ECON 120 - Regulation & Antitrust Policy
Drake University, Spring 2019
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Signature: _____

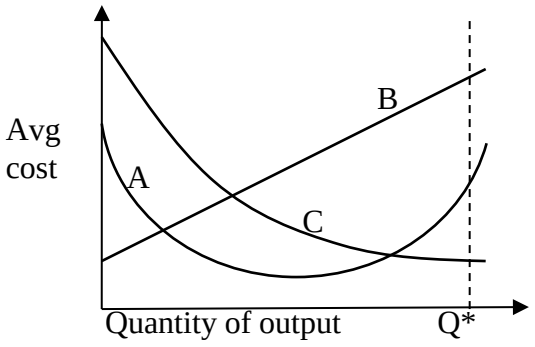
Printed name: _____

EXAMINATION 2 VERSION B
"Antitrust Theory"
March 14, 2019

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, 15 pts total]

(1) Which average cost curve below is typical of a firm that enjoys a natural monopoly? Assume that industry output is at least Q*
a. Average cost curve A.
b. Average cost curve B.
c. Average cost curve C.
d. None of the above.
e. Cannot be determined from information given.



(2) If marginal cost is less than marginal revenue at the current level of output, the firm can increase its profit by
a. increasing output.
b. decreasing output.
c. either increasing or decreasing output.
d. none of the above.
e. Cannot be determined from information given.

(3) Monopoly causes economic inefficiency because
a. monopolists enjoy profits, called monopoly rents, even in the long run.
b. monopoly prices are unfair.
c. it is unfair for one firm to control the market.
d. monopolists are usually wealthier than their customers.
e. some consumers, willing to pay the marginal cost of the product, are not served.

(4) The "Structure-Conduct-Performance" paradigm is simplistic because it assumes that
a. structure does not depend on conduct.
b. conduct does not depend on structure.
c. performance does not depend on structure.
d. performance does not depend on conduct.

(5) In a Nash equilibrium, each firm chooses a strategy that maximizes
a. the combined profit of the firms.
b. social welfare.
c. the firm's profit, given the rival firm's chosen strategy.
d. the firm's profit, regardless of the strategy the rival firm might choose.

(6) One implication of the Cournot model of oligopoly is that the equilibrium price is higher
a. the more firms are in the industry.
b. the more elastic is market demand.
c. both of the above.
d. none of the above.

(7) Which market model predicts the highest equilibrium price?
a. Price competition.
b. Collusion to maximize joint profits.
c. Cournot oligopoly.
d. All models predict the same equilibrium price, if all use the same assumptions about market demand and marginal cost.

(8) Suppose firms in a cartel use a "trigger strategy" to enforce discipline. If cheating is detected, then these firms will all
a. raise their prices.
b. lower their prices.
c. decrease their output.
d. halt production.

(9) Under the Department of Justice's corporate leniency program, amnesty can be given to
a. any cartel participants that cooperate with the government investigation.
b. any cartel participants that agree to leave the cartel.
c. the first cartel member that cooperates with the government investigation.
d. the last cartel member that cooperates with the government investigation.

(10) In private antitrust suits against price-fixing, injured parties can collect damages
a. multiplied by 1.5.
b. multiplied by 2.
c. multiplied by 3.
d. multiplied by 4.

(11) Which hypothesis claims that higher industry concentration is *not* associated with a loss of social welfare?
a. collusion hypothesis.
b. differential efficiency hypothesis.
c. Both of the above.
d. None of the above.

(12) Suppose an industry is a Cournot oligopoly but entry is possible after firms pay a fixed, sunk entry cost. The lower that entry cost, the
a. greater the number of firms, in long-run equilibrium.
b. smaller the number of firms, in long-run equilibrium.
c. The entry cost is unrelated to the entry cost.
d. Cannot be determined from information given.

(13) Suppose a dominant firm shares a market with a competitive fringe of smaller firms. The dominant firm's market power is greater,
a. the less elastic is total market demand curve.
b. the less elastic is the competitive fringe's supply curve.
c. Both of the above.
d. None of the above.

(14) According to the model of "dynamic limit pricing," a dominant firm can slow the rate of entry of competitive rivals by setting a
a. high price.
b. low price.
c. The dominant firm's price has no effect on the entry of competitive rivals.
d. Cannot be determined from information given.

(15) According to Dixit's model, an incumbent firm can deter entry of other firms, while still enjoying high profit, by
a. keeping its fixed cost as low as possible.
b. maintaining its output level high.
c. keeping its price close to marginal cost.
d. investing in extra production capacity.

II. Problems: Please 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) [Monopoly, markup formula, Lerner index: 4 pts] Wipeout Ski Hill enjoys a local monopoly. Its marginal cost per customer is $8.00. The management believes the elasticity of demand for its lift tickets is -5.

a. What admission price should Wipeout set, to maximize profit?

$

b. Compute Wipeout's Lerner index of market power [(P-MC)/P].

(2) [Antitrust statutes: 4 pts] Insert one of the following statutes in each box. You may insert the same statute into more than one box.

Sherman Act Section 1
Clayton Act Section 7
Sherman Act Section 2
Federal Trade Commission Act

a. "No corporation engaged in commerce shall acquire, directly or indirectly, the whole or any part of the stock … of another corporation engaged also in commerce, where ... the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly."

b. "Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce … is declared to be illegal."

c. "Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce … shall be deemed guilty of a felony…"

d. "Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce, are declared unlawful."

(3) [Cournot duopoly: 14 pts] Suppose a market is served by only two firms: Acme Products Company and Best Products Company. Suppose the two firms form a *symmetric Cournot duopoly*, each firm setting its own quantity while taking the other firm's quantity as given. Let q_A = Acme's quantity and q_B = Best's quantity, so that total market quantity $Q = q_A + q_B$. The market demand curve is $P = 10 – (Q/100)$. Each firm has constant marginal and average cost equal to \$4. Circle your final answers. Use the space at the bottom of the next page for scratch work.

a. Find an expression for Acme's revenue, as a function of its own quantity and the quantity produced by the other firm: $TR_A(q_A,q_B)$. [Hint: By definition, $TR_A = P\ q_A$. Here, replace P by the equation for the demand curve, and then replace Q by $(q_A + q_B)$.]

b. Find an expression for Acme's marginal revenue, as a function of its own quantity and the quantity produced by the other firm: $MR_A(q_A,q_B)$. [Hint: $MR_A = dTR_A / dq_A$.]

c. Find an expression for Acme's reaction function (or best reply function), showing how much Acme will produce for any given level of quantity set by the other firm: $q_A^* = f(q_B)$. [Hint: Set $MR_A = MC$ and solve for q_A as a function of q_B .]

d. Assume the equilibrium is symmetric (that is, assume $q_A^* = q_B^*$) and compute Ames's equilibrium quantity q_A^*.

Question continues on next page.

e. Compute total market quantity Q* and the equilibrium price P*.

f. Compute the Lerner index of market power [(P-MC)/P].

g. Compute the social deadweight loss from Cournot duopoly.

(4) [Joint profit maximization: 10 pts] Suppose the two firms in the previous problem form a cartel to maximize the sum of their profits. Show your work and circle your final answers.

a. Find the cartel's marginal revenue function.

b. Compute the cartel's profit-maximizing level of output Q*.

c. Compute the cartel's profit-maximizing price P*.

d. Compute the cartel's Lerner index of market power [(P-MC)/P].

e. Compute the social deadweight loss from the cartel.

(5) [Price-setting (Bertrand) duopoly with differentiated products: 15 pts] Firm A and Firm B produce similar items, but their designs are distinctive, so their products are not perfect substitutes. Firm A's demand is given by $Q_A = 200 - 30\ P_A + 10\ P_B$. Firm B's demand is given by $Q_B = 200 - 30\ P_B + 10\ P_A$. Each firm sets its own *price*, taking as given the *price* of the other firm. Assume the firms have no costs, so each firm simply seeks to maximize its own revenue.

a. Give an expression for Firm A's revenue TR_A, in terms of P_A and P_B .

b. What price should Firm A set, given Firm B's price P_B ? Give an expression in terms of P_B. In other words, give Firm A's *best reply function* .

c. Compute the (Nash) equilibrium prices P_A^* and P_B^*. [Hint: you may assume this equilibrium is symmetric: $P_A^* = P_B^*$.]

d. Compute Q_A^* and Q_B^*. [Again, assume symmetry.]

e. Compute the revenue of each firm.

(6) [Measures of concentration: 6 pts] CpsdailyNews.com reported that shares of U.S. gasoline retailers in 2018 were as follows.

Gasoline retailer	**Market share**
Shell	13%
Exxon	6%
Chevron	6%
Speedway	6%
BP	6%
Circle K	5%
Mobile	5%
Sunoco	4%
Valero	4%
Quiktrip	3%

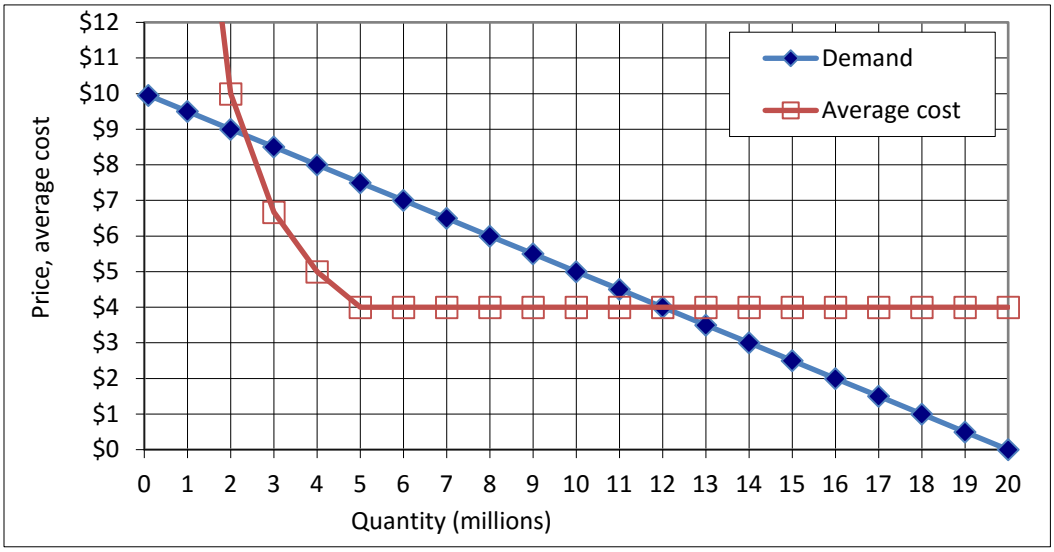
The total sums to 58%. Assume the remaining manufacturers are very small and may be ignored in the following calculations.

a. Compute the four-firm concentration ratio. ____ %

b. Compute the eight-firm concentration ratio. ____ %

c. Compute the Hirschman-Herfindahl Index. ____

(7) [Entry barriers and contestable markets: 26 pts] The graph below shows a market where the incumbent firm now produces eight million units of output and sets a price of $6. The average cost curve applies to the incumbent and to any other firm that tries to enter this market.



a. What is minimum average cost?	$
b. What is the minimum efficient scale?	million
c. Assume MC=AC and compute the incumbent's Lerner index (or "price-cost margin").	

First, suppose a second firm enters the market and produces four million units of output. Assume the Bain-Sylos postulate: the incumbent firm keeps its output level fixed at eight million and lets the market price fall.

d. What is the new market price?	$
e. What is the entrant's average cost?	$
f. Does the entrant make a profit or a loss?	
g. How much?	$ million

Alternatively, suppose a second firm enters the market and offers a price of $5. Do not assume the Bain-Sylos postulate. Instead assume the market is *contestable* and the incumbent firm keeps its price fixed at $6.

h. What is the entrant's quantity?	million
i. What is the entrant's average cost?	$
j. Does the entrant make a profit or a loss?	
k. How much?	$ million
l. What price *should* the incumbent set to prevent entry?	$
m. Compute the incumbent's Lerner index (or "price-cost margin") assuming it sets price as in part (l).	

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. [6 pts]

(1) Use the same demand and cost assumptions as in problem (5), but now assume that Firm A and Firm B coordinate their prices to maximize the combined total revenue ($TR=TR_A+TR_B$) of both companies.
   a. Compute the prices P_A^* and P_B^* that maximize TR. [Hint: Set $\partial TR/\partial P_A = 0$, and assume symmetry: $P_A^* = P_B^*$.]
   b. Compute Q_A^* and Q_B^*, the corresponding quantities.
   c. Compute TR*, the maximum combined total revenue.

(2) Suppose a market is currently served by only one firm, Firm A, whose average and marginal cost is \$5, but whose price is currently \$8. Firm B, with similar costs, is considering entering the market. To preserve its monopoly, Firm A tells Firm B that if Firm B enters the market, then Firm A will lower the price to \$4 to make sure that Firm B loses money.
   a. Define the term *credible threat*.
   b. Is Firm A's threat *credible?* Why or why not?

[end of exam]