.S. v. U.S. Steel (1920).
 - U.S. v. Alcoa (1945).
 - U.S. v. United Shoe Machinery (1953).
 - Utah Pie v. Continental Baking (1967).
 - Berkey Photo v. Kodak (1979).

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) [Welfare tradeoffs of mergers: 14 pts] Consider the industry depicted in the graph below.



A proposed merger in this industry would have two effects. First, it would change the industry from a competitive market to a monopoly. Second, it would reduce AC and MC from \$4 to \$2 due to economies of scale.

- What price would the monopoly charge? [Hint: draw the MR curve carefully.]
- Compute the total loss of consumer surplus as a result of monopoly pricing.
- How much of this loss is a transfer to the monopoly producer?
- Compute the deadweight loss as a result of monopoly pricing (without considering cost savings).
- Compute the cost savings in producing the monopoly level of output as a result of the merger.
- Does net social welfare *increase or decrease* as a result of the merger?
- By how much?

\$
\$
\$
\$
\$
\$

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

Firm	A	B	C	D	E
Market share	30%	20%	10%	10%	5%

Assume the shares of the remaining firms are so small that they have a negligible effect on calculations below.

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 D were to merge with Firm E.

c. Compute the postmerger value of the Hirschman-Herfindahl index.

d. Under the 2010 *Guidelines*, would this industry now be classified as “unconcentrated,” “moderately concentrated,” or “highly concentrated”?

e. On the basis of these calculations alone, under the 2010 *Guidelines*, would this merger be deemed “**unlikely to have adverse competitive effects**,” or would it “**raise significant competitive concerns**,” or would it be “**presumed to be likely to enhance market power**”? Why?

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(3) [Successive monopolies with fixed proportions: 18 pts] Suppose an upstream monopoly firm produces a component that is used by a downstream firm to make a particular appliance. The upstream firm has constant marginal cost (equal to average cost) of $MC_C = \$2$. Each appliance requires exactly one component and \$3 of other inputs in fixed proportion. Therefore the downstream firm has constant marginal cost (equal to average cost) of \$3 plus the price of the component, P_C , which is set by the upstream firm. The key assumptions are

Marginal and average cost of component:	$MC_C = AC_C = \$2.$
Marginal and average cost of appliance:	$MC_A = AC_A = \$3 + P_C$
Demand for appliance:	$P_A = 15 - (Q/100).$

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

$MR_A =$

[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 component. [Hint: Set the marginal cost of the appliances equal to MR_A and solve for P_C .]

$$P_C =$$

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

$$MR_C =$$

Now compute the quantity of component (and thus appliances) sold Q , the price of component P_C , the upstream component monopolist's profit, the price of appliances P_A , and the downstream appliance monopoly's profit. Insert your answers in column (i) in the **Table of Results** below.

(ii) Second, assume the upstream and downstream industries are served by a vertically-integrated monopoly. The marginal cost of appliances for the vertically-integrated monopoly is therefore $MC_A = \$2 + \3 .

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

Table of Results [9 pts]	(i) Successive monopolies	(ii) Vertically integrated monopoly
Q = quantity of components (and appliances)		
P_C = price of component	\$	
Profit of upstream firm	\$	
P_A = price of appliances	\$	\$
Profit of downstream firm	\$	
Total upstream + downstream profits	\$	\$

d. [3 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?

(4) [Tying: 14 pts] Suppose a monopoly software company believes that the representative customers below are willing to pay the following amounts for three programs.

	Word processor	Spreadsheet	Presentation
Attorney	\$350	\$200	\$50
Accountant	\$100	\$300	\$50
Sales representative	\$50	\$100	\$250

Suppose each program were priced separately, and suppose the software company wishes to maximize revenue.

- a. What price should the company set for the word-processing program?

\$

- b. What price should the company set for the spreadsheet program?

\$

- c. What price should the company set for the presentation program?

\$

- d. How much revenue would the company receive in total for all three programs and all three customers?

\$

Suppose all three programs were bundled and priced as a single "office" package. Again assume the software company wishes to maximize revenue.

- e. What price should the company set for the package of three programs?

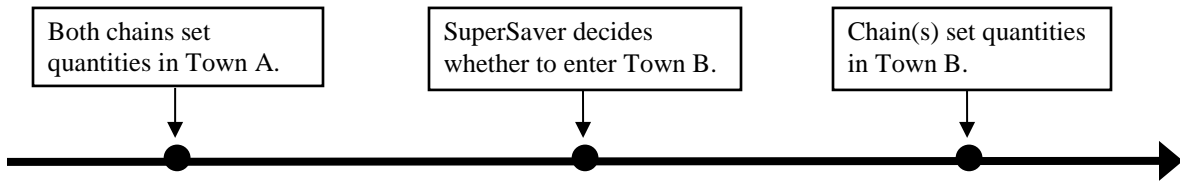
\$

- f. How much revenue would the company receive in total for all three customers?

\$

- g. Should the company sell the programs *separately* or as a *package*? (Assume the marginal cost of all programs is zero.)

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



The demand curve for each town is $P = 32 - (Q/10)$. For both companies, marginal cost is constant and equal to average cost. For SuperSaver, marginal cost is \$ 2. However, SuperSaver is unsure whether ValueMart's marginal cost is \$ 2 or \$ 14.

If both firms' marginal costs are \$ 2, then the symmetric Cournot duopoly equilibrium is $q_v = q_s = 100$.

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

\$

- b. Compute SuperSaver's profit in Town B in this case, ignoring start-up cost.

\$

If instead ValueMart's marginal cost is \$ 14, then the asymmetric Cournot duopoly equilibrium is $q_v = 20$ and $q_s = 140$.

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

\$

- d. Compute SuperSaver's profit in Town B in this case, ignoring start-up cost.

\$

Suppose SuperSaver believes there is a 50% chance that ValueMart's marginal cost is \$ 2, and a 50% chance that ValueMart's marginal cost is \$ 14.

- e. Compute SuperSaver's expected profit in Town B, ignoring start-up cost.

\$

- f. If the start-up costs of entering Town B are \$ 1600, should SuperSaver enter Town B if it is uncertain of ValueMart's marginal cost? Answer "Yes" or "No."

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Now in fact, ValueMart's marginal cost and average cost are both \$ 14, though SuperSaver does not know this.

- g. Compute ValueMart's total combined profit in both Towns A and B from simply playing each Town as an asymmetric Cournot duopoly.

\$

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

- h. What quantity should ValueMart set in Town A—20 or 100?

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- i. What quantity should ValueMart set in Town B?

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- j. Compute ValueMart's total combined profit in both Towns A and B.

\$

- 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) Acme Manufacturing Company is producing 10,000 units of output per month with the following monthly costs:

<i>Payroll</i>	<i>\$60,000</i>
<i>Energy</i>	<i>\$10,000</i>
<i>Supplies</i>	<i>\$20,000</i>
<i>Long-term leases on buildings and equipment</i>	<i>\$40,000</i>
<i>Administration and overhead</i>	<i>\$70,000</i>

Acme currently charges a price of \$10 for its product. A rival firm has accused Acme of predatory pricing in violation of the Sherman Act. Would Acme be convicted if the court used the Areeda-Turner rule? Why or why not?

- (2) Suppose Upstart Software Company complains that Microsoft will not permit it to sell its app through Microsoft's app store because Upstart's app competes with a similar app sold by Microsoft. According to the "essential facilities doctrine," what four things must Upstart show to win an antitrust case against Microsoft?

[end of exam]