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| Regulation & Antitrust Policy (Econ 180) | Signature: |  |
| Drake University, Spring 2011  William M. Boal | Printed name: |  |

**QUIZ #8 VERSION B**

**"Vertical Mergers and Vertical Restrictions"**

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. Points will be subtracted for illegible writing or incorrect rounding. Point values for each question are noted in brackets.

**I. Multiple choice:**  Circle the one best answer to each question. [3 pts each: 24 pts total]

(1) The view that vertical mergers may be a problem, because less-simple models, analyzed using game theory, show that they can sometimes both be profitable and decrease welfare, is called the

1. Traditional or Harvard School view.
2. Chicago School view.
3. Post-Chicago view.
4. Supply-side view.

(2) Suppose a software monopolist sells an operating system to manufacturers of computers. Each computer requires one copy of the operating system. (Assume the market for computers is competitive.) If the software monopolist were to extend its monopoly into the downstream computer market, its profit

1. would fall to zero.
2. would remain unchanged.
3. might increase.

(3) Zelcro Company makes a patented fastener that can be used in clothing as a substitute for zippers or snaps. Thus its fasteners are used in *variable proportion* in clothing, the downstream market. If Zelcro Company were to extend its upstream monopoly into the downstream clothing market, its profit

1. would fall to zero.
2. would remain unchanged.
3. might increase.

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

1. decrease.
2. increase.
3. not be affected because they did not merge.
4. Cannot be determined from information given.

(5) The government was most aggressive in preventing vertical mergers

1. in the 1960s.
2. in the 1980s.
3. since 1995.
4. The government has always treated vertical mergers extremely aggressively.

(6) 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

1. giving retailers exclusive territories.
2. setting a minimum retail price.
3. setting a maximum retail price.

(7) Which practice did the courts hold to be *per se* illegal from the *Dr. Miles* case in 1911 until *Leegin v. PSKS Inc.* in 2007?

1. resale price maintenance.
2. territorial restraints.
3. exclusive dealing.
4. vertical mergers.

(8) 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

1. free.
2. below cost but not free.
3. at cost.
4. above cost.

**II. Problems:** Insert your answer to each question below in the box provided. Use margins 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) [Motivations for vertical mergers: 8 pts] Check one answer to each question below.

a. Which structure can spread the risk of price fluctuations in intermediate goods?

[ ] two separate firms. [ ] single vertically-integrated firm.

b. Which structure can avoid the problem of "double maginalization"?

[ ] two separate firms. [ ] single vertically-integrated firm.

c. Which structure can better reduce inflexibility created by formal contracts?

[ ] two separate firms. [ ] single vertically-integrated firm.

d. Which structure creates greater incentives for each unit to minimize costs?

[ ] two separate firms. [ ] single vertically-integrated firm.

(2) [Tying: 21 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 | $100 | $50 |
| Accountant | $200 | $300 | $150 |
| Sales representative | $100 | $50 | $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*? |  |

(3) [Successive monopolies with fixed proportions: 39 pts] Suppose an upstream monopoly firm produces a patented electronic chip that is used by a downstream monopolist to make a wireless device. The upstream firm has constant marginal cost (equal to average cost) of MCC= $3. Each device requires exactly one chip and $4 of other inputs in fixed proportion. Therefore the downstream industry has constant marginal cost (equal to average cost) of $4 plus the price of the chip, PC, which is set by the upstream monopolist. The key assumptions are

Marginal and average cost of chip: MCC = ACC = $3.

Marginal and average cost of device: MCD = ACD = $4 + PC

Demand for device: PD = 15– (Q/100).

a. [3 pts] Find the equation for the marginal revenue curve for the device. [Hint: Since demand is linear, marginal revenue has the same vertical intercept, but twice the slope, as the demand curve.]

MRD =

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."

b. [3 pts] Find the equation for the derived demand curve for the chip. [Hint: Set the marginal cost of the device equal to MRD and solve for PC.]

PC =

c. [3 pts] Find the equation for the marginal revenue curve for the chip. [Hint: For linear demand curves, marginal revenue has the same vertical intercept, but twice the slope, as the demand curve.]

MRC =

Compute the quantity of chips (and thus devices) sold Q, the price of the chip PC, the upstream chip monopolist's profit, the price of the device PD, and the downstream device 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 devices for the vertically-integrated monopoly is therefore MCD = $3 + $4. Compute the quantity of devices, the price of devices PD, and the integrated monopolist's profit. Insert your answers in the unshaded boxes in column (ii) of the **Table of Results** on the next page.

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| **Table of Results** [27 pts] | **(i) Successive monopolies** | **(ii) Vertically integrated monopoly** |
| Q = quantity of chips (and devices) |  |  |
| PC = price of chips | $ |  |
| Profit of upstream firm | $ |  |
| PD = price of devices | $ | $ |
| 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?

**III. Challenge question** [Horizontal mergers: 8 pts]

The national market shares of the top mobile phone companies in the U.S. are as follows.[[1]](#endnote-1)

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| --- | --- | --- | --- |
| Verizon | 31% | TracFone | 6% |
| AT&T | 27% | MetroPCS | 3% |
| Sprint[[2]](#endnote-2) | 16% | US Cellular | 2% |
| T-Mobile | 12% |  |  |

You may assume that remaining companies are very small. Now AT&T proposes to merge with T-Mobile.

1. Compute the industry's current Hirschman-Herfindahl index.
2. Compute the industry's Hirschman-Herfindahl index after the proposed merger.
3. On the basis of this information alone, do you predict the U.S. antitrust authorities will approve the merger? Why or why not?
4. What additional information might change your prediction?

[end of quiz]

1. eMarketer, from comScore.com data, published in *Wall Street Journal* online, accessed March 21, 2011. [↑](#endnote-ref-1)
2. Includes Sprint Prepaid. [↑](#endnote-ref-2)