EXAMINATION 3 VERSION B
"Antitrust Policy"

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: Please circle the one best answer to each question. [1 pt each, 22 pts total]

(1) A vertical merger is a merger between
a.   two firms that buy and sell from each other, such as a coal mine and a steel mill.
b.   two firms that produce related products, such as a firm that makes soccer balls and a firm that makes tennis balls.
c.   two firms that produce unrelated products, such as a firm that makes bread and a firm that operates hotels.
d.   two firms that make the same product in the same market, such as car manufacturer and another car manufacturer.

(2) The law that prohibits mergers if the effect is "substantially to lessen competition, or to tend to create a monopoly" is the
a.   Clayton Act Section 7.
b.   FTC Act Section 5.
c.   Sherman Act Section 1.
d.   Sherman Act Section 2.

(3) Which type of merger is most likely to be opposed by the government today?
a.   a conglomerate merger for product extension.
b.   a conglomerate merger for market extension.
c.   a pure conglomerate merger.
d.   a horizontal merger.
e.   a vertical merger.
f.   all of the above are equally likely to be opposed.

(4) In the 1997 proposed merger of Staples and Office Depot, the government argued that
a.   the effect of the merger on cost savings and market price should be weighed using the compensation test.
b.   only the effect of the merger on market price should be considered.
c.   only cost savings should be considered.
d.   the merger was acceptable.

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

(6) Typically, if the definition of the market is narrowed to include fewer products believed to be close substitutes, then the Hirschman-Herfindahl index (HHI) will usually
a.   increase.
b.   decrease.
c.   become negative.
d.   The HHI is not usually affected by market definition.

(7) Suppose two firms, A and B, produce the same kind of output. The "diversion ratio" is
a.   the ratio of Firm A's marginal product to Firm B's marginal product.
b.   the ratio of the firms' revenues from entertainment to the firms' revenues from other industries.
c.   the ratio of Firm A's marginal cost to Firm B's marginal cost.
d.   the decrease in units sold by Firm B when Firm A sells one more unit.

(8) Efficiency reasons for vertical mergers include
a.   allowing changes in product specification without renegotiating contracts.
b.   reducing transaction costs.
c.   spreading the risk of price fluctuation.
d.   All of the above.

(9) Suppose each pencil sold includes one eraser attached to it. Suppose the upstream eraser industry and the downstream pencil industry are both monopolized. If the eraser producer then merged with the pencil producer, total profit would
a.   rise but the price of pencils would fall.
b.   fall and the price of pencils would fall.
c.   rise and the price of pencils would rise.
d.   fall but the price of pencils would rise.

(10) 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
a.   fall.
b.   rise.
c.   stay the same.
d.   cannot be determined from the information given.

(11) 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.

(12) Examples of vertical restraints do *not* include
a.   exclusive dealing.
b.   resale price maintenance.
c.   tying.
d.   predatory pricing.
e.   territorial restraints.

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

(14) Suppose a manufacturer of computer printers has some market power. Also suppose the manufacturer requires its customers to buy only its own brand of printer cartridges. If the explanation for this tying practice is price discrimination, then we would expect the manufacturer's brand of printer cartridges to be priced
a.   below cost.
b.   at cost.
c.   above cost.
d.   cannot be determined from information given.

(15) Predatory pricing can be profitable only if predation is followed by a period of
a.   price discrimination.
b.   accommodation.
c.   losses.
d.   competition.
e.   recoupment.

(16) 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 total cost.
b.   marginal cost
c.   average variable cost.
d.   average fixed cost.

(17) According to the "essential facilities" doctrine articulated by the Court of Appeals in *MCI v. AT&T* (1982), a company is guilty of monopolization if one can show all of the following, *except*
a.   denial of use of facility to the competitor.
b.   the feasibility of providing the facility to the competitor.
c.   control of the facility by a monopolist.
d.   a difference in price between the monopolist and the competitor.
e.   the competitor's inability to duplicate the facility.

(18) Compared to single-price monopoly, market-segmenting price discrimination
a.   always increases social welfare.
b.   always decreases social welfare.
c.   may increase or decrease social welfare.
d.   has no further effect on social welfare.

(19) The Robinson-Patman Act, outlawing price discrimination, was passed in 1936 to protect
a.   manufacturers.
b.   consumers.
c.   large chain stores.
d.   small independent retailers.
e.   all of the above.

(20) If a market is characterized by "network effects," then
a. consumers judge product quality based on the opinions of other consumers in their social network.
b. manufacturers use vertical restraints to increase sales through a network of dealers.
c. competing products are connected through a network.
d. each user's willingness-to-pay depends on the total number of other users.

(21) In a two-sided platform, with two groups of users, demand by users from one group typically is
a. positively related to the number of users from the other group.
b. negatively related to the price for the first group.
c. both of the above.
d. none of the above.

(22) Most observers agree that the task for antitrust in the new economy is
a. to prevent dominant firms from stifling challenges by new entrants.
b. to minimize disruption to markets.
c. to prevent markets from becoming too concentrated.
d. to ensure that prices are close to marginal cost.
e. all of the above.

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 of the firms in an industry are as follows.

| Firm	A	B	C	D	E	F
Market share	20%	20%	20%	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 E were to merge with Firm F.

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?

(2) [Welfare tradeoffs of mergers: 14 pts] Consider the industry depicted in the graph below.
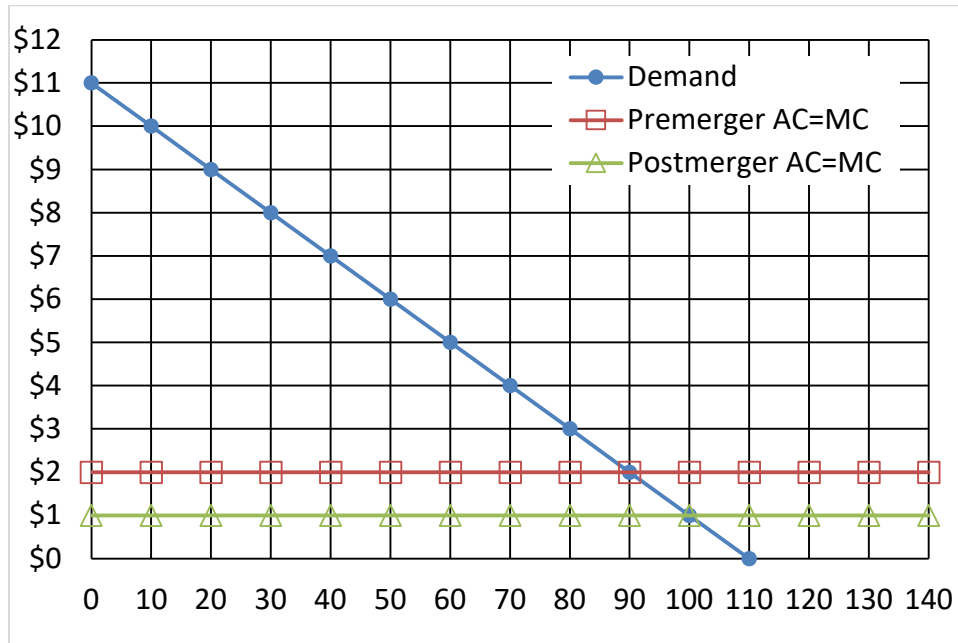
A proposed merger in this industry would have two effects. First, it would change the industry from a competitive market to a monopoly. Second, it would reduce AC and MC from $2 to $1 due to various efficiencies.

a. What price would the new monopoly charge? [Hint: draw the MR curve carefully.] $ _____

b. Compute the total loss of consumer surplus as a result of monopoly pricing. $ _____

c. How much of this loss is a transfer to the monopoly producer? $ _____

d. Compute the deadweight loss as a result of monopoly pricing (without considering cost savings). $ _____

e. Compute the cost savings in producing the monopoly level of output as a result of the merger. $ _____

f. Does net social welfare *increase or decrease* as a result of the merger?

g. By how much? $ _____

(3) [Upward pricing pressure: 8 pts] Suppose Firm A has 40% market share and Firm B has 20% market share. Assume that all customers buy from *some* firm in this market.

   a. Compute an estimate of the diversion ratio D_{AB} –that is, the number of units lost by Firm B when Firm A sells one more unit.

   b. Compute an estimate of the diversion ratio D_{BA} –that is, the number of units lost by Firm A when Firm B sells one more unit.

Further assume the following.
   - Firm A's price and marginal cost are $21 and $17 respectively.
   - Firm B's price and marginal cost are $23 and $14, respectively.
   - It is estimated that a merger would lower Firm A's marginal cost to $16, and would lower Firm B's marginal cost to $13.

Suppose Firms A and B were to merge. Compute the consequences for **Firm B**'s pricing.

   c. Compute the upward pricing pressure on Firm B caused by the merger (UPP_B).

   $

   d. Compute the hypothetical value of efficiencies (that is, the decrease in Firm B's marginal cost) that would be required to reduce UPP_B to zero.

   $

(4) [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= $1. 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

$$\text{Marginal and average cost of component:} \quad MC_C = AC_C = \$1.$$
$$\text{Marginal and average cost of appliance:} \quad MC_A = AC_A = \$3 + P_C$$
$$\text{Demand for appliance:} \quad P_A = 8 - (Q/10).$$

   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 $MC_A = \$1 + \$3$.

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?

(5) [Tying,: 8 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	$20	$30	$5
Sports channel	$5	$5	$20

Suppose each channel were priced separately, and suppose the cable TV service wishes to maximize revenue.
  a. [1 pt] What price should be charged for the comedy channel? $

  b. [1 pt] What price should be charged for the sports channel? $

  c. How much revenue would the software company receive in total for both channels $
     and all three customers?

Suppose both channels were bundled and priced as a single "premium package." Again assume the cable TV service wishes to maximize revenue.
  d. What price should be charged for the package of two channels? $

  e. How much revenue would the cable TV service receive in total for all three $
     customers?

(6) [Price discrimination: 6 pts] Suppose a monopoly believes its Blue customers have an elasticity of demand for its product equal to -3, and its Green customers have an elasticity of -7. The marginal cost of the product to either segment is $12.
 a. To maximize profit, which market segment should get the higher price?

  b. Compute the profit-maximizing price for Blue customers. $

  c. Compute the profit-maximizing price for Green customers. $

(7) [Network effects: 8 pts] The following graph shows willingness to pay for access to a network for two representative users, a high-intensity user (WTPH) and a low-intensity user (WTPL). Assume there are 200 potential users of each type.
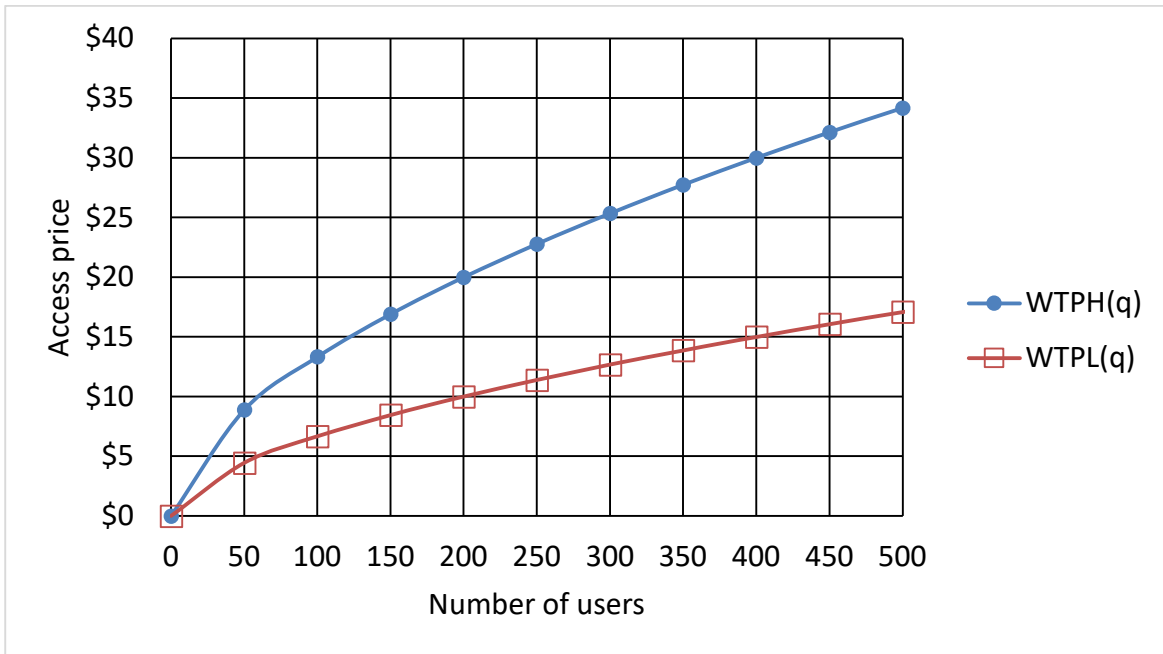
a. Explain why these curves slope upward.

b. What range of access prices (P) would be compatible in equilibrium with **no users** on the network?

$ _____ < P < $ _____

c. What range of access prices would be compatible in equilibrium with **200 users** on the network?

$ _____ < P < $ _____

d. What range of access prices would be compatible in equilibrium with **400 users** on the network?

$ _____ < P < $ _____

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

(1) Suppose a proposed horizontal merger would increase industry concentration sufficiently that it would be presumed by antitrust authorities to enhance market power. Describe two situations where U.S. antitrust authorities might approve the merger anyway, according to the 2010 Horizontal Merger Guidelines.

(2) U.S. antitrust policy restricts the conduct of dominant firms more than firms with small market share. Give two examples of conduct that is forbidden for dominant firms but permitted for firms with small market share. For each example, explain briefly why dominant firms are treated differently. (Note that "conduct" does *not* include mergers.)

[end of exam]