

Section I**MICROECONOMICS****Section I****Time—70 Minutes****60 Questions**

Directions: Each of the question or incomplete statements below is followed by five suggested answers or completions. Select the one that is best in each case and then fill in the corresponding oval on the answer sheet.

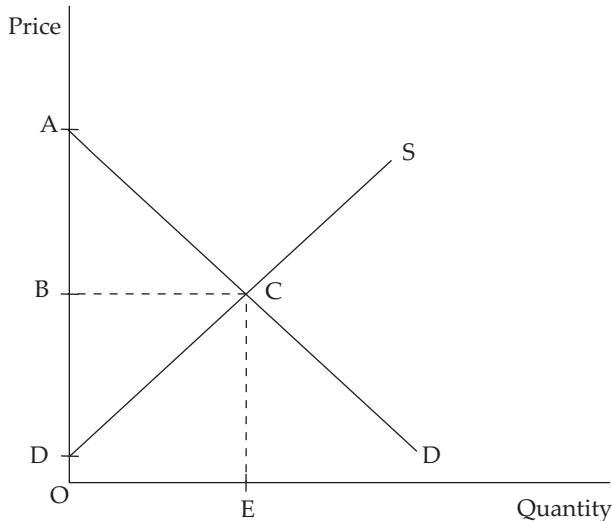
1. Which of the following constitute the fundamental questions every economic system must answer?

- I. What goods and services will be produced?
- II. How will they be produced?
- III. When will they be produced?
- IV. For whom will they be produced?
- V. Where will they be produced?

- (A) I, III, and V only
- (B) I, II, and IV only
- (C) I, II, and V only
- (D) II, IV, and V only
- (E) II, III, and IV only

2. Labor, human capital, entrepreneurship, natural resources, and physical capital are all examples of which of the following?

- (A) Public goods
- (B) Inferior goods
- (C) Factors of production
- (D) Outputs
- (E) Substitutes in production



3. In the figure above, consumer surplus is represented by the area

- (A) OACE
- (B) BCD
- (C) ACD
- (D) ABC
- (E) BCEO

4. The law of diminishing marginal utility is most useful for explaining the

- (A) law of supply
- (B) law of demand
- (C) curvature of the total cost curve
- (D) shape of the production possibilities frontier
- (E) diminishing marginal product of capital

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Number of Workers	Total Gyros per Hour
1	4
2	10
3	17
4	22
5	25

5. The table above provides the total number of workers and the resulting total output of Gyros Unlimited per hour, holding all other inputs constant. Which of the following statements can be made with certainty based on the available information?

(A) The firm faces decreasing returns to scale.
 (B) Diminishing marginal returns begin when the second worker is hired.
 (C) The firm faces increasing returns to scale.
 (D) The firm should not hire five workers.
 (E) Diminishing marginal returns begin when the fourth worker is hired.

6. The owner of a competitive firm making zero economic profit

(A) should consider shutting down because she could make more elsewhere
 (B) is making less than normal profits
 (C) is making exactly what she would make in her next best alternative job
 (D) will most likely make more profits in the long run
 (E) is making serious resource allocation errors

7. Which of the following is more likely to result from a competitive market structure than from a monopoly making the same product?

(A) Price equal to marginal cost
 (B) Relative welfare loss
 (C) Relatively high price
 (D) Relatively low quantity
 (E) Relatively inferior quality

8. Which of the following is likely to have the most elastic demand?

(A) A good with a vertical demand curve
 (B) Cigarettes
 (C) All types of soda pop
 (D) Sprite
 (E) Life-sustaining pills

9. What are the effects on the supply and demand curves for Frisbees if a new procedure reduces the cost of making Frisbees?

<u>Demand Curve</u>	<u>Supply Curve</u>
(A) Shifts right	Shifts right
(B) No change	Shifts left
(C) No change	Shifts right
(D) Shifts left	Shifts right
(E) Shifts right	Shifts left

10. Which of the following statements is true for a firm in a perfectly competitive industry?

(A) Total revenue increases and then decreases.
 (B) Marginal revenue is decreasing.
 (C) Average revenue is initially negative and then becomes positive.
 (D) Marginal revenue is increasing.
 (E) Average revenue equals marginal revenue.

11. Which of the following will shift the supply curve for textbooks to the left?

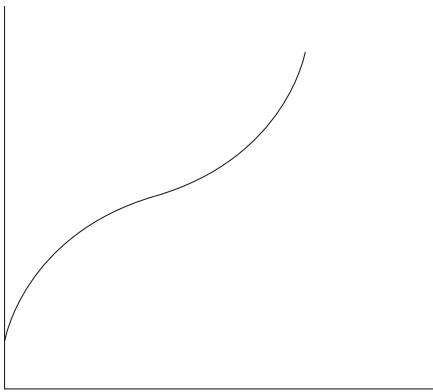
(A) A decrease in the demand for a substitute in production
 (B) A decrease in the number of buyers
 (C) An increase in printing costs
 (D) Expectations of future surpluses
 (E) A decrease in taxes on textbook suppliers

12. In the absence of intervention, imperfect competition, externalities, public goods, and imperfect information all result in which of the following?

(A) Demand curves that should be added vertically
 (B) Market failure
 (C) Prices that are too low
 (D) Quantities of output that are too high
 (E) An excess of pollution

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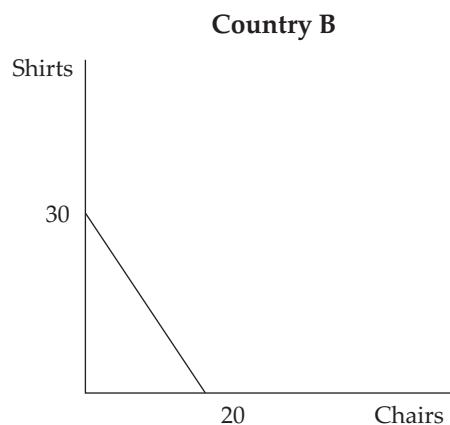
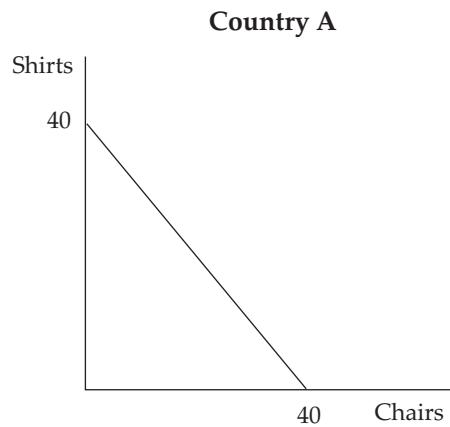
13. The line in the figure above is the most similar to a typical

- (A) total cost curve
- (B) total product curve
- (C) marginal product curve
- (D) average product curve
- (E) marginal cost curve

14. Firms with the following market structure(s) maximize profits by producing where marginal cost equals marginal revenue, if at all.

- I. Perfect competition
- II. Oligopoly
- III. Monopoly
- IV. Monopolistic competition

- (A) I only
- (B) I and II only
- (C) I and III only
- (D) I, III, and IV only
- (E) I, II, III, and IV



15. The simplified PPFs for countries A and B appear in the figures above. Both countries have the same resources to work with. Which of the following statements is correct?

- (A) Country A has a comparative advantage in both goods.
- (B) Country A has a comparative advantage in chairs, and country B has a comparative advantage in shirts.
- (C) Country B has an absolute advantage in shirts.
- (D) Country A has a comparative advantage in shirts, and country B has a comparative advantage in chairs.
- (E) Country A has an absolute disadvantage in chairs.

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16. Which of the following was not a landmark antitrust act?

(A) The Wagner Act
(B) The Sherman Act
(C) The Clayton Act
(D) The Robinson-Patman Act
(E) The Celler-Kefauver Act

17. In the same period there is a drought affecting the supply of pineapples and a discovery that they assist in the avoidance of cancer. How will this combination of events affect the equilibrium price and quantity of pineapples?

<u>Equilibrium Price</u> (A) Increases (B) Increases (C) Indeterminate (D) Decreases (E) Increases	<u>Equilibrium Quantity</u> Decreases Indeterminate Increases Indeterminate Increases
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18. Which of the following statements accurately describes the relationship between average product (AP) and marginal product (MP) of labor?

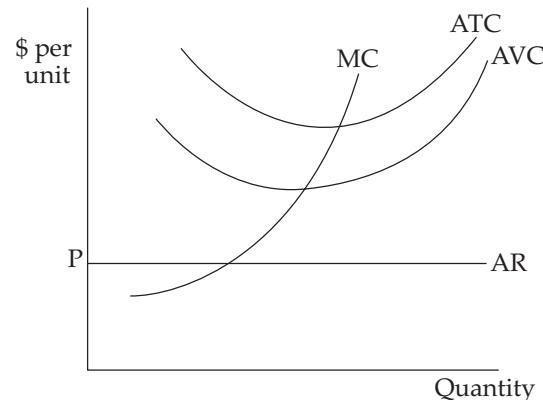
(A) AP rises when MP is above it and falls when MP is below it.
 (B) MP intersects AP at the maximum of MP.
 (C) AP and MP are always parallel to each other.
 (D) AP and MP are either both rising or both falling at all levels of labor.
 (E) AP is always rising when MP is falling and vice versa.

19. Which of the following goods is likely to provide both the largest total utility and the smallest marginal utility?

(A) Plastic
 (B) Automobiles
 (C) Computers
 (D) Spam
 (E) Air

20. In order to find the market supply curve for a particular good, one would

(A) aggregate the firm marginal revenue curves horizontally
 (B) aggregate the firm supply curves vertically
 (C) aggregate the firm marginal cost curves vertically
 (D) aggregate the firm marginal revenue curves vertically
 (E) aggregate the firm supply curves horizontally



21. A competitive firm facing the demand and cost curves in the figure above should

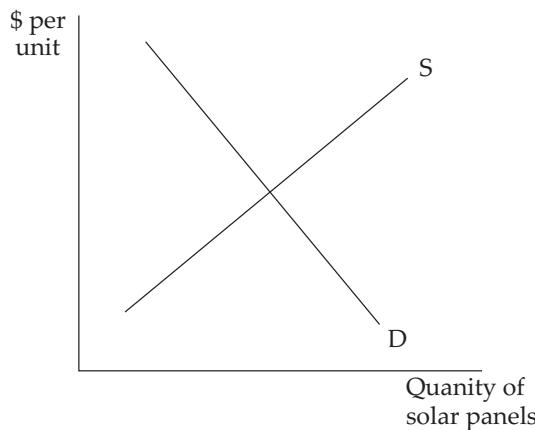
(A) shut down immediately
 (B) produce where marginal cost equals marginal revenue
 (C) stay open in the short run but not the long run
 (D) stay open in the short run and long run
 (E) produce where marginal cost equals average revenue

22. A loud party in the neighborhood is disturbing people living nearby who would like to sleep. Which of the following is most likely to lead to an efficient solution to the problem?

(A) Ban parties
 (B) Permit people to throw parties as they please
 (C) Place a tax on parties equal to the value of the lost sleep that results
 (D) Permit parties only on Tuesdays and Saturdays
 (E) Place a tax on parties equal to the value party-goers receive from their parties

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23. The figure above illustrates the supply and demand for solar panels. In 1998, 50 panels were sold for \$1,000 each, while in 1999, 50 panels were sold for \$900 each. Which of the following combinations of supply and demand behavior most likely occurred?

<u>Demand Curve</u>	<u>Supply Curve</u>
(A) Shift right	Shift left
(B) Shift left	Shift right
(C) Shift right	Shift right
(D) Shift left	No change
(E) No change	Shift right

24. Unlike a perfectly competitive firm, a monopoly

- (A) will charge the highest price it can on the demand curve
- (B) has a horizontal marginal revenue curve
- (C) has an upward sloping total revenue curve
- (D) faces a downward sloping demand curve
- (E) faces a horizontal demand curve

25. Every time Mr. Hamm makes another pizza in his shop, he places \$0.45 worth of sauce on top. For Mr. Hamm, the cost of pizza sauce is a component of which of the following?

- I. Total Fixed Costs
- II. Total Variable Costs
- III. Marginal Cost
- IV. Total Costs

- (A) I and IV only
- (B) II and III only
- (C) II and IV only
- (D) III and IV only
- (E) II, III, and IV only

26. If the government wants to establish a socially optimal price for a natural monopoly, it should select the price at which

- (A) average revenue equals zero
- (B) marginal revenue equals zero
- (C) the marginal cost curve intersects the demand curve
- (D) the average total cost curve intersects the demand curve
- (E) marginal revenue equals marginal cost

27. Which of the following will increase wages for tuba makers?

- (A) An increase in the number of graduates at tuba maker training school
- (B) An increase in the price of tubas
- (C) An increase in the price of tuba lessons
- (D) An increase in the tax on tubas
- (E) An effective price ceiling for tubas

28. After Julia received a raise in her income, she began purchasing more ice cream cones and fewer popsicles. For Julia, popsicles

- (A) disobey the law of demand
- (B) are a joint product
- (C) are a complementary good with ice cream
- (D) are a normal good
- (E) are an inferior good

29. When the opportunity for price discrimination arises,

- (A) market segments with relatively elastic demand pay higher prices
- (B) market segments with relatively inelastic demand pay lower prices
- (C) consumer surplus decreases
- (D) demand is horizontal
- (E) demand is vertical

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30. When a perfectly competitive labor market is in equilibrium,

- everyone who wants to work has the opportunity to do so
- individual firms face downward sloping labor demand curves
- unemployment can reach as high as 10-15 percent
- individual firms face upward sloping labor demand curves
- individual firms are considered “price makers”

Basketball	TC
1	103
2	105
3	109
4	114

31. On the basis of the information in the table above, and the assumption that total fixed costs are 100, which of the following is a correct statement about the costs of basketball production?

- The marginal cost of the fourth basketball is 14.
- The marginal cost curve falls and then rises.
- The total variable cost when three units are produced is 17.
- The marginal cost of the first basketball is 103.
- The marginal cost curve rises and then falls.

32. A production possibility frontier will be a straight line when

- efficiency is achieved
- the goods on the axes are perfect substitutes in consumption
- utility is maximized
- resources are not specialized
- the marginal product functions for all inputs are straight lines

33. An industry with three firms selling a standardized or differentiated product would be called

- a competitive industry
- a monopolistically competitive industry
- an oligopoly
- a duopoly
- a monopoly

34. Which of the following are associated with public goods?

- Free riders
- Adding demand curves vertically to find the demand curve for society
- Nonrivalry in consumption
- Nonexcludability

- I and II only
- I and IV only
- II and III only
- I, III, and IV only
- I, II, III, and IV

Workers	Total Product
1	5
2	9
3	12
4	14
5	15

35. Loony Spoons corporation sells silverware in a competitive market at a constant price of \$2 per piece. A competitive labor market sets the wage at \$5 per hour. The table above indicates the total product per hour using various numbers of workers. How many workers should Loony Spoons hire per hour?

- 1
- 2
- 3
- 4
- 5

36. Which of the following statements about a price ceiling is accurate?

- An effective price ceiling must be at a price below the equilibrium price.
- A price ceiling will increase the quantity of the good supplied.
- A price ceiling will cause a shift in the demand curve for the good.
- A price ceiling will have no effect on the quantity of the good supplied.
- Surpluses in the supply of the good are among the results of a price ceiling.

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37. If a decrease in income of 10 percent would cause Alec's consumption of vitamins to increase by 15 percent, which of the following statements is the most likely to be correct?

(A) Alec's income elasticity of demand is 1.5.
 (B) Vitamins would be categorized as an inferior good for Alec.
 (C) Alec's income elasticity of demand is $\frac{2}{3}$.
 (D) Vitamins would be categorized as a necessity for Alec.
 (E) Alec's income elasticity of demand is 150.

	2 workers	4 workers	6 workers
1 shovel	3 trees	4 trees	5 trees
2 shovels	5 trees	6 trees	7 trees
3 shovels	6 trees	8 trees	9 trees

38. The table above indicates the number of trees that can be planted per hour using different combinations of inputs. All of the relevant numbers in the table are consistent with

(A) constant returns to scale
 (B) increasing marginal returns
 (C) constant marginal returns
 (D) economies of scale
 (E) increasing returns to scale

39. In the payoff matrix in the figure above, a dominant strategy equilibrium

(A) is for Bob to go high and Tom to go low
 (B) is for both Bob and Tom to go low
 (C) is for Bob to go low and Tom to go high
 (D) is for both Bob and Tom to go high
 (E) does not exist

	Tom		
	high	low	
Bob	high	B: 1 T: 3	B: 5 T: 2
	low	B: 4 T: 6	B: 1 T: 3

40. In the long run, a monopolistically competitive firm

(A) earns zero economic profit
 (B) earns positive economic profit
 (C) earns negative economic profit
 (D) faces a vertical demand curve
 (E) faces a horizontal demand curve

41. Which of the following is most likely to result in a shift to the right in the demand curve for orange juice?

(A) A bumper crop of oranges in Florida
 (B) A decrease in the price of Tang
 (C) Expectations of lower future prices for orange juice
 (D) A law permitting orange pickers to be paid less than the minimum wage
 (E) Expectations of higher future income among juice drinkers

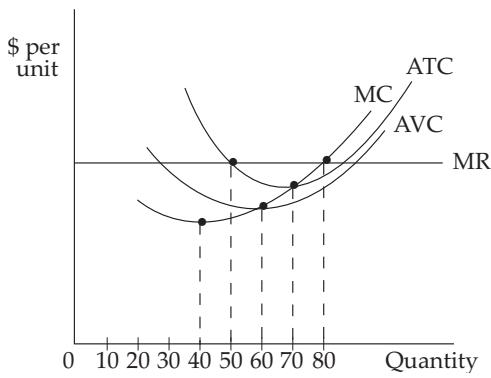
42. The market demand curve for labor would shift to the left as the result of

(A) an increase in the price of the good which the labor is producing
 (B) an increase in demand for the good which the labor is producing
 (C) an increase in the wage rate paid to workers
 (D) a decrease in the marginal product of labor
 (E) a decrease in the number of workers willing to work

43. The industry that makes plastic army figures uses a small fraction of the plastic demanded for all purposes. On this basis, we can conclude that the army-figures industry is most likely a(n)

(A) increasing-cost industry
 (B) constant-cost industry
 (C) decreasing-cost industry
 (D) profit-making industry
 (E) loss-making industry

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44. Given the cost and revenue curves in the figure above, how many units of output should be produced in order to maximize profit?

(A) 40
(B) 50
(C) 60
(D) 70
(E) 80

45. The concentration ratio for a monopoly is

(A) 0
(B) 5
(C) 10
(D) 100
(E) 1,000

46. At a Nash equilibrium,

(A) the supply curve intersects the demand curve
(B) neither party has an incentive to deviate from his or her strategy
(C) the marginal revenue curve intersects the marginal cost curve
(D) the equilibrium is unstable and each party would like to switch strategies
(E) no additional output could possibly be produced

47. The condition that $P = MC$ is the direct requirement for which type of efficiency?

(A) Distributive efficiency
(B) Technical efficiency
(C) Efficiency in production
(D) Efficiency in exchange
(E) Allocative efficiency

48. In order for a firm to successfully carry out price discrimination, which of the following conditions must hold?

I. The firm cannot face a downward sloping demand curve.
II. The firm must have market power.
III. Buyers with differing demand elasticities must be separable.
IV. The firm must have motives beyond profit maximization.
V. The firm must be able to prevent the re-sale of its products.

(A) I, III, and V only
(B) III and IV only
(C) I and IV only
(D) II, III, and V only
(E) II and V only

49. Which of the following is characteristic of a perfectly competitive firm's demand curve?

(A) average revenue is less than price at all levels of output
(B) marginal revenue is equal to marginal cost at all levels of output
(C) price and marginal revenue are equal at all levels of output
(D) it is the same as the market demand curve
(E) demand is inelastic at all levels of output

50. The relationship between the marginal revenue curve and the demand curve for a monopoly is most similar to the relationship between the marginal factor cost curve and what curve for a monopsony?

(A) Labor demand
(B) Labor supply
(C) Marginal external cost
(D) Total cost
(E) Marginal cost

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51. What could the government do to most effectively avoid a free rider problem?

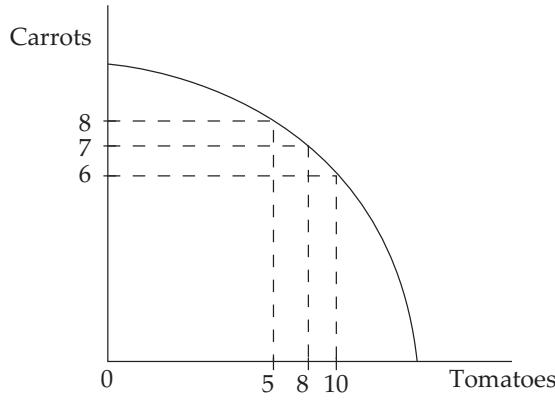
- (A) Enact stricter antitrust legislation
- (B) Provide more complete information about the relevant goods
- (C) Supply public goods using tax dollars
- (D) Tax those creating negative externalities
- (E) Subsidize those creating positive externalities

52. The necessity for a monopoly to lower its price in order to sell more units of its product explains why

- (A) monopolies are common among public utilities
- (B) the marginal revenue curve is below the demand curve for a monopoly
- (C) the marginal cost curve for a monopoly slopes upward
- (D) monopolies are able to maintain market power
- (E) monopolies differ from monopolistically competitive firms

53. Based on the PPF in the figure above, the opportunity cost of producing the seventh carrot is

- (A) 2 tomatoes
- (B) 3 tomatoes
- (C) 5 tomatoes
- (D) 8 tomatoes
- (E) the slope of the PPF



A Production Possibility Frontier (PPF) graph showing the trade-off between producing Carrots and Tomatoes. The vertical axis is labeled 'Carrots' and the horizontal axis is labeled 'Tomatoes'. The PPF is a concave curve starting from a point on the vertical axis and ending at a point on the horizontal axis. Dashed lines from the point (5, 8) on the PPF indicate that it takes 2 tomatoes to produce 1 additional carrot (the slope of the PPF at that point is 2).

54. The market demand curve for labor will shift to the right when

- (A) the number of firms increases
- (B) the price of output decreases
- (C) the labor supply curve shifts to the right
- (D) the labor supply curve shifts to the left
- (E) the marginal product of labor decreases

55. Patents, control of resources, economies of scale, and exclusive licenses are

- (A) all requirements for price discrimination
- (B) required in order for a firm to earn short-run profits
- (C) all sources of elastic demand
- (D) all barriers to entry
- (E) all detriments to market power

56. Which of the following statements is accurate in regard to a perfectly competitive firm?

- (A) Demand is downward sloping.
- (B) The demand curve lies above the marginal revenue curve.
- (C) Price is determined by the equilibrium in the entire market.
- (D) Average revenue differs from price.
- (E) Marginal revenue differs from average revenue.

57. Which of the following indicates that two goods are complements?

- (A) A positive income elasticity
- (B) A horizontal demand curve
- (C) A negative cross-price elasticity
- (D) A demand elasticity greater than one
- (E) A positive cross-price elasticity

58. Education makes Chris a better worker, voter, parent, and citizen. Because the benefits from education go beyond those that Chris enjoys himself, education provides

- (A) increasing marginal utility and should be subsidized
- (B) externalities and should be taxed
- (C) decreasing marginal utility and should be taxed
- (D) externalities and should be subsidized
- (E) an example of a good with inelastic supply

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59. When a negative externality exists as the result of the production of a good, the socially optimal quantity of output could be achieved by

- (A) free market capitalism
- (B) placing limits on the quantity that can be produced
- (C) government purchases of the good
- (D) setting a minimum on the quantity that can be produced
- (E) subsidizing the good's production

60. The demand curve for labor is derived from

- (A) the market labor demand curve
- (B) the demand curve for the output produced by labor
- (C) the labor supply curve for the firm
- (D) the equilibrium wage in the labor market
- (E) the market labor supply curve

END OF SECTION I

MICROECONOMICS
Section II

Planning time—10 minutes

Writing time—50 minutes

You will have 10 minutes to read the exam questions. Spend this time reading through all of the questions, practicing graphs, noting possible problem-solving approaches, and otherwise planning your answers. It's fine to make notes on the green question insert, but be sure to write your answers and anything else that might be worth partial credit in the pink answer booklet—the graders will not see the green insert. After 10 minutes you will be told to break the seal on the pink Free-Response booklet and begin writing your answers in that booklet.

Directions: You have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. In the country of Kold, the marginal cost of producing gloves is constant at \$1 per pair, regardless of the industry structure.
 - (a) Draw a correctly labeled graph of the glove market that includes a downward-sloping demand curve. Suppose that the market is controlled by a monopolist. Label as P_m and Q_m the price and quantity that would maximize profits.
 - (b) On the same graph drawn for part (a), label as P_c and Q_c the price and quantity that would prevail in the long run if the glove market were perfectly competitive.
 - (c) On the same graph drawn for parts (a) and (b), shade the area that represents the efficiency loss (or deadweight loss) associated with the monopoly. Explain what efficiency condition is violated by the monopoly.
 - (d) Explain how and why the relationship between the demand curve and the marginal revenue curve differs between an unregulated monopoly and a perfectly competitive firm.

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		Ally	
		Baseball	Soccer
Lee	Baseball		
	Soccer		

2. Ally and Lee both plan to attend either the soccer game or the baseball game after taking their AP exams. They prefer to meet at the same event, but before the exams they are too preoccupied to determine which event to attend, and the exams let out at different times, so they don't run into each other afterwards. The events are on opposite sides of town and Lee and Ally must each choose one event to attend without knowing where the other will be. Lee will receive 10 utils (a measure of happiness) if he ends up at the baseball game with Ally and 5 utils at the baseball game without her. Ally will receive 8 utils if she finds Lee at the baseball game and 6 utils at the baseball game without him. Lee will receive 12 utils at the soccer game with Ally and 4 utils at the soccer game without her. Ally will receive 10 utils at the soccer game with Lee and 3 utils at the soccer game without him.

- Complete the payoff matrix above to reflect the utility levels that Ally and Lee will receive in each scenario.
- Where would Ally and Lee go if they were able to coordinate their strategies? Explain.
- Does Lee have a dominant strategy in this game? Explain.
- Identify every set of strategies in this scenario that represents a Nash equilibrium.

3. When one person receives a flu shot, many other people benefit, because they no longer bear the risk of catching the flu from the shot recipient.

- Graph the supply and demand for flu shots, indicating both the private and the social marginal benefit. Label the equilibrium price and quantity and the socially optimal quantity of flu shots.
- What policy would you recommend to help bring about the socially optimal number of flu shots? Explain how your recommendation would remedy the situation.

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END OF EXAM

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