

**TEST BANK**

# Managerial Economics

SEVENTH EDITION

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# Managerial Economics

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GANNON UNIVERSITY



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## Chapter 1

### Introduction

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#### MULTIPLE CHOICE

1. Managerial economics uses \_\_\_\_\_ to help managers solve problems.
- a. formal models
  - b. prescribed behavior
  - c. quantitative methods
  - d. microeconomic theory
  - e. all of the above

ANS: E                      PTS: 1

2. Managerial economics draws upon all of the following EXCEPT:
- a. finance
  - b. microeconomics
  - c. accounting
  - d. marketing
  - e. sociology

ANS: E                      PTS: 1

3. The economic theory of the firm assumes that the primary objective of a firm's owner or owners is to:
- a. behave in a socially conscientious manner
  - b. maximize the firm's profit
  - c. maximize the firm's total sales
  - d. maximize the value of the firm
  - e. All of these are primary objectives

ANS: D                      PTS: 1

4. If the annual interest rate is  $i$ , the present value of  $\$X$  to be received at the end of each of the next  $n$  years is:
- a.  $\$X/i$
  - b.  $\$X/(1 + i)^n$
  - c.  $\$X \sum_{t=1}^n 1/(1 + i)^t$
  - d.  $\$X[(1 + i)^n] / [i(1 + i)^n - 1]$
  - e.  $\$X / [i(1 + i)^n - 1]$

ANS: C                      PTS: 1

5. If the annual interest rate is  $i$ , the present value of  $\$X$  to be received at the end of each future year forever is:
- a.  $\$X/(1 + i)$
  - b.  $\$X/i$
  - c.  $\$X/(1 + i)^n$
  - d.  $\$X/i^n$
  - e.  $\$X^n/i^n$

ANS: B                      PTS: 1

6. If the annual interest rate is 25 percent, the present discounted value of  $\$100$  to be received in one year is:
- a.  $\$75$
  - b.  $\$80$
  - c.  $\$100$
  - d.  $\$120$
  - e.  $\$125$

ANS: B                      PTS: 1

7. You've just won the \$25 million lottery. You are going to receive a check for \$1 million today and at the end of every year for the next 24 years. If the interest rate is 10 percent, the present value of your prize is:
- a. \$8,984,744
  - b. \$9,984,744
  - c. \$12,984,744
  - d. \$20,000,000
  - e. \$25,000,000

ANS: A                      PTS: 1

8. You borrow money from Fast Eddie's Fast Cash at 20 percent per year interest and agree to pay \$500 at the end of each of the next four years. You must have borrowed approximately:
- a. \$2,000
  - b. \$1,595
  - c. \$1,295
  - d. \$1,095
  - e. \$895

ANS: C                      PTS: 1

9. You buy your child a \$100 savings bond that matures in 10 years and pays an annual interest rate of 10 percent. At maturity the bond will be worth:
- a. \$228.17
  - b. \$200
  - c. \$259.37
  - d. \$271.17
  - e. \$217.71

ANS: C                      PTS: 1

10. Your mortgage requires that you pay \$12,000 at the end of each of the next 30 years. If the annual interest rate is 12 percent, then you must have borrowed approximately:
- a. \$117,660
  - b. \$96,660
  - c. \$78,660
  - d. \$63,660
  - e. \$133,660

ANS: B                      PTS: 1

11. The present value of expected future profits will \_\_\_\_\_ if the discount rate increases and will \_\_\_\_\_ if expected future profits increase.
- a. increase; not change
  - b. increase; increase
  - c. not change; decrease
  - d. decrease; increase
  - e. decrease; decrease

ANS: D                      PTS: 1

12. If the annual interest rate is  $i$ , the present value of a payment of  $\$X$  to be received  $n$  years from now is:
- a.  $\$X/(1 + i)$
  - b.  $\$X/i$
  - c.  $\$X/(1 + i)^n$
  - d.  $\$X/i^n$
  - e. none of the above

ANS: C                      PTS: 1



13. In managerial economics, managers are assumed to maximize:

- a. current profits
- b. their take-home pay
- c. their employees' welfare
- d. the value of their firm
- e. social welfare

ANS: D                      PTS: 1

14. Owner-supplied labor is a cost that is usually:

- a. included in both accounting costs and economic costs
- b. included in accounting costs but not in economic costs
- c. included in economic costs but not in accounting costs
- d. not included in either accounting costs or economic costs
- e. ignored because it is impossible to place a value on it

ANS: C                      PTS: 1

15. What is the relationship between economic and accounting profit?

- a. Economic profit is equal to accounting profit.
- b. Economic profit is greater than accounting profit.
- c. Economic profit is less than accounting profit.
- d. Economic profit may be equal to or less than accounting profit.
- e. Economic profit may be equal to or greater than accounting profit.

ANS: D                      PTS: 1

16. The difference between accounting and economic profit is:
- a. caused by confusion over tax laws
  - b. the value of owned resources in their next best alternative use
  - c. the result of superior training received by accountants
  - d. proportionately very small for owner-managed firms
  - e. a decreasing function of interest rates

ANS: B                      PTS: 1

17. Managers make decisions that contribute to the profitability of a firm by:
- a. exploiting market efficiencies
  - b. taking on risks
  - c. engaging in illegal behavior
  - d. maximizing sales
  - e. manipulating the share price of the firm's stock

ANS: B                      PTS: 1

18. Economic profits may result from:
- a. innovation
  - b. risk taking
  - c. exploiting market inefficiencies
  - d. all the above
  - e. a and b

ANS: D                      PTS: 1

19. Which of the following would a manager NOT use to create market inefficiencies?

- a. establishing a brand name
- b. sophisticated pricing strategies
- c. diversification efforts
- d. output decisions
- e. building market entry barriers

ANS: A                      PTS: 1

20. The principal–agent problem refers to:

- a. the threat from foreign competition
- b. the need to manage inventory more effectively
- c. double-entry bookkeeping
- d. the potential costs of separation of ownership and control
- e. the time value of money

ANS: D                      PTS: 1

21. Managers may choose to pursue goals other than maximization of a firm's value. This is referred to as the \_\_\_\_\_ problem.

- a. slacker–shirking
- b. neuropathy
- c. generation X
- d. principal–agent
- e. none of the above

ANS: D                      PTS: 1

22. Managers may make decisions that are not consistent with the goals of stockholders. This is referred to as the \_\_\_\_\_ problem.
- a. principal–agent
  - b. economic disincentive
  - c. incentive–compromise
  - d. efficiency–inefficiency
  - e. equilibrium

ANS: A                      PTS: 1

23. ConAgra has introduced a lean mixture of cereal and ground beef that is indistinguishable from ground beef but has about the same amount of fat as chicken. As a result, the:
- a. demand for chicken increases
  - b. demand for ground beef decreases
  - c. demand for chicken decreases
  - d. demand for cereal decreases
  - e. supply of chicken increases

ANS: C                      PTS: 1

24. The price of computers has fallen, while the quantity purchased has remained constant. This implies that the demand for computers has:
- a. decreased, while the supply of computers has increased
  - b. increased
  - c. decreased, while the supply of computers has decreased
  - d. increased, while the supply of computers has increased
  - e. become more volatile

ANS: A                      PTS: 1

25. Which of the following would be likely to reduce the demand for residential housing?

- a. high prices for residential housing units
- b. high mortgage interest rates
- c. high prices for lumber and other construction materials
- d. low unemployment rates
- e. low prices for residential housing units

ANS: B                      PTS: 1

26. The market demand curve shows the quantity of a good or service:

- a. households would sell at various prices
- b. households would buy at various outputs
- c. firms would sell at various prices
- d. firms would buy at various prices
- e. households would buy at various prices

ANS: E                      PTS: 1

27. J. D. Power, the big management consulting firm, extols the reliability of Dell computers; this causes the:

- a. demand for Dell computers to decrease
- b. supply of Dell computers to increase
- c. quantity supplied of Dell computers to increase
- d. quantity supplied of Dell computers to decrease
- e. demand and supply of Dell computers to remain unchanged

ANS: C                      PTS: 1

28. California imposes strict new regulations on the blending of gasoline that increase production costs. As a result, the:
- a. demand for gasoline will increase
  - b. demand for gasoline will decrease
  - c. supply of gasoline will increase
  - d. supply of gasoline will decrease
  - e. demand for and supply of gasoline will not change

ANS: D                      PTS: 1

29. The market supply curve shows the quantity of a good or service that \_\_\_\_\_, holding other possible influences constant.
- a. households would sell at various prices
  - b. households would buy at various outputs
  - c. firms would sell at various prices
  - d. firms would buy at various prices
  - e. households would buy at various prices

ANS: C                      PTS: 1

30. In Figure 1, the equilibrium price and quantity are:
- a.  $P^a$  and  $Q^a$
  - b.  $P^b$  and  $Q^b$
  - c.  $P^c$  and  $Q^c$
  - d.  $P^a$  and  $Q^c$
  - e.  $P^c$  and  $Q^a$

ANS: B                      PTS: 1

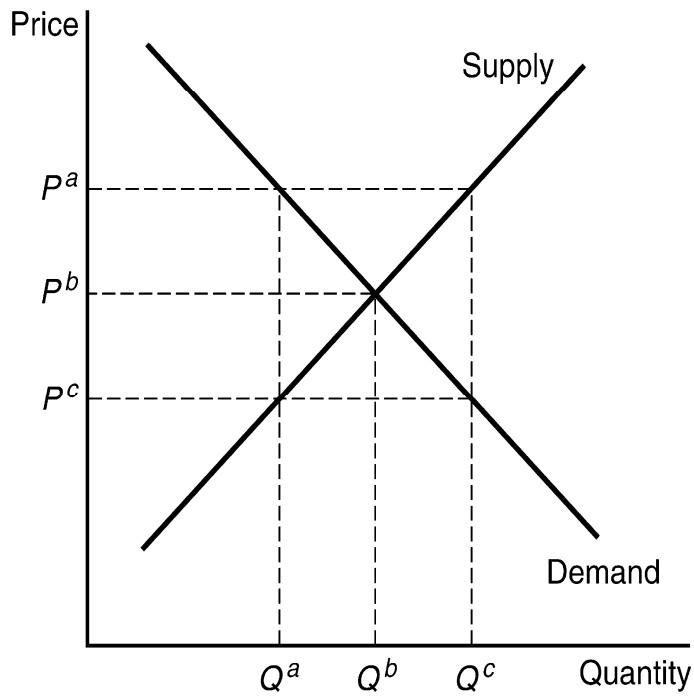


Figure 1

31. In Figure 1, there will be an excess supply at any price:

- a. above  $P^b$
- b. below  $P^b$
- c. other than  $P^b$
- d. below  $P^a$
- e. above  $P^c$

ANS: A      PTS: 1

32. In Figure 1, there will be an excess demand at any price:

- a. below  $P^a$
- b. below  $P^b$
- c. other than  $P^b$
- d. above  $P^b$
- e. above  $P^c$

ANS: B      PTS: 1

33. As a result of historically high gasoline prices in 2008, traffic volume in the United States (measured in terms of billions of miles driven per month) declined significantly. These changes were caused by a \_\_\_\_\_ of gasoline and \_\_\_\_\_.
- a. surplus; a decrease in the quantity demanded of gasoline
  - b. surplus; a decrease in the demand for gasoline
  - c. shortage; a decrease in the quantity demanded of gasoline
  - d. shortage; a decrease in the demand for gasoline
  - e. shortage; an increase in the demand for gasoline

ANS: C                      PTS: 1

34. Microeconomic theory is primarily \_\_\_\_\_, and microeconomics is primarily \_\_\_\_\_.
- a. prescriptive; descriptive
  - b. predictive; descriptive
  - c. descriptive; predictive
  - d. descriptive; prescriptive
  - e. prescriptive; predictive

ANS: D                      PTS: 1



## Chapter 2

### Demand Theory

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#### MULTIPLE CHOICE

1. Information on the quantities that would be purchased at different prices, holding all other factors constant, in a given time period from a group of firms is shown in a:
  - a. firm demand curve
  - b. market demand curve
  - c. firm demand schedule
  - d. market supply schedule
  - e. firm supply curve

ANS: B                      PTS: 1

2. The market demand schedule shows the quantities that would be purchased, holding all other factors constant, from a group of firms during a given time period:
  - a. at varying prices
  - b. at varying advertising levels
  - c. at varying competitors' prices and advertising levels
  - d. at varying prices and advertising levels
  - e. over different time intervals

ANS: A                      PTS: 1

3. The demand curve's usual slope implies that consumers:
  - a. buy more as the price of a good is increased
  - b. buy more as a good is advertised more
  - c. buy more at higher average incomes
  - d. buy less as the price of a good is increased
  - e. have tastes that sometimes change

ANS: D                      PTS: 1

4. A graphical representation of the demand function is called a:

- a. demand schedule
- b. demand curve
- c. demand function
- d. marginal revenue schedule
- e. marginal revenue curve

ANS: B                      PTS: 1

5. A market demand curve is likely to shift to the right when:

- a. average income falls
- b. prices fall
- c. prices rise
- d. population increases
- e. new firms enter the market

ANS: D                      PTS: 1

6. A firm's demand curve is usually:

- a. to the right of the market demand curve
- b. more inelastic than the market demand curve
- c. the same as the market demand curve
- d. drawn holding supply constant
- e. more elastic than the market demand curve

ANS: E                      PTS: 1

7. If the elasticity of per capita demand with respect to population is zero, then a 10 percent increase in the population will cause the quantity demanded to:
- a. increase by 25 percent
  - b. decrease by 10 percent
  - c. remain constant
  - d. increase by 10 percent
  - e. decrease by 25 percent

ANS: C                      PTS: 1

8. As we move down a linear demand curve, demand becomes:
- a. more elastic
  - b. less elastic at first and then more elastic
  - c. steeper
  - d. more elastic at first and then less elastic
  - e. less elastic

ANS: E                      PTS: 1

9. The demand for personal computers has been estimated to be  $Q = 500,000 - 700P + 200I - 500S$ . Assume that per capita income  $I$  is \$13,000 and the average price of software  $S$  is \$400. When the price of personal computers is  $P = \$3,000$ , the price elasticity of demand is:
- a.  $-2.625$
  - b.  $-7.0$
  - c.  $-1.0$
  - d.  $-21.0$
  - e.  $-4.25$

ANS: A                      PTS: 1

10. The demand for fashion watches is  $Q = 9 - 0.7P + 2I$ . Assume that per capita income  $I$  is \$13.

When the price of fashion watches is  $P = \$30$ , the price elasticity of demand is:

- a.  $-0.66$
- b.  $-1.0$
- c.  $-2.0$
- d.  $-0.5$
- e.  $-1.5$

ANS: E

PTS: 1

11. The demand for space heaters is  $Q = 250 - P + 2\text{COOL}$ , where COOL is the absolute value of the difference between the average overnight low temperature and  $40^{\circ}\text{F}$ . Assume that the average overnight low is  $0^{\circ}\text{F}$ . When the price of space heaters is  $P = \$30$ , the price elasticity of demand is:

- a.  $-0.1$
- b.  $-1.0$
- c.  $-0.66$
- d.  $-1.5$
- e.  $-6.6$

ANS: A

PTS: 1

12. The demand for space heaters is  $Q = 250 - P + 2\text{COOL}$ , where COOL is the absolute value of the difference between the average overnight low temperature and 40°F. Assume that the average overnight low this month is 40°F. When the price of space heaters is  $P = \$50$ , the price elasticity of demand is:
- a. -1.38
  - b. -13.8
  - c. -0.138
  - d. -1.50
  - e. -0.25

ANS: E                      PTS: 1

13. The demand for answering machines is  $Q = 1,000 - 150P + 25I$ . Assume that per capita disposable income  $I$  is \$200. When the price of answering machines is  $P = \$10$ , the price elasticity of demand is:
- a. -3.0
  - b. -3.33
  - c. -1.33
  - d. -0.33
  - e. -1.0

ANS: D                      PTS: 1

14. The demand for textbooks is  $Q = 200 - P + 25U - 50P_{\text{beer}}$ . Assume that the unemployment rate  $U$  is 8 and the price of beer  $P_{\text{beer}}$  is \$2. When the average price of a textbook is  $P = \$100$ , the price elasticity of demand is:
- a. -1.0
  - b. -2.0
  - c. -0.5
  - d. -50
  - e. -5.0

ANS: C                      PTS: 1

15. Suppose that the demand curve for compact disks is given by  $P = 600 - Q$  and that the supply curve is given by  $P = 0.5Q$ , where  $Q$  is the quantity of compact disks and  $P$  is their price. What is the price elasticity of demand at the equilibrium price and quantity?
- a. -0.05
  - b. -0.02
  - c. -0.20
  - d. -0.50
  - e. -2.00

ANS: D                      PTS: 1

16. The demand for cough medicine is  $Q = 10 - 2P$ . At a price of \$2.50, the price elasticity of demand is:
- a. -2.0
  - b. -1.0
  - c. -2.5
  - d. -0.4
  - e. -1.5

ANS: B                      PTS: 1

17. The demand for office chairs in thousands is  $Q = 80 - P^2$ . At a price of \$4, the price elasticity of demand is:
- a.  $-0.5$
  - b.  $-8.0$
  - c.  $-2.0$
  - d.  $-4.0$
  - e.  $-0.25$

ANS: A                      PTS: 1

18. The price elasticity of demand for Portland cement at a local retail outlet is  $-3$  at the current price of \$3. If the marginal cost is \$2, then the store manager should:
- a. increase the price to \$4
  - b. lower the price to \$2.75
  - c. quit selling cement
  - d. leave the price unchanged
  - e. lower the price to \$2.50

ANS: D                      PTS: 1

19. The formula for the arc price elasticity can be written (where  $\Delta Q$  denotes the change in  $Q$ ) as:
- a.  $\eta = [\Delta Q / (Q_1 + Q_2)] / [\Delta P / (P_1 + P_2)]$
  - b.  $\eta = [\Delta Q / (Q_1 + Q_2)] / [\Delta P / (Q_1 + Q_2)]$
  - c.  $\eta = [\Delta Q / (P_1 + P_2)] / [\Delta P / (Q_1 + Q_2)]$
  - d.  $\eta = [\Delta P / (P_1 + P_2)] / [\Delta Q / (Q_1 + Q_2)]$
  - e. none of the above

ANS: A                      PTS: 1

20. The constant price elasticity of demand for cigarettes has been estimated to be  $-0.5$ . To reduce smoking by 50 percent, approximately how much tax needs to be added to a \$1 pack?
- a. \$1.00
  - b. \$2.00
  - c. \$3.00
  - d. \$.50
  - e. \$4.00

ANS: A                      PTS: 1

21. The formula for the arc elasticity of demand can be written as:
- a.  $\eta_{XY} = [\Delta Q_X / (Q_X^1 + Q_X^2)] / [\Delta P_X / (P_X^1 + P_X^2)]$
  - b.  $\eta_{XY} = [\Delta Q_X / (Q_Y^1 + Q_Y^2)] / [\Delta P_Y / (P_X^1 + P_X^2)]$
  - c.  $\eta_{XY} = [\Delta Q_X / (Q_X^1 + Q_X^2)] / [\Delta P_Y / (P_Y^1 + P_Y^2)]$
  - d.  $\eta_{XY} = [\Delta P_X / (P_X^1 + P_X^2)] / [\Delta Q_Y / (Q_Y^1 + Q_Y^2)]$
  - e. none of the above

ANS: C                      PTS: 1

22. Total revenue can be defined as:
- a. average revenue multiplied by marginal revenue
  - b. average revenue divided by marginal revenue
  - c. average revenue multiplied by output
  - d. average revenue divided by output
  - e. marginal revenue divided by output

ANS: C                      PTS: 1



23. Along a linear demand curve, total revenue is maximized:
- a. where the slope of a line from the origin to the demand curve is equal to the elasticity
  - b. where the elasticity is  $-1$
  - c. near the quantity axis intercept
  - d. near the price axis intercept
  - e. where the elasticity is 0

ANS: B                      PTS: 1

24. The demand for a product is more inelastic the:
- a. more narrowly defined the product
  - b. longer the time period covered
  - c. lower the average income of consumers
  - d. better the available substitutes
  - e. poorer the available substitutes

ANS: E                      PTS: 1

25. The demand for a product is more elastic the:
- a. more broadly the product is defined
  - b. longer the time period covered
  - c. higher the average income of consumers
  - d. smaller the share of a consumer's income the item represents
  - e. larger the number of firms in the market

ANS: B                      PTS: 1

26. The demand for costume jewelry has been estimated to be  $Q = 100P^{-2}E^2$ , where  $E$  is the price of real gem jewelry. Costume jewelry and real gem jewelry are:
- a. substitute goods
  - b. complement goods
  - c. inferior goods
  - d. normal goods
  - e. unrelated goods

ANS: A                      PTS: 1

27. The price elasticity of market demand primarily depends on the:
- a. number of firms in an industry
  - b. cost of producing an industry's output
  - c. availability of substitutes
  - d. substitutability of inputs in producing a product
  - e. supply curves of inputs

ANS: C                      PTS: 1

28. Marginal revenue can be defined in terms of price ( $P$ ) and elasticity ( $\eta$ ) as:
- a.  $MR = P(\eta + 1/\eta)$
  - b.  $P = MR(1/\eta)$
  - c.  $MR = P\eta$
  - d.  $MR = P(1 + 1/\eta)$
  - e.  $P = MR(1 - 1/\eta)$

ANS: D                      PTS: 1

29. If price is \$25 when the price elasticity of demand is  $-0.5$ , then marginal revenue must be:

- a. \$50
- b.  $-\$25$
- c. \$12.50
- d. \$37.50
- e. \$25

ANS: B                      PTS: 1

30. If price is \$12 when the price elasticity of demand is  $-1$ , then marginal revenue must be:

- a. \$24
- b. \$18
- c. \$12
- d. \$6
- e. \$0

ANS: E                      PTS: 1

31. A profit-maximizing firm's price can be written in terms of marginal cost and price elasticity of demand as:

- a.  $P = MC(1 - 1/\eta)$
- b.  $P = MC(1/\eta)$
- c.  $P = MC/(1 + 1/\eta)$
- d.  $P = MC\eta$
- e.  $P = MC(1 + 1/\eta)$

ANS: C                      PTS: 1

32. If the marginal cost of seating a theatergoer is \$5 and the elasticity of demand is  $-4$ , the profit-maximizing price is:
- a. \$3.33
  - b. \$5.00
  - c. \$10.00
  - d. \$13.33
  - e. \$6.67

ANS: E                      PTS: 1

33. If the marginal cost of making a photocopy is 3 cents and the elasticity of demand is  $-2$ , the profit-maximizing price is:
- a. 3 cents
  - b. 5 cents
  - c. 6 cents
  - d. 7 cents
  - e. 8 cents

ANS: C                      PTS: 1

34. A manufacturer of infant clothes has found that the demand for its product is given by  $Q = 100P^{-1.25}A^{0.5}$ , where  $P$  is price and  $A$  is advertising expenditures. If marginal cost is \$5, the profit-maximizing price is:
- a. \$10.00
  - b. \$15.00
  - c. \$20.00
  - d. \$25.00
  - e. \$6.25

ANS: D                      PTS: 1

35. If the marginal cost of brewing beer is 40¢ and the profit-maximizing price is 60¢, then the price elasticity of demand is:
- a. -0.333
  - b. -3
  - c. -0.667
  - d. -1.5
  - e. -2

ANS: B                      PTS: 1

36. “Colombia, Brazil Advance Proposal to Withhold 10 Percent of Export Output” (*Wall Street Journal*, September 23, 1991, p. B6). A Colombian delegate to the International Coffee Organization said that if all its members withheld 10 percent of export output, the international price would rise 20 percent. This statement implies the price elasticity of demand for coffee is approximately:
- a. -0.00
  - b. -5.00
  - c. -2.00
  - d. -0.20
  - e. -0.50

ANS: E                      PTS: 1

37. Marginal revenue can be defined as the:
- a. percent increase in total revenue resulting from a one percent increase in output
  - b. increase in total revenue resulting from a one unit increase in output
  - c. total revenue divided by output
  - d. average revenue multiplied by output
  - e. average revenue multiplied by output divided by 4

ANS: B                      PTS: 1

38. Total revenue decreases as output increases whenever:

- a. marginal revenue is less than average revenue
- b. marginal revenue is greater than average revenue
- c. average revenue is decreasing
- d. marginal revenue is negative
- e. average revenue is negative

ANS: D                      PTS: 1

39. Along a demand curve with unitary elasticity everywhere, total revenue:

- a. increases as output increases
- b. decreases as output increases
- c. remains constant as output increases
- d. increases and then decreases as output increases
- e. decreases and then increases as output increases

ANS: C                      PTS: 1

40. The price elasticity of demand can be interpreted as the:

- a. percentage change in the quantity demanded divided by the percentage change in the good's price
- b. percentage change in the quantity demanded divided by the percentage change in a substitute good's price
- c. percentage change in the good's price divided by the percentage change in quantity demanded
- d. change in the quantity demanded of a good divided by the change in its price
- e. change in the quantity demanded of a good divided by the change in a related good's price

ANS: A                      PTS: 1

41. The marginal cost of producing a paperback is half the marginal cost of producing a hardback version sold to consumers at four times the paperback price. If the price elasticity of demand for paperbacks is  $-4$ , then the price elasticity of demand for hardcover books is:
- a.  $-2.6$
  - b.  $-3.6$
  - c.  $-1.6$
  - d.  $-0.6$
  - e.  $-4.6$

ANS: C                      PTS: 1

42. The demand for fax machines in thousands of units has been estimated to be  $Q = 1,000 - 1.5P + 5L$ , where  $P$  is the price of the machines and  $L$  is the average cost of a 10-minute midday call from Los Angeles to New York. At a fax machine price of \$400 and a phone call cost of \$10, the price elasticity of demand for fax machines is:
- a.  $-4.0$
  - b.  $-2.50$
  - c.  $-0.61$
  - d.  $-0.25$
  - e.  $-1.33$

ANS: E                      PTS: 1

43. A manufacturer of infant clothes has found that the demand for its product is given by  $Q = 100P^{-1.25}A^{0.5}$ , where  $P$  is price and  $A$  is advertising expenditures. The price elasticity of demand for these infant clothes is:

- a.  $-0.8$
- b.  $-1.25$
- c.  $-1.0$
- d.  $-2.5$
- e.  $-0.5$

ANS: B                      PTS: 1

44. The formula for the point price elasticity can be written as:

- a.  $\eta = (\Delta Q / \Delta P)(P / Q)$
- b.  $\eta = (\Delta P / \Delta Q)(P / Q)$
- c.  $\eta = (\Delta Q / \Delta P)(Q / P)$
- d.  $\eta = (\Delta P / \Delta Q)(Q / P)$
- e. none of the above

ANS: A                      PTS: 1

45. Total revenue is rising with increases in output whenever:

- a. output increases
- b. marginal revenue is positive
- c. average revenue is positive
- d. demand is inelastic
- e. average revenue is negative

ANS: B                      PTS: 1



46. A profit-maximizing firm sets its price:
- a. to maximize sales
  - b. where demand is elastic
  - c. to equate average revenue and average cost
  - d. at the highest level possible
  - e. where marginal profit is maximized

ANS: B                      PTS: 1

47. A good whose demand curve shifts to the left as income increases is a(n):
- a. normal good
  - b. substitute good
  - c. inferior good
  - d. inelastic good
  - e. abnormality good

ANS: C                      PTS: 1

48. The formula for the income elasticity of demand can be written as:
- a.  $\eta_I = (\Delta Q / \Delta I)(I / Q)$
  - b.  $\eta_I = (\Delta I / \Delta Q)(I / Q)$
  - c.  $\eta_I = (\Delta Q / \Delta I)(Q / I)$
  - d.  $\eta_I = (\Delta I / \Delta Q)(Q / I)$
  - e. none of the above

ANS: A                      PTS: 1

49. The income elasticity of demand is defined as the:
- a. percentage change in the quantity demanded divided by the percentage change in the price level
  - b. change in the quantity demanded divided by the change in per capita income
  - c. percentage change in income divided by the percentage change in the quantity demanded
  - d. change in per capita income divided by the change in the quantity demanded
  - e. percentage change in the quantity demanded divided by the percentage change in per capita income

ANS: E                      PTS: 1

50. The demand for answering machines is  $Q = 1,000 - 150P + 25I$ . Assume that per capita disposable income  $I$  is \$200. When the price of answering machines is  $P = \$10$ , the income elasticity of demand is:
- a. 2.5
  - b. 0.11
  - c. 1.0
  - d. 25
  - e. 1.11

ANS: E                      PTS: 1

51. The demand for cable television hookups is  $Q = 100 - 10P^{1/2} + 2I^{-1}$ , where  $P$  is price and  $I$  is per capita income. Cable TV is a(n):
- a. normal good
  - b. natural monopoly
  - c. inferior good
  - d. substitute good
  - e. complement good

ANS: C                      PTS: 1

52. In Russia, as per capita income rises from \$1,980 to \$2,020, everything else remaining constant, annual per capita consumption of vodka falls from 525 to 475 liters; this implies an income elasticity of demand for vodka of:
- a. -0.50
  - b. -5.0
  - c. 2.0
  - d. 5.0
  - e. 0.50

ANS: B                      PTS: 1

53. In 1965, as per capita income among a particular segment of the population fell from \$10,200 to \$9,800, everything else remaining constant, annual per capita consumption of beer fell from 55 to 45 gallons; this implied an income elasticity of demand for beer of:
- a. 4.44
  - b. 4.55
  - c. 5.0
  - d. 4.65
  - e. 0.5

ANS: C                      PTS: 1

54. The formula for the cross-price elasticity of demand can be written as:

- a.  $\eta_{XY} = (\Delta Q_X / \Delta P_Y)(P_Y / Q_X)$
- b.  $\eta_{XY} = (\Delta P_Y / \Delta Q_X)(P_Y / Q_X)$
- c.  $\eta_{XY} = (\Delta P_Y / \Delta Q_X)(P_Y / Q_X)$
- d.  $\eta_{XY} = (\Delta P_Y / \Delta Q_X)(Q_X / P_Y)$
- e. none of the above

ANS: A                      PTS: 1

55. The cross-price elasticity of demand is defined as the:

- a. percentage change in the quantity demanded of a good divided by the percentage change in the good's price
- b. percentage change in the quantity demanded of a good divided by the percentage change in a different good's price
- c. percentage change in a good's price divided by the percentage change in a different good's price
- d. change in the quantity demanded of a good divided by the change in its price
- e. change in the quantity demanded of a good divided by the change in income

ANS: B                      PTS: 1

56. The demand for fax machines has been estimated to be  $Q = 1,000 - P + 40L$ , where  $P$  is the price of the machines and  $L$  is the average cost of a 10-minute midday call from Los Angeles to New York. At a fax machine price of \$400 and a phone call cost of \$10, the cross-price elasticity of demand for fax machines with respect to the price of phone service is:

- a. 0.4
- b. 2.5
- c. -0.25
- d. 4.0
- e. 4.25

ANS: A                      PTS: 1

57. Makers of disposable diapers must advertise 5 percent more to offset completely the 2 percent decline in sales due to heightened environmental concern. The advertising elasticity of demand is:
- a. 4.0
  - b. 0.4
  - c. 2.5
  - d. 0.25
  - e. 0.20

ANS: B                      PTS: 1

58. El Niño wind patterns affected the weather across the United States during the winter of 1997–98. Suppose the demand for home heating oil in Connecticut is given by  $Q = 20 - 2P_{hho} + 0.5P_{ng} - \text{TEMP}$ , where  $Q$  is the quantity of home heating oil demanded,  $P_{hho}$  is the price of home heating oil per unit,  $P_{ng}$  is the price of natural gas per unit, and TEMP is the absolute difference between the average winter temperature over the past 10 years and the current average winter temperature. If the current price of home heating oil is \$1.20, the current price of natural gas is \$2.00, and the average winter temperature this year is 40 degrees compared to 28 degrees over the past 10 years, the quantity of home heating oil demanded is:
- a. 6.6 gallons
  - b. 16.6 gallons
  - c. 35.4 gallons
  - d. 20 gallons
  - e. none of the above

ANS: A                      PTS: 1

59. El Niño wind patterns affected the weather across the United States during the winter of 1997–98. Suppose the demand for home heating oil in Connecticut is given by  $Q = 20 - 2P_{hho} + 0.5P_{ng} - \text{TEMP}$ , where  $Q$  is the quantity of home heating oil demanded,  $P_{hho}$  is the price of home heating oil per unit,  $P_{ng}$  is the price of natural gas per unit, and TEMP is the absolute difference between the average winter temperature over the past 10 years and the current average winter temperature. If the current price of home heating oil is \$1.20, the current price of natural gas is \$2.00, and the average winter temperature this year is 40 degrees compared to 28 degrees over the past 10 years, the TEMP variable tells us that:
- a. each 1-degree increase in temperature over the normal average raises home heating oil sales by 1 unit
  - b. each 1-degree increase in temperature over the normal average lowers home heating oil sales by 1 unit
  - c. the average daily temperature has no impact on the sales of home heating oil
  - d. the average daily temperature has an impact only on the sales of natural gas
  - e. price elasticity of demand for home heating oil is 2

ANS: B

PTS: 1

60. El Niño wind patterns affected the weather across the United States during the winter of 1997–98. Suppose the demand for home heating oil in Connecticut is given by  $Q = 20 - 2P_{hho} + 0.5P_{ng} - \text{TEMP}$ , where  $Q$  is the quantity of home heating oil demanded,  $P_{hho}$  is the price of home heating oil per unit,  $P_{ng}$  is the price of natural gas per unit, and TEMP is the absolute difference between the average winter temperature over the past 10 years and the current average winter temperature. If the current price of home heating oil is \$1.20, the current price of natural gas is \$2.00, and the average winter temperature this year is 40 degrees compared to 28 degrees over the past 10 years, the price elasticity of demand for home heating oil is:
- a. -0.09
  - b. -0.36
  - c. -1.2
  - d. -2
  - e. none of the above

ANS: B                      PTS: 1

61. El Niño wind patterns affected the weather across the United States during the winter of 1997–98. Suppose the demand for home heating oil in Connecticut is given by  $Q = 20 - 2P_{hho} + 0.5P_{ng} - \text{TEMP}$ , where  $Q$  is the quantity of home heating oil demanded,  $P_{hho}$  is the price of home heating oil per unit,  $P_{ng}$  is the price of natural gas per unit, and TEMP is the absolute difference between the average winter temperature over the past 10 years and the current average winter temperature. If the current price of home heating oil is \$1.20, the current price of natural gas is \$2.00, and the average winter temperature this year is 40 degrees compared to 28 degrees over the past 10 years, if the sellers of home heating oil are profit maximizers, they should:
- a. lower prices
  - b. raise prices
  - c. advertise more
  - d. advertise less
  - e. none of the above

ANS: B                      PTS: 1



## Chapter 3

### Consumer Behavior and Rational Choice

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#### MULTIPLE CHOICE

1. Points along an indifference curve represent bundles of goods that:
- a. cost the same amount to buy
  - b. consumers don't like very much
  - c. decline in marginal utility
  - d. deliver equal utility
  - e. cannot be compared

ANS: D                      PTS: 1

2. Indifference curves describe:
- a. various consumer income levels
  - b. alternative market prices for goods and services
  - c. the quantities of a good or service that people are willing and able to buy at alternative prices
  - d. producer production levels at alternative market prices
  - e. consumer preferences

ANS: E                      PTS: 1

3. Sarah Jones believes that Coke and Pepsi are perfect substitutes. That is, she is equally happy with a Coke or a Pepsi and cannot tell the difference between them. Her indifference curves:
- a. are linear, with slope equal to  $-1$
  - b. are upward-sloping
  - c. are linear, with slope equal to  $1$
  - d. cross where she consumes equal amounts of Coke and Pepsi
  - e. cannot be defined, since she likes both equally well

ANS: A                      PTS: 1

4. Indifference curves cannot cross because:

- a. consumers will always substitute 1 unit of a good for 1 unit of another good
- b. consumers prefer more to less
- c. a single consumption bundle would bring two different levels of utility
- d. all of the above
- e. b and c

ANS: E                      PTS: 1

5. At equilibrium, the marginal rate of substitution describes:

- a. the slope of the budget constraint
- b. the number of units of one good that a consumer is willing to trade for an additional unit of another good, holding utility fixed
- c. the slope of the demand curve
- d. the number of units of one good that a consumer is willing to trade for an additional unit of another good in order to increase utility by 1 unit
- e. a and b

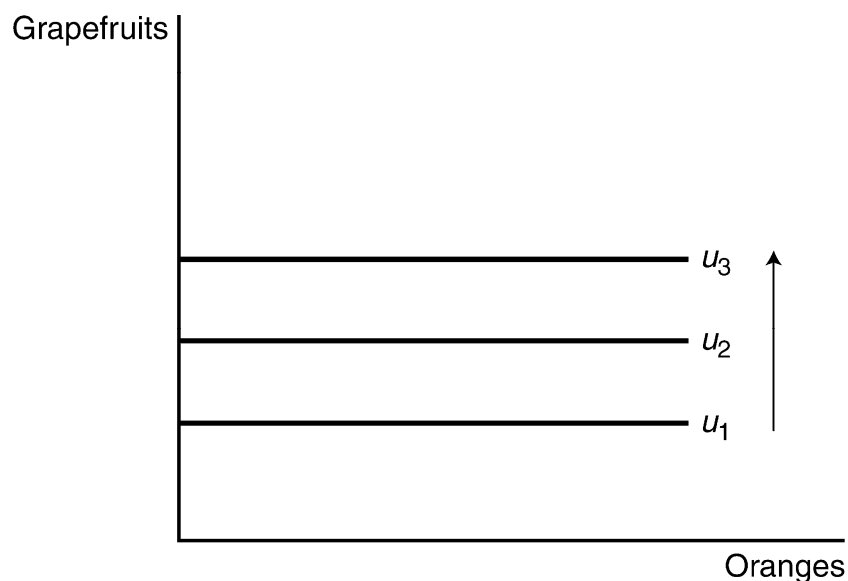
ANS: B                      PTS: 1

6. The marginal rate of substitution:

- a. remains constant as the consumer moves around an indifference curve
- b. is constant if the goods are perfect complements
- c. decreases as the consumer moves down a typical indifference curve
- d. cannot be defined if the goods are perfect substitutes
- e. none of the above

ANS: C                      PTS: 1

7. Consider the indifference map below. This map represents Larry's preferences over two goods, oranges and grapefruits. Larry:



- a. does not like oranges and will not eat them
- b. gets greater utility from additional grapefruits, but not from additional oranges
- c. prefers oranges to grapefruits
- d. will always choose to consume equal amounts of oranges and grapefruits
- e. will always choose to consume a combination of oranges and grapefruits

ANS: B                      PTS: 1

8. Suppose Al is currently consuming five movies and two concerts per month. If his utility function is given by  $U = 15MC$ , where  $M$  represents the number of movies seen and  $C$  represents the number of concerts attended, Al's total utility is equal to:

- a. 10
- b. 15
- c. 30
- d. 75
- e. 150

ANS: E                      PTS: 1

9. Suppose Al is currently consuming four movies and four concerts per month. If his utility function is given by  $U = 15M^{0.5}C$ , where  $M$  represents the number of movies seen and  $C$  represents the number of concerts attended, what is Al's total utility equal to?

- a. 15
- b. 30
- c. 120
- d. 240
- e. 960

ANS: C                      PTS: 1

10. Suppose Al is currently consuming four movies and four concerts per month. If his utility function is given by  $U = 15M^{0.5}C$ , where  $M$  represents the number of movies consumed and  $C$  represents the number of concerts attended, what is the marginal utility of the next concert Al will attend?

- a. 15
- b. 30
- c. 60
- d. 120
- e. 960

ANS: B                      PTS: 1

11. Points along a budget constraint describe:
- a. market baskets that cost the same amount of money
  - b. market baskets that bring the consumer equal utility
  - c. quantities of a good that the consumer is willing and able to buy at alternative market prices
  - d. alternative prices that a producer might charge for a good
  - e. alternative levels of utility that a consumer might get from consuming a given market basket

ANS: A                      PTS: 1

12. A budget constraint:
- a. must be convex to the origin if consumers prefer more to less
  - b. will be upward-sloping if consumers consider one good a “bad”
  - c. must be downward-sloping if both goods have positive prices
  - d. will be concave to the origin if the consumer’s budget is fixed
  - e. will always have slope equal to  $-1$

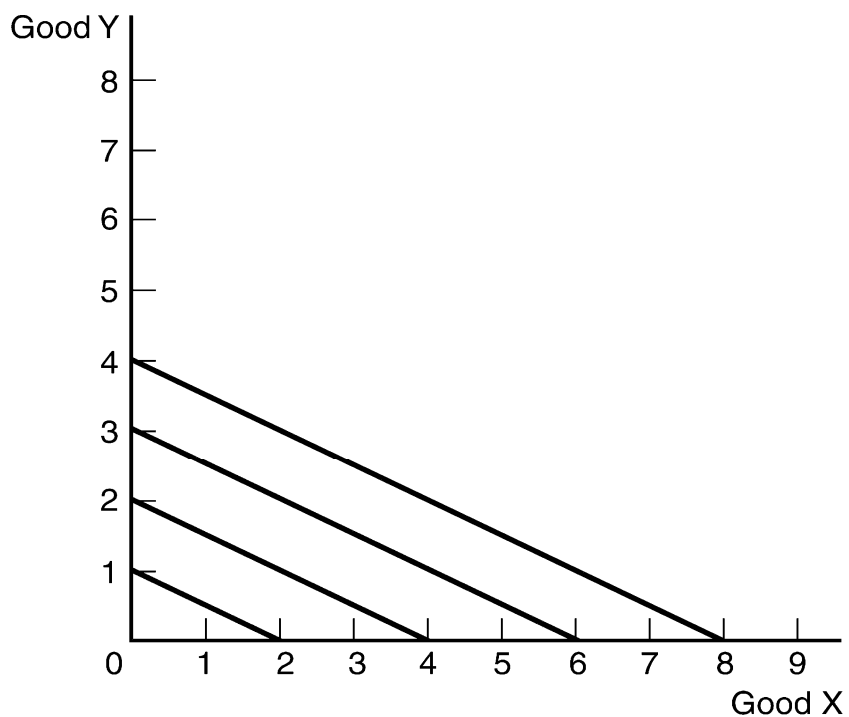
ANS: C                      PTS: 1

13. Nancy has \$100 to spend on books and compact disks. Books cost \$10 and compact disks cost \$20. The slope of Nancy’s budget constraint (where the quantity of books is on the horizontal axis) is:
- a.  $-0.5$
  - b.  $-2$
  - c.  $-5$
  - d.  $-10$
  - e. none of the above

ANS: A                      PTS: 1

14. Consider the budget constraints below. These constraints represent the market baskets that

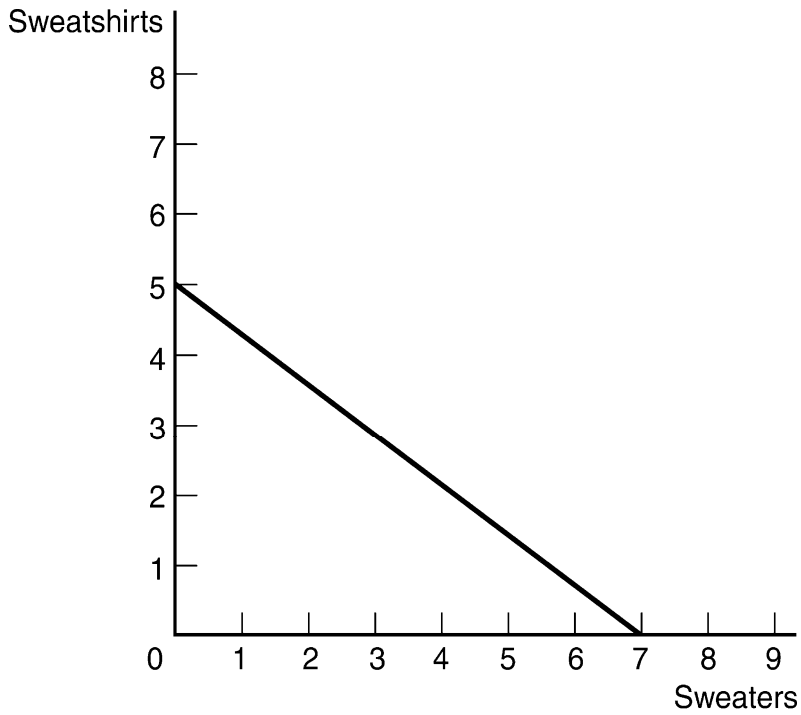
Edith can afford to buy at alternative:



- a. prices of good  $X$
- b. levels of income
- c. prices of good  $Y$
- d. preferences over goods  $X$  and  $Y$
- e. prices of goods  $X$  and  $Y$

ANS: B                      PTS: 1

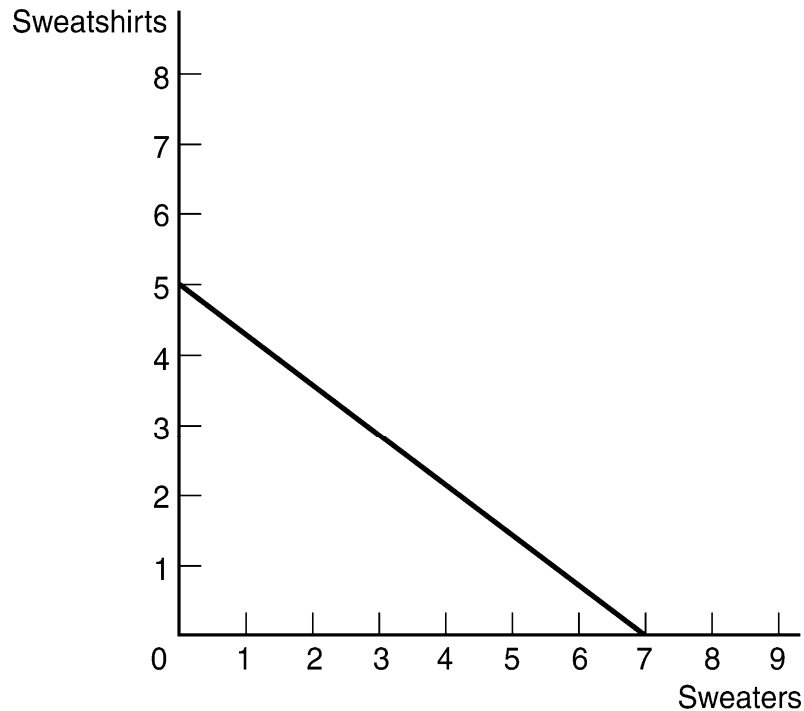
15. Consider the budget constraint below. Dennis spends all his money on sweaters and sweatshirts. If the price of sweaters is \$15, how much money does Dennis have in his budget?



- a. \$7
- b. \$75
- c. \$105
- d. \$178
- e. none of the above

ANS: C                      PTS: 1

16. Consider the budget constraint below. Dennis spends all his money on sweaters and sweatshirts. If the price of sweaters is \$15, what is the price of sweatshirts?



- a. \$5
- b. \$7
- c. \$15
- d. \$21
- e. none of the above

ANS: D                      PTS: 1

17. An increase in a consumer's income:
- a. shifts the consumer's indifference curves out
  - b. causes the consumer to buy more of every good
  - c. shifts the consumer's budget constraint out
  - d. causes the consumer to increase her purchases of inferior goods
  - e. causes the consumer to buy more inferior goods

ANS: C                      PTS: 1



18. A consumer's budget constraint changes slope whenever:

- a. the consumer buys a different combination of goods
- b. relative prices change
- c. the consumer's income increases
- d. an indifference curve is tangent to it
- e. absolute prices change

ANS: B                      PTS: 1

19. The consumer's optimal consumption of  $X$  and  $Y$  is characterized by:

- a.  $(MU_X)(MU_Y) = P_X P_Y$
- b.  $MU_X = P_X$
- c.  $MU_X/MU_Y = P_Y/P_X$
- d.  $MU_X/P_Y = MU_X/P_X$
- e.  $MU_X/MU_Y = P_X/P_Y$

ANS: E                      PTS: 1

20. The marginal rate of substitution of  $X$  for  $Y$  is defined as:

- a.  $P_X/P_Y$
- b.  $P_X P_Y$
- c.  $MU_X MU_Y$
- d.  $MU_X/MU_Y$
- e.  $MU_X/P_X$

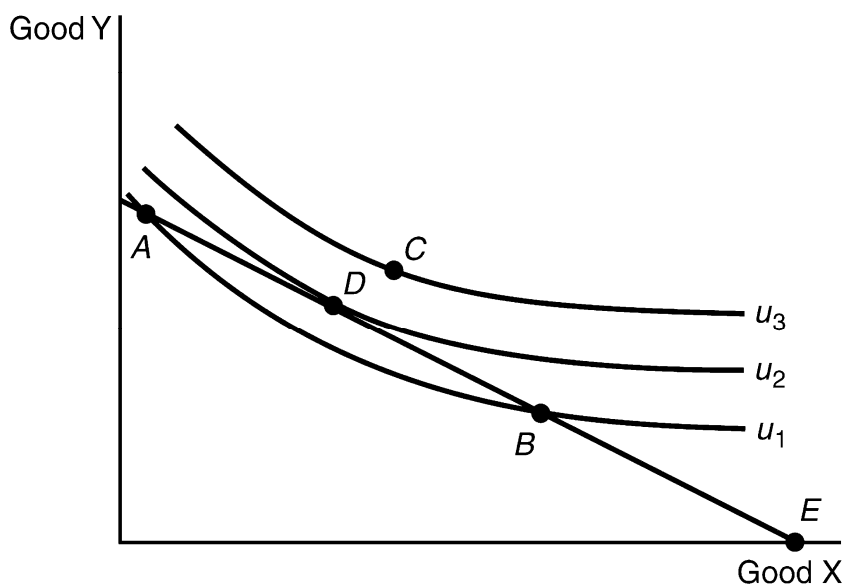
ANS: D                      PTS: 1

21. The consumer's optimal consumption of  $X$  and  $Y$  occurs where the consumer:
- a. reaches the highest indifference curve that intersects the budget constraint
  - b. reaches the highest budget constraint that is tangent to the indifference curve
  - c. reaches the lowest indifference curve that intersects the budget constraint at any point
  - d. reaches the highest indifference curve that is just tangent to the budget constraint
  - e. is satiated with  $X$  and  $Y$

ANS: D

PTS: 1

22. Mary's indifference map and budget constraint for goods  $X$  and  $Y$  are shown below. If Mary spends all her money on  $X$  and  $Y$ , which bundle will she choose to maximize her utility?



- a.  $A$
- b.  $B$
- c.  $C$
- d.  $D$
- e.  $E$

ANS: D

PTS: 1

23. Don consumes bagels and cream cheese. He likes to place 2 ounces of cream cheese on each bagel, no more, no less. In this case, Don's indifference curves for bagels and cream cheese will be:
- a. straight lines with slopes equal to  $-2$
  - b. L-shaped, or right angles
  - c. upward-sloping
  - d. horizontal lines
  - e. vertical lines

ANS: B                      PTS: 1

24. Betty spends all her income on cheese and crackers. She finds that the marginal utility of cheese is 10 and the marginal utility of crackers is 15. The price of cheese is \$5 per unit and the price of crackers is \$3 per unit. At this point, Betty:
- a. is maximizing her utility subject to her budget constraint
  - b. should consume more cheese and fewer crackers
  - c. should consume more crackers and less cheese
  - d. should consume more crackers and more cheese
  - e. should switch her consumption over to other goods that she likes better

ANS: C                      PTS: 1

25. Tom spends all his monthly income on pretzels and potato chips. Currently, he is maximizing his utility; the marginal utility of pretzels is 150 and the marginal utility of potato chips is 125. If pretzels cost \$6 per box, how much do potato chips cost?
- a. \$2
  - b. \$3
  - c. \$4
  - d. \$5
  - e. \$6

ANS: D                      PTS: 1

26. Which of the following does not affect the shape of a consumer's indifference curves?
- a. age
  - b. education
  - c. tastes
  - d. prices
  - e. advertising

ANS: D                      PTS: 1

27. Assume that the utility function of wine for a certain consumer is given by  $TU = 96Q - 3Q^2$ . If wine is free, to maximize utility, the amount the consumer should consume is:
- a. 6 bottles of wine
  - b. 16 bottles of wine
  - c. 90 bottles of wine
  - d. 93 bottles of wine
  - e. unknown; there is insufficient information to determine this

ANS: B                      PTS: 1

28. John spends his budget on food and clothing each month. His utility function is given by  $TU = 100C^{0.25}F^{0.75}$ . The marginal rate of substitution of clothing for food is:
- a.  $0.33F/C$
  - b.  $0.25FC$
  - c.  $0.33F^2C$
  - d.  $25F/C$
  - e.  $0.66C/F$

ANS: A                      PTS: 1

29. In most cases, at the optimal consumption bundle:
- a. the consumer cannot increase utility without some change in market conditions or preferences
  - b. the last dollar spent on each good brings the same amount of satisfaction to the consumer
  - c. the marginal rate of substitution is equal to the absolute values of the slope of the budget constraint
  - d. the indifference curve is just tangent to the budget constraint
  - e. all of the above

ANS: E                      PTS: 1

30. A corner solution to a consumer choice problem suggests that:
- a. the consumer is not rational
  - b. one product is not purchased at all
  - c. both products are preferred, but one at a lower rate than the other
  - d. neither product is a normal good
  - e. all of the above

ANS: B                      PTS: 1

31. The table below describes Ben's preferences over cake and ice cream. The utility from consumption of one good is independent of the consumption of the other. The price of cake is \$10 per unit and the price of ice cream is \$4 per unit.

Units	<i>MU</i>	<i>MU</i>
<u>Consumed</u>	<u>Cake</u>	<u>Ice Cream</u>
1	80	20
2	60	19
3	40	18
4	20	17
5	0	16

If Ben has \$50 to spend, the optimal combination of these goods is:

- a. 4 units of cake and 1 unit of ice cream
- b. 3 units of cake and 5 units of ice cream
- c. 3 units of cake and 1 unit of ice cream
- d. 5 units of cake
- e. none of the above

ANS: B                      PTS: 1

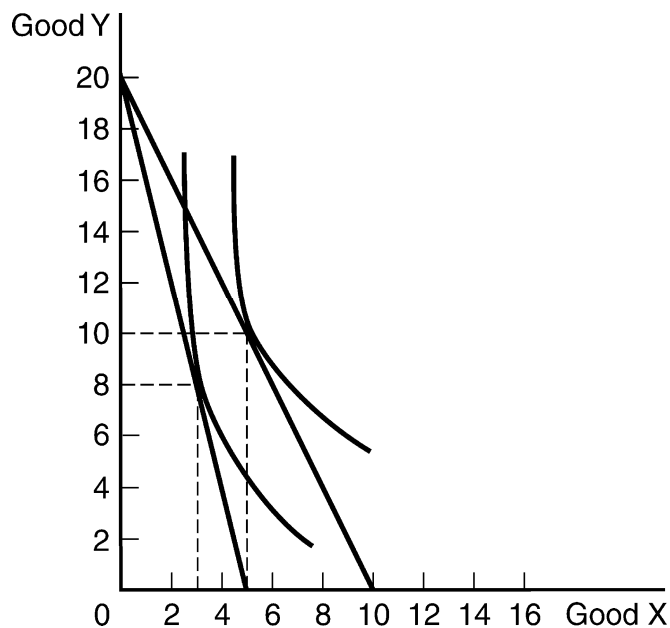
32. Referring to problem 31, Ben's total utility at his optimal consumption bundle will be:
- a. 56
  - b. 200
  - c. 270
  - d. 310
  - e. none of the above

ANS: C                      PTS: 1

33. An indifference map can be used to find a demand curve for a consumer. Given an initial equilibrium point, to find a demand curve for good  $X$ , change the:
- consumer's income and draw a new budget constraint
  - price of  $Y$  and draw a new budget constraint
  - consumer's preferences
  - price of  $X$  and draw a new budget constraint
  - price of a substitute and draw a new budget constraint

ANS: D                      PTS: 1

34. Consider the indifference map below. The price of  $Y$  is \$5. Two points on a demand curve for good  $X$  are:



- (8, \$5) and (10, \$5)
- (3, \$10) and (5, \$20)
- (3, \$20) and (8, \$5)
- (3, \$20) and (5, \$10)
- none of the above

ANS: D                      PTS: 1

35. Using the indifference map from problem 34, two points on a demand curve for good *Y* are:
- a. (8, \$5) and (10, \$5)
  - b. (3, \$10) and (5, \$20)
  - c. (3, \$20) and (8, \$5)
  - d. (3, \$20) and (5, \$10)
  - e. cannot be determined from the information given

ANS: E                      PTS: 1

36. The market demand curve is:
- a. the vertical summation of the individual demand curves
  - b. the horizontal summation of the individual demand curves
  - c. the sum of the prices that each consumer is willing to pay for each quantity of output
  - d. the sum of the quantities that each consumer is willing to buy at each price
  - e. b and d

ANS: E                      PTS: 1

37. Susan is investing in the stock market. She is choosing among a variety of stocks; each stock has an expected return and a level of risk attached. Susan likes higher returns, but she dislikes risk. If we were to draw indifference curves for Susan over risk and expected return, they would be:
- a. L-shaped
  - b. linear
  - c. upward-sloping
  - d. downward-sloping
  - e. vertical lines

ANS: C                      PTS: 1



38. Betty is investing in the stock market. She is choosing among a variety of stocks; each stock has an expected return and a level of risk attached. Betty likes higher returns and she likes risk. If we were to draw indifference curves for Betty over risk and expected return, they would be:
- a. L-shaped
  - b. linear
  - c. upward-sloping
  - d. downward-sloping
  - e. vertical lines

ANS: D                      PTS: 1

39. Fred consumes quantities of butter and margarine; his utility function is given by  $U = 5M + 2B$ . If Fred has \$10 to spend on butter and margarine, and if butter costs \$2 per pound and margarine costs \$1 per pound, what is his optimal bundle of butter and margarine?
- a. 3 butter and 4 margarine
  - b. 5 butter and 0 margarine
  - c. 0 butter and 10 margarine
  - d. 2 butter and 6 margarine
  - e. none of the above

ANS: C                      PTS: 1

40. Jane spends \$210 per month on wine and beer. Her utility function is given by  $TU = 100WB$ , where  $W$  represents the number of bottles of wine that she buys and  $B$  represents the number of cases of beer that she buys. If wine costs \$10 per bottle and beer costs \$15 per case, she will maximize utility by buying:
- a. 10.5 bottles of wine and 7 cases of beer
  - b. 2 bottles of wine and 3 cases of beer
  - c. equal amounts of wine and beer
  - d. 10 bottles of wine and 13.33 cases of beer
  - e. none of the above

ANS: A                      PTS: 1

41. Points along an indifference curve represent bundles of goods that:
- a. cost the same amount to buy
  - b. consumers don't like very much
  - c. decline in marginal utility
  - d. deliver equal utility
  - e. cannot be compared

ANS: D                      PTS: 1

42. Consumer surplus is defined as:
- a. the quantities of a good or service that bring equal utility to the consumer
  - b. the quantity of a good or service that is utility maximizing for the consumer
  - c. the difference between what a consumer is willing to pay and what he or she actually pays for a good or service
  - d. the difference between the market price and the marginal cost of producing a good or service
  - e. none of the above

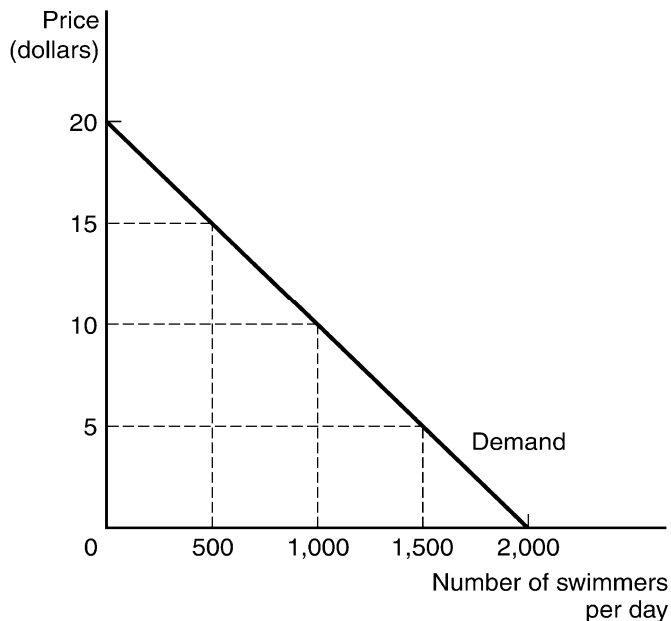
ANS: C                      PTS: 1

43. Consumer surplus is important to firms because:
- a. it represents value consumers receive that they do not pay for
  - b. market prices must incorporate consumer surplus
  - c. they must pay taxes based on the level of consumer surplus
  - d. if firms can capture it, they can increase their profitability
  - e. a and d

ANS: E

PTS: 1

The diagram below represents the demand for trips to a local swimming pool during the summer. Please use it to answer questions 44–46.



44. If the price of a day of swimming is \$5 per person, consumer surplus will be:
- a. \$0
  - b. \$1,500
  - c. \$11,250
  - d. \$20,000
  - e. none of the above

ANS: C

PTS: 1

45. If the city subsidizes the swimming pool so that swimming is free, consumer surplus will be:

- a. \$0
- b. \$1,500
- c. \$11,250
- d. \$20,000
- e. none of the above

ANS: D                      PTS: 1

46. If the city subsidizes the swimming pool so that swimming is free, the number of people swimming each day will be:

- a. 0
- b. 500
- c. 1,000
- d. 1,500
- e. 2,000

ANS: E                      PTS: 1

47. Fred loves tomatoes. He makes soups, sauces, and stews with them; stuffs them; roasts them; and grills them. Fred has discovered a farmer's market where the price of a bushel of tomatoes depends on how many bushels are purchased. The first bushel is \$15; the second, \$12; the third, \$10; and four or more, \$9.00 each. Fred has \$82 to spend on tomatoes and on "all other things" during the coming week. All other things sell for \$1 per unit. Assume that all other things are measured on the vertical axis. What is the horizontal intercept of Fred's budget constraint?
- a. 14
  - b. 7.5
  - c. 8
  - d. 6
  - e. 5

ANS: C                      PTS: 1

48. Fred loves tomatoes. He makes soups, sauces, and stews with them; stuffs them; roasts them; and grills them. Fred has discovered a farmer's market where the price of a bushel of tomatoes depends on how many bushels are purchased. The first bushel is \$15; the second, \$12; the third, \$10; and four or more, \$9.00 each. Fred has \$82 to spend on tomatoes and on "all other things" during the coming week. All other things sell for \$1 per unit. Assume that all other things are measured on the vertical axis. What is Fred's marginal rate of substitution if he chooses to buy 5 bushels of tomatoes?
- a. -9
  - b. 0.10
  - c. 12
  - d. 1/15
  - e. 1/9

ANS: E                      PTS: 1

49. Jamie is considering the purchase of a new Ferrari for \$100,000. Her income is \$200,000, and her alternative is “all other things,” which sell for \$1 each. If all other things are plotted on the vertical axis and her marginal rate of substitution is \_\_\_\_\_, then she will buy \_\_\_\_\_ Ferrari(s).
- a. 200,000; 1
  - b. 200,000; 2
  - c. 1/200,000; 1
  - d. 1/200,000; 2
  - e. none of the above

ANS: B                      PTS: 1

50. Jamie is considering the purchase of a new car for \$20,000. Her income is \$60,000, and her alternative is “all other things,” which sell for \$1 each. If all other things are plotted on the vertical axis and her marginal rate of substitution is \_\_\_\_\_, then she will buy \_\_\_\_\_ car(s).
- a. 15,000; 0
  - b. 15,000; 1
  - c. 15,000; 2
  - d. 15,000; 3
  - e. 1/15,000; 3

ANS: A                      PTS: 1

51. A consumer buys 12 units of entertainment, measured on the horizontal axis, and 84 units of “all other things.” The consumer’s income elasticity of demand is equal to 1 for both goods. If income increases by 10 percent, then the consumer’s marginal rate of substitution at the utility-maximizing market bundle will:
- a. increase
  - b. decrease
  - c. be equal to 1
  - d. remain constant
  - e. there is insufficient information to answer the question

ANS: D                      PTS: 1

52. A consumer buys 12 units of entertainment and 84 units of “all other things.” The consumer’s income elasticity of demand is greater than 1 for entertainment and less than 1 for all other things. If income increases by 10 percent, then the consumer’s marginal rate of substitution at the utility-maximizing market bundle will:
- a. increase
  - b. decrease
  - c. be equal to 1
  - d. remain constant
  - e. there is insufficient information to answer the question

ANS: A                      PTS: 1

## Chapter 4

### Production Theory

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#### MULTIPLE CHOICE

1. A production function is a table, a graph, or an equation showing the:
- a. least-cost method of producing output
  - b. optimal combination of inputs
  - c. maximum output that can be achieved from specified levels of inputs
  - d. combinations of inputs that can be produced with equal costs
  - e. optimal production technology that a firm should employ

ANS: C                      PTS: 1

2. When total product is at its maximum:
- a. average product is greater than marginal product
  - b. average product is maximized
  - c. average product equals marginal product
  - d. marginal product equals 1
  - e. average product equals 1

ANS: A                      PTS: 1

3. The average product of labor is defined as the:
- a. change in output divided by the change in labor input usage
  - b. change in labor input usage divided by the change in output
  - c. output divided by the labor input usage
  - d. labor input usage divided by the output level
  - e. output divided by the marginal product of labor

ANS: C                      PTS: 1



4. The marginal product of labor is defined by the:
- a. change in output divided by the change in labor input usage
  - b. change in labor input usage divided by the change in output
  - c. output divided by the labor input usage
  - d. labor input usage divided by the output level
  - e. output divided by the marginal product of labor

ANS: A                      PTS: 1

5. The marginal product of labor can be illustrated geometrically as the:
- a. slope of the total product curve with respect to labor
  - b. slope of the total product curve with respect to capital
  - c. slope of a chord from the origin out to the total product curve at the specified level of labor
  - d. inverse of the slope of a chord from the origin out to the total product curve at the specified level of labor
  - e. slope of the total product curve with respect to labor divided by the slope of the total product curve with respect to capital

ANS: A                      PTS: 1

6. The average product of labor can be illustrated geometrically as the:
- slope of the total product curve with respect to labor
  - slope of the total product curve with respect to capital
  - slope of a chord from the origin out to the total product curve at the specified level of labor
  - inverse of the slope of a chord from the origin out to the total product curve at the specified level of labor
  - slope of the total product curve with respect to labor divided by the slope of the total product curve with respect to capital

ANS: C                      PTS: 1

7. In the table below, the average product of labor at  $L = 10$  is:

$L$	$Q$
0	0
5	2
10	5
15	10
20	13

- 5
- 0.5
- 2
- 3
- 1

ANS: B                      PTS: 1

8. In the table below, the average product of labor at  $L = 3$  is:

$L$	$Q$
0	0
1	3
2	7
3	15
4	20

- a. 5
- b. 8
- c. 0.2
- d. 2
- e. 3

ANS: A                      PTS: 1

9. In the table below, the average product of labor at  $L = 6$  is:

$L$	$Q$
2	4
4	10
6	18
8	24
10	28

- a. 8
- b. 4
- c. 6
- d. 12
- e. 3

ANS: E                      PTS: 1

10. In the table below, the marginal product of labor at  $L = 6$  is:

$L$	$Q$
4	10
5	13
6	18
7	22
8	25

- a. 3
- b. 2
- c. 5
- d. 4
- e. 1

ANS: C                      PTS: 1

11. In the table below, the marginal product of labor at  $L = 4$  is:

$L$	$Q$
2	50
3	57
4	68
5	75
6	78

- a. 7
- b. 11
- c. 17
- d. 16
- e. 6

ANS: C                      PTS: 1

12. In the table below, the marginal product of labor at  $L = 10$  is:

$L$	$Q$
2	1
6	2
10	3
14	4
18	5

- a. 0.3
- b. 3.33
- c. 7
- d. 4
- e. 3

ANS: A                      PTS: 1

13. Whenever marginal product is positive and declining with increasing use of an input:

- a. total product is declining as input use increases
- b. average product is declining as input use increases
- c. marginal product is greater than average product
- d. marginal product is less than average product
- e. total product is increasing at a decreasing rate as input use increases

ANS: E                      PTS: 1

14. Whenever marginal product is increasing with increasing use of an input:

- a. total product is increasing at a decreasing rate
- b. total product is increasing at an increasing rate
- c. marginal product is less than average product
- d. average product is decreasing
- e. total product is declining as input use increases

ANS: B                      PTS: 1

15. When average product is at a maximum, marginal product is:

- a. zero
- b. increasing
- c. equal to average product
- d. greater than average product
- e. less than average product

ANS: C                      PTS: 1

16. Whenever average product is declining with increases in input usage:

- a. marginal product is less than average product
- b. total product is declining with increases in input
- c. total product is increasing with increases in input
- d. marginal product is greater than average product
- e. total product is at a maximum

ANS: A                      PTS: 1

17. The law of diminishing marginal returns states that:

- a. the marginal product of labor declines as all inputs are increased
- b. production functions exhibit decreasing returns to scale
- c. the marginal product of labor returns as more capital is used
- d. the marginal product of a factor eventually diminishes as more of the input is used, holding other inputs fixed
- e. the marginal product of a factor always diminishes as more of the input is used, holding other inputs fixed

ANS: D                      PTS: 1

18. Diminishing marginal returns:
- a. imply decreasing returns to scale
  - b. occur at all combinations of input usage
  - c. occur only for labor
  - d. are consistent with increasing returns to scale
  - e. are inconsistent with increasing returns to scale

ANS: D                      PTS: 1

19. The condition describing the profit-maximizing level of factor  $X$  is:

- a.  $MRP_x = ME_x$
- b.  $MP_x = P_x$
- c.  $MP_x/P_x = P_{\text{output}}$
- d.  $MP_x/P_{\text{output}} = P_x$
- e.  $ME_x = P_x$

ANS: A                      PTS: 1

20. The optimal combination of two inputs,  $K$  and  $L$ , can be characterized by:

- a.  $P_K MP_K = P_L MP_L$
- b.  $MP_K = MP_L$
- c.  $P_L MP_K = P_K MP_L$
- d.  $MP_K/MP_L = P_L/P_K$
- e. none of the above

ANS: C                      PTS: 1

21. Output is produced according to  $Q = 4L + 6K$ , where  $L$  is the quantity of labor input and  $K$  is the quantity of capital input. If the price of  $K$  is \$12 and the price of  $L$  is \$6, then the cost minimizing combination of  $K$  and  $L$  capable of producing 60 units of output is:
- a.  $L = 5$  and  $K = 6.66$
  - b.  $L = 7.5$  and  $K = 5$
  - c.  $L = 6$  and  $K = 6$
  - d.  $L = 0$  and  $K = 10$
  - e.  $L = 15$  and  $K = 0$

ANS: E                      PTS: 1

22. Output is produced according to  $Q = 4LK$ , where  $L$  is the quantity of labor input and  $K$  is the quantity of capital input. If the price of  $K$  is \$10 and the price of  $L$  is \$5, then the cost minimizing combination of  $K$  and  $L$  capable of producing 32 units of output is:
- a.  $L = 8$  and  $K = 1$
  - b.  $L = 4$  and  $K = 2$
  - c.  $L = 2$  and  $K = 2$
  - d.  $L = 2$  and  $K = 4$
  - e.  $L = 1$  and  $K = 8$

ANS: B                      PTS: 1



23. Happiness can be produced with wine and roses according to  $Q = W^{1/2}R^{1/4}$ , where  $W$  is bottles of wine and  $R$  is bouquets of roses obtained per month. If wine costs \$20 per bottle and roses cost \$60 per dozen, the happiness-maximizing combination of wine and roses costing \$360 in total is:

- a.  $W = 18$  bottles,  $R = 0$  bouquets
- b.  $W = 15$  bottles,  $R = 1$  bouquets
- c.  $W = 12$  bottles,  $R = 2$  bouquets
- d.  $W = 9$  bottles,  $R = 3$  bouquets
- e.  $W = 6$  bottles,  $R = 4$  bouquets

ANS: C                      PTS: 1

24. If rice can be produced using water and seed according to  $Q = WS$ , where water,  $W$ , costs \$3 and seed,  $S$ , costs \$3, what is the cost minimizing combination of water and seed capable of producing 144 units of rice?

- a.  $W = 64$ ,  $S = 0$
- b.  $W = 0$ ,  $S = 64$
- c.  $W = 1$ ,  $S = 64$
- d.  $W = 8$ ,  $S = 8$
- e.  $W = 12$ ,  $S = 12$

ANS: E                      PTS: 1

25. An isoquant represents combinations of inputs that:

- a. produce the same level of output
- b. produce increasing amounts of output
- c. minimize costs
- d. maximize output
- e. create wealth

ANS: A                      PTS: 1

26. Isoquants usually slope downward (from left to right) because:

- a. marginal products are usually positive
- b. marginal products are always positive
- c. marginal products will eventually decrease
- d. marginal products are always increasing
- e. average products are usually less than marginal products

ANS: C                      PTS: 1

27. The marginal rate of technical substitution between two inputs:

- a. shows the rate at which one input can be traded for another, holding output constant
- b. shows the efficient combination of inputs
- c. increases as we move down an isoquant
- d. shows the rate at which output can be increased by using more of both inputs
- e. shows the rate at which output decreases when using less of one of the inputs

ANS: A                      PTS: 1

28. The marginal rate of technical substitution is defined by:

- a.  $MRTS_{1,2} = MP_1 / MP_2$
- b.  $MRTS_{1,2} = MP_1 MP_2$
- c.  $MRTS_{1,2} = MP_1 / P_1$
- d.  $MRTS_{1,2} = P_1 / P_2$
- e.  $MRTS_{1,2} = MP_2 / P_2$

ANS: A                      PTS: 1

29. Lines that separate the economically relevant portion of an isoquant map from the irrelevant portion are:
- a. isocost lines
  - b. ridge lines
  - c. opportunity lines
  - d. relevance lines
  - e. budget lines

ANS: B                      PTS: 1

30. If labor is on the vertical axis and capital is on the horizontal axis, the slope of an isocost line is given by:
- a.  $-P_L/P_K$
  - b.  $-P_K/P_L$
  - c.  $-P_K P_L$
  - d.  $-MP_L/MP_K$
  - e.  $-MP_K/MP_L$

ANS: B                      PTS: 1

31. Lines that represent bundles of inputs that cost the same total amount are called:
- a. total cost curves
  - b. isocost curves
  - c. cost curves
  - d. isoquants
  - e. isoprofit curves

ANS: B                      PTS: 1

32. Increasing returns to scale:

- a. occur only where marginal returns are increasing
- b. cannot occur if all inputs have diminishing returns
- c. imply imperfect capital market returns
- d. result from just-in-time production
- e. are consistent with diminishing marginal returns by all inputs

ANS: E                      PTS: 1

33. If output is produced according to  $Q = 3K + 4L$ , then this production process exhibits:

- a. increasing returns to scale
- b. decreasing returns to scale
- c. first increasing and then decreasing returns to scale
- d. constant returns to scale
- e. first decreasing and then increasing returns to scale

ANS: D                      PTS: 1

34. If output is produced according to  $Q = K^{1/2} + 3L^{1/2}$ , then this production process exhibits:

- a. increasing returns to scale
- b. decreasing returns to scale
- c. first increasing and then decreasing returns to scale
- d. constant returns to scale
- e. first decreasing and then increasing returns to scale

ANS: B                      PTS: 1

35. If output is produced according to  $Q = (KL)^{3/4}$ , then this production process exhibits:

- a. increasing returns to scale
- b. decreasing returns to scale
- c. first increasing and then decreasing returns to scale
- d. constant returns to scale
- e. first decreasing and then increasing returns to scale

ANS: A                      PTS: 1

36. Output elasticity can be defined as the:

- a. percentage change in output divided by the (equal) percentage change in all inputs
- b. change in output divided by the change in all inputs
- c. change in inputs divided by the change in output
- d. change in output divided by the change in one input
- e. percentage change in output divided by the (average) percentage change in all inputs

ANS: A                      PTS: 1

37. If output is produced according to  $Q = 30L + 12K$ , then the output elasticity is:

- a. 2
- b. 0
- c. 1
- d. 0.5
- e. 21

ANS: C                      PTS: 1

38. Cast-Steel Chairs produces office chairs using steel and labor with  $Q = 1/2L^{0.4}S^{0.6}$ . If labor costs \$10 per hour and steel costs \$60 per unit, what is the optimal combination of labor and steel if Cast-Steel's budget is \$10,000?
- a.  $S = 75$  units,  $L = 550$  hours
  - b.  $S = 0$  units,  $L = 1,000$  hours
  - c.  $S = 25$  units,  $L = 850$  hours
  - d.  $S = 50$  units,  $L = 700$  hours
  - e.  $S = 100$  units,  $L = 400$  hours

ANS: E                      PTS: 1

39. If you have used the Lagrangian technique to determine the output maximizing combination of inputs for a fixed total expenditure on inputs, then the Lagrangian multiplier can be interpreted as the:
- a. inverse of the marginal product of the most productive input
  - b. inverse of the marginal cost of producing one more unit
  - c. marginal product of the most productive input
  - d. marginal cost of producing one more unit
  - e. marginal product of the most productive input multiplied by marginal cost

ANS: B                      PTS: 1

40. If you have used the Lagrangian technique to determine the cost minimizing combination of inputs capable of producing a given output, then the Lagrangian multiplier can be interpreted as the:
- a. inverse of the marginal product of the most productive input
  - b. inverse of the marginal cost of producing one more unit
  - c. marginal product of the most productive input
  - d. marginal cost of producing one more unit
  - e. marginal product of the most productive input multiplied by marginal cost

ANS: D                      PTS: 1

41. If output is produced according to  $Q = 4K^{1/2}L^{1/2}$ , the price of  $K$  is \$3, and the price of  $L$  is \$1, then the marginal cost of output at the optimal input combination that costs \$120 in total is:
- a.  $\$0.5(3)^{1/2}$
  - b. \$0.5
  - c. \$3
  - d. \$0.3
  - e. \$0.15

ANS: A                      PTS: 1

42. If output is produced according to  $Q = 12K^{1/2}L^{1/2}$ , the price of  $K$  is \$2, the price of labor,  $L$ , is \$2, and the price of  $Q$  is \$100, the marginal profit at the optimal combination of inputs that cost \$100 is:
- a. \$99.67
  - b. \$299
  - c. \$598
  - d. \$0
  - e. \$597

ANS: A                      PTS: 1

43. George's shoe store buys and sells shoes in pairs. If George's isoquants are drawn with quantity of right shoes on the vertical axis and quantity of left shoes on the horizontal axis, what do they look like? They are:
- a. curves that get flatter as the number of left shoes increases
  - b. curves that get steeper as the number of left shoes increases
  - c. straight lines that have a negative slope
  - d. L-shaped
  - e. horizontal straight lines

ANS: D                      PTS: 1

44. The law of diminishing marginal returns is obvious because, if it didn't hold, it would be possible to:
- a. feed everyone in the world by intensively cultivating one acre of land
  - b. manufacture all of the cars in the world using just one of the world's existing factories
  - c. increase total output of a product without employing additional inputs
  - d. all of the above
  - e. answers a and b, but not c

ANS: E                      PTS: 1



45. Hedge Fun is a landscaping firm that specializes in topiary. Last year, the firm had 30 employees and served 120 customers. This year, it had 35 employees and served 135 customers. What is the marginal product of labor?
- a. 2
  - b. 3
  - c. 4
  - d. 5
  - e. none of the above

ANS: B                      PTS: 1

46. Hedge Fun is a landscaping firm that specializes in topiary. Last year, the firm had 30 employees and served 120 customers. This year, it had 35 employees and served 135 customers. The average product of labor is at a maximum when the number of customers:
- a. is less than 120
  - b. is equal to 120
  - c. is between 120 and 135
  - d. is equal to 135
  - e. is greater than 135

ANS: A                      PTS: 1

47. Hedge Fun is a landscaping firm that specializes in topiary. Last year, the firm had 60 employees and served 120 customers. This year, it had 70 employees and served 140 customers. What is the marginal product of labor?
- a. 2
  - b. 3
  - c. 4
  - d. 5
  - e. none of the above

ANS: A                      PTS: 1

48. Hedge Fun is a landscaping firm that specializes in topiary. Last year, the firm had 60 employees and served 120 customers. This year, it had 70 employees and served 140 customers. The average product of labor is at a maximum when the number of customers is:
- a. less than 120
  - b. equal to 120
  - c. between 120 and 140
  - d. equal to 140
  - e. greater than 140

ANS: C                      PTS: 1

49. A straight line drawn from the origin is tangent to a short-run production function with only one input, labor. At the quantity of labor where the tangency occurs:
- a. the average product of labor is at a maximum
  - b. the marginal product of labor is at a maximum
  - c. the marginal product of labor is increasing
  - d. the average product of labor is increasing
  - e. the total product of labor is at a maximum

ANS: A                      PTS: 1

50. An American economist visiting India observed that the roads were maintained by large numbers of workers with picks and shovels and other hand tools, while the same work is done in the United States by relatively small numbers of workers and mechanized devices. He correctly concluded that the reason for this difference is that:
- a. production by Indian workers is not efficient
  - b. workers in India are more productive than workers in the United States
  - c. workers in the United States are paid more than Indian workers
  - d. machinery that is used in the United States is not available in India
  - e. none of the above

ANS: C                      PTS: 1

## Chapter 5

### The Analysis of Costs

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#### MULTIPLE CHOICE

1. The opportunity cost of a firm's inputs:
  - a. depends on who supplies them to the firm
  - b. includes implicit costs but does not include explicit costs
  - c. includes explicit costs but does not include implicit cost
  - d. should not concern anyone but economists
  - e. is the value of the inputs in their most highly valued alternative use

ANS: E                      PTS: 1

2. The opportunity cost doctrine says that opportunity costs:
  - a. and economic costs differ by the amount of implicit costs
  - b. should always be greater than explicit costs
  - c. should usually be greater than explicit costs
  - d. and the firm's production function determine the firm's cost of production
  - e. can never be properly figured by accountants

ANS: D                      PTS: 1

3. Long-run average cost equals long-run marginal cost whenever:
  - a. the production function exhibits constant returns to scale
  - b. fixed costs are zero
  - c. no factor always has increasing marginal returns
  - d. the cost of capital is near zero
  - e. long-run marginal cost is at its minimum

ANS: A                      PTS: 1

4. An example of implicit costs is the:
- a. bad-debt liabilities arising out of excessive sales on credit
  - b. wages paid to the owners' children
  - c. opportunity cost of owner-supplied capital and labor that is not recognized by accountants
  - d. prices paid for purchased inputs
  - e. the alternative uses for money that could be borrowed

ANS: C                      PTS: 1

5. Gerry works 40 hours a week, managing Gerry's Market, without drawing a salary. He could earn \$600 a week doing the same work for Jean. Gerry's Market owes its bank \$100,000, and Gerry has invested \$100,000 of his own money. If Gerry's accounting profits are \$1,000 per week while the interest on his bank debt is \$200 per week, his economic profits are:
- a. \$0 per week
  - b. \$200 per week
  - c. \$400 per week
  - d. \$800 per week
  - e. \$1,000 per week

ANS: B                      PTS: 1

6. If average variable cost is increasing with increases in output, total fixed cost will:
- a. increase with increases in output
  - b. decrease with increases in output
  - c. remain unchanged with increases in output
  - d. increase initially and then decrease with increases in output
  - e. decrease initially and then increase with increases in output

ANS: C                      PTS: 1

7. If there is only one variable input, average variable cost can be defined as the:

- a. output's price divided by the input's average product
- b. output's price divided by the input's marginal product
- c. price of the variable input divided by its average product
- d. price of the variable input divided by its marginal product
- e. price of the variable input multiplied by its marginal product

ANS: C                      PTS: 1

8. The addition to total cost resulting from the addition of the last unit of output is known as:

- a. marginal product
- b. average product
- c. average variable cost
- d. average total cost
- e. marginal cost

ANS: E                      PTS: 1

9. If a firm is choosing cost minimizing combinations of inputs, marginal cost can be defined as the price of any:

- a. input divided by its average product
- b. variable input divided by its average product
- c. fixed input divided by its average product
- d. variable input divided by its marginal product
- e. fixed input divided by its marginal product

ANS: D                      PTS: 1

10. Short-run marginal cost eventually increases with increasing output because:

- a. eventually marginal returns will diminish
- b. not all variable inputs increase at the same rate
- c. diseconomies of scale usually set in immediately
- d. of diseconomies of scope
- e. eventually diseconomies of scale set in

ANS: A                      PTS: 1

11. When average total cost is at its minimum:

- a. average variable cost is declining with increases in output
- b. average variable cost plus average fixed cost is declining with increases in output
- c. average total cost is equal to average variable cost
- d. marginal cost is equal to average variable cost
- e. marginal cost is equal to average total cost

ANS: E                      PTS: 1

12. When average variable cost is at its minimum:

- a. average total cost is increasing with increases in output
- b. average variable cost plus average fixed cost is increasing with increases in output
- c. average total cost is equal to average variable cost
- d. marginal cost is less than average total cost
- e. marginal cost is greater than average total cost

ANS: D                      PTS: 1

13. The long run is a time period during which:
- a. all inputs are semivariable
  - b. all inputs except capital and entrepreneurship are variable
  - c. average variable costs are strictly less than average total cost
  - d. all inputs are quasi-variable
  - e. all inputs are variable

ANS: E                      PTS: 1

14. The long-run average cost curve slopes downward if there are:
- a. some factors without diminishing marginal returns
  - b. economies of scope in the management of multiplant operations
  - c. economies of scale
  - d. diseconomies of scope in the management of multiplant operations
  - e. no factors without diminishing marginal returns

ANS: C                      PTS: 1

15. The long-run average cost curve slopes upward if there are:
- a. some factors without diminishing marginal returns
  - b. diseconomies of scope in the management of multiplant operations
  - c. economies of scale
  - d. diseconomies of scale
  - e. no factors without diminishing marginal returns

ANS: D                      PTS: 1



16. A short-run average cost curve is tangent to the long-run average cost curve at the quantity where:
- a. the fixed plant size would have been optimal
  - b. short-run marginal cost is minimized
  - c. short-run marginal cost is equal to average cost
  - d. short-run average cost is minimized
  - e. long-run average cost is minimized

ANS: A                      PTS: 1

17. Where long-run average cost equals short-run average cost:
- a. short-run average cost is minimized
  - b. long-run average variable cost equals short-run average variable cost
  - c. long-run average cost equals long-run marginal cost
  - d. long-run average cost is minimized
  - e. long-run marginal cost equals short-run marginal cost

ANS: E                      PTS: 1

18. Economies of scale are said to exist whenever:
- a. the learning curve is upward-sloping
  - b. increases in output bring about higher output
  - c. increases in output bring about higher input prices
  - d. the elasticity of total cost with respect to output is greater than 1
  - e. the long-run average cost curve is downward-sloping

ANS: E                      PTS: 1

19. Framjam Sports Equipment produces basketballs at its factory in Kentucky and soccer balls at its factory in Illinois. At its current annual rate of production, the cost of producing basketballs is \$80,000 and the cost of producing soccer balls is \$45,000. If the firm consolidates production at a single location, the annual cost of production will be \$100,000. What is the degree of economies of scope in this case?
- a. 5
  - b. 4
  - c. 0.75
  - d. 0.25
  - e. none of the above

ANS: D                      PTS: 1

20. Framjam Sports Equipment produces basketballs at its factory in Kentucky and soccer balls at its factory in Illinois. At its current annual rate of production, the cost of producing basketballs is \$70,000 and the cost of producing soccer balls is \$45,000. If the firm consolidates production at a single location, the annual cost of production will be \$100,000. What is the degree of economies of scope in this case?
- a. 15
  - b. 0.25
  - c. 0.15
  - d. 0.85
  - e. none of the above

ANS: C                      PTS: 1

21. Average variable cost is equal to the:

- a. change in total variable cost divided by the change in output levels
- b. total variable cost divided by the level of output
- c. marginal cost divided by the average product of the variable input
- d. marginal cost divided by the marginal product of the variable input
- e. total variable cost divided by the change in output levels

ANS: B                      PTS: 1

22. Marginal cost is equal to the:

- a. change in total variable cost divided by the change in output
- b. total variable cost divided by the level of output
- c. price of the input divided by the average product of the variable input
- d. price of the input divided by the total product of the variable input
- e. total variable cost divided by the change in output levels

ANS: A                      PTS: 1

23. Average fixed cost is equal to the:

- a. difference between marginal cost and average variable cost
- b. difference between marginal cost and average total cost
- c. difference between average total cost and average variable cost
- d. total fixed cost divided by the minimum efficient scale
- e. total variable cost divided by the minimum efficient scale

ANS: C                      PTS: 1

24. Whenever average variable cost is declining with increases in output:

- a. marginal cost is always declining as average total cost declines
- b. average total cost at first decreases and then increases with output
- c. marginal cost is always declining as average total cost increases
- d. marginal cost at first decreases and then increases with output
- e. marginal cost at first increases and then decreases with output

ANS: D                      PTS: 1

25. If price is below average total cost but above average variable cost, the break-even level of output:

- a. is greater than the profit-maximizing level of output
- b. is zero
- c. can't be calculated since losses will be earned at each level of output including the profit-maximizing level
- d. approaches infinity
- e. equals the profit-maximizing level of output

ANS: C                      PTS: 1

26. Leisure Enterprise's total cost of producing speedboats is given by  $TC = 10Q^3 - 4Q^2 + 25Q + 500$ . On the basis of this information, the marginal cost of producing the 25th speedboat is:

- a. \$1,700
- b. \$6,050
- c. \$18,575
- d. \$18,775
- e. \$19,075

ANS: C                      PTS: 1

27. If Hilltop Turf Farm's total cost of producing acres of sod is  $TC = 0.2Q^2 + 120Q + 5,000$ , the marginal cost of producing the 50th acre of sod is:
- a. \$110
  - b. \$120
  - c. \$130
  - d. \$140
  - e. \$150

ANS: D                      PTS: 1

28. Ramblin' Randy's Dude Ranch's daily total cost of accommodating overnight guests is given by  $TC = 100 + 5Q$ . On the basis of this information, the average fixed cost, when there are 25 overnight guests, is:
- a. \$4
  - b. \$5
  - c. \$6
  - d. \$7
  - e. \$9

ANS: A                      PTS: 1

29. Loco Pony Adventures rents clowns and ponies for children's birthday parties. If the annual total cost of furnishing entertainment is given by  $TC = 0.5Q^2 + 25Q + 1,000$ , the average variable cost of catering to 30 birthday parties is:
- a. \$25.00
  - b. \$25.50
  - c. \$26.50
  - d. \$30.00
  - e. \$40.00

ANS: E                      PTS: 1

30. The weekly total cost of baking pies at Tasty Tortes is given by  $TC = 0.01Q^{1.5}$ . Tasty's marginal cost of producing 10,000 pies a week is:
- a. \$1.00
  - b. \$1.50
  - c. \$2.00
  - d. \$2.50
  - e. \$4.50

ANS: B                      PTS: 1

31. Bringing Up Baby (BUB) produces step-by-step manuals for child rearing. If BUB's total cost of producing manuals is given by  $TC = 0.004Q^3 - 0.1Q^2 + 0.5Q + 250$ , the marginal cost of producing the 50th manual is:
- a. \$5.50
  - b. \$20.50
  - c. \$20.95
  - d. \$21.50
  - e. \$21.95

ANS: B                      PTS: 1

32. Why Can't We Be Friends? operates a conflict settlement service for distressed couples. If it has no fixed costs and its monthly average variable cost of cases is given by  $AVC = 2.5Q + 500$ , the marginal cost at a caseload of 50 attempted reconciliations per month is:
- a. \$500
  - b. \$550
  - c. \$600
  - d. \$625
  - e. \$750

ANS: E                      PTS: 1

33. Down and Out Co. operates an executive placement service for corporate executives displaced by corporate restructuring. Its monthly total cost of cases is given by  $TC = 25Q^{1/2} + 2,500$ ; the average cost at a caseload of 25 attempted placements per month is:
- a. \$100
  - b. \$105
  - c. \$200
  - d. \$205
  - e. \$225

ANS: B                      PTS: 1

34. Teal Talkies, a manufacturer of designer cell phones, has determined that its total cost of production is  $TC = 1,000 + 500Q^{-1} + 15Q^2$ . At 5 units of output, the firm's average cost is:
- a. \$330
  - b. \$130
  - c. \$200
  - d. \$295
  - e. \$300

ANS: D                      PTS: 1

35. Pace's total cost of producing CO<sub>2</sub> cartridges is given by  $TC = 0.5X^3 - 24X^2 + 144X$ . The level of output that minimizes average total cost is:
- a. 12 cartridges
  - b. 10 cartridges
  - c. 18 cartridges
  - d. 20 cartridges
  - e. 24 cartridges

ANS: E                      PTS: 1

36. Minimum efficient scale is the output at which:
- a. long-run average cost is first minimized
  - b. long-run average cost first equals long-run marginal cost
  - c. short-run average cost equals long-run average cost for the first time
  - d. short-run marginal cost equals long-run marginal cost for the first time
  - e. diseconomies are first overcome and then economies of scale set in

ANS: A                      PTS: 1

37. Lot's Wife Manufacturing produces rear view video systems for buses. The firm's cost function is  $TC = 2000 + 120Q$ . If the systems sell for \$145, what is the break-even rate of production?
- a. 200
  - b. 120
  - c. 80
  - d. 55
  - e. none of the above

ANS: C                      PTS: 1

38. Economies of scope exist when it is cheaper to produce:
- a. with a large fixed plant and equipment
  - b. at increasing rates of output
  - c. given quantities of two different products together than to produce the same quantities separately
  - d. given quantities of two different products separately than to produce the same quantities together
  - e. using more than one technique

ANS: C                      PTS: 1



39. Break-even analysis usually assumes:
- a. marginal revenue is declining with output
  - b. all costs are variable
  - c. managers wish to minimize fixed costs
  - d. marginal costs are increasing with output
  - e. average variable costs are constant

ANS: E                      PTS: 1

40. The Wilson Corporation produces output according to  $Q = 4(KL)^{1/2}$ , where  $K$  is the amount of capital used and  $L$  is the amount of labor employed. If capital costs \$2 per unit and labor costs \$8 per unit, Wilson's minimized long-run average total cost is:
- a. \$2
  - b.  $\$2Q$
  - c. \$10
  - d.  $\$10Q$
  - e. \$22

ANS: A                      PTS: 1

41. Wagner Machine Tool produces output according to  $Q = 4(KL)^{1/2}$ , where  $K$  is the amount of capital used and  $L$  is the amount of labor employed. Capital costs \$2 per unit, and Wagner is constrained in the short run to use 16 units of capital. If labor costs \$8 per unit, Wagner's minimized short-run marginal cost at an output of 48 is:
- a. \$3.00
  - b. \$3.50
  - c. \$4.00
  - d. \$4.50
  - e. \$5.00

ANS: A                      PTS: 1

42. The Skinny Corporation produces exercise videos according to  $Q = (KL)^{1/2}$ , where  $K$  is the amount of capital used and  $L$  is the amount of labor employed. If capital costs \$16 per unit and labor costs \$2 per unit, Skinny's minimized long-run average total cost is:

- a.  $\$(128Q)^{1/2}$
- b.  $\$128Q$
- c.  $\$128$
- d.  $\$2$
- e.  $\$8$

ANS: A

PTS: 1

43. Kinsley Consulting Group determines that reports can be produced according to  $Q = 0.5(KL)^{2/3}$ , where  $K$  is the amount of capital used and  $L$  is the amount of labor employed. Capital costs \$20 per unit and labor costs \$2.50 per unit; Kinsley's minimized long-run marginal cost at 32 units of output is:

- a. \$10
- b. \$15
- c. \$120
- d. \$150
- e. \$320

ANS: B

PTS: 1

44. If total cost is given by  $TC = a + bQ - cQ^2 + dQ^3$ , then average variable cost is minimized at \_\_\_\_\_ units of output.
- a.  $Q^* = a/2d$
  - b.  $Q^* = b/2d$
  - c.  $Q^* = c/3d$
  - d.  $Q^* = c/2d$
  - e.  $Q^* = d/2c$

ANS: C                      PTS: 1

45. Bill's Mechanical Devices Inc. produces robots for the automotive industry. If its average variable costs are given by  $AVC = 25$ , its fixed costs are \$2,500, and it charges \$75 a robot, what is Bill's break-even level of output?
- a. 25 robots
  - b. 33.3 robots
  - c. 50 robots
  - d. 75 robots
  - e. 100 robots

ANS: C                      PTS: 1

46. Trudeau's Body Shop incurs total costs given by  $TC = 2,400 + 100Q$ . If the price it charges for a paint job is \$120, what is its break-even level of output?
- a. 20 paint jobs
  - b. 40 paint jobs
  - c. 60 paint jobs
  - d. 90 paint jobs
  - e. 120 paint jobs

ANS: E                      PTS: 1

47. Brandy's Restaurant estimates that its total cost of providing  $Q$  meals per month is given by  $TC = 6,000 + 2Q$ . If Brandy charges \$4 per meal, what is its break-even level of output?
- a. 1,000 meals
  - b. 1,500 meals
  - c. 2,000 meals
  - d. 2,500 meals
  - e. 3,000 meals

ANS: E                      PTS: 1

48. Master's Cleaners' average variable costs consist of \$.70 of direct labor, \$.30 of direct materials, and \$.50 of other variable inputs. If it has fixed costs of \$1,000, what level of output is required at a price of \$2 to generate \$500 in profits?
- a. 1,000
  - b. 1,500
  - c. 2,000
  - d. 2,500
  - e. 3,000

ANS: E                      PTS: 1

49. If total cost is given by  $TC = 10Q - 5Q^2 + 0.1Q^3$ , then average cost is minimized at \_\_\_\_\_ units of output.
- a. 0.5
  - b. 0.01
  - c. 50
  - d. 25
  - e. 0.1

ANS: D                      PTS: 1

50. If total cost is given by  $TC = a + bQ - cQ^2 + dQ^3$ , then marginal cost is minimized at \_\_\_\_\_ units of output.

a.  $Q^* = a/2d$

b.  $Q^* = b/2d$

c.  $Q^* = c/2d$

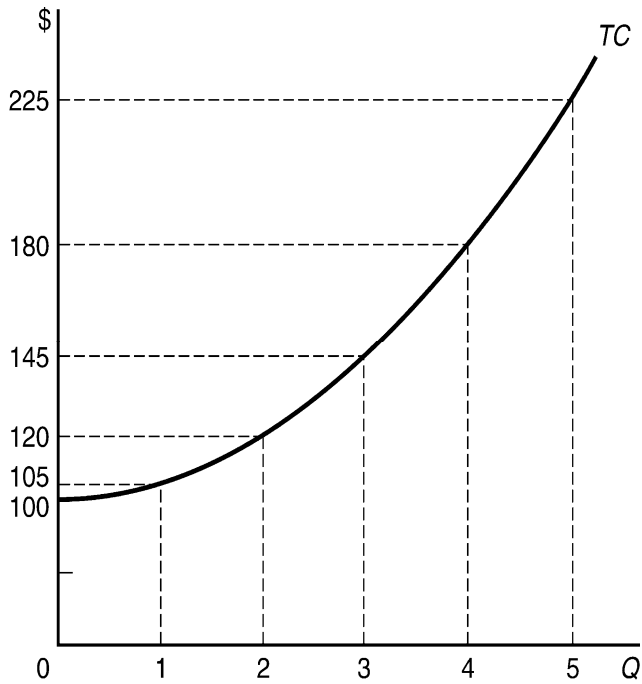
d.  $Q^* = b/3d$

e.  $Q^* = c/3d$

ANS: E

PTS: 1

The diagram below represents the short-run total cost function for the Fidget Company, which produces widgets. Please use it to answer questions 51–54.



51. The equation for the total cost function represented in the diagram is:

- a.  $TC = 100$
- b.  $TC = 10Q$
- c.  $TC = 5Q^2$
- d.  $TC = 100Q$
- e.  $TC = 100 + 5Q^2$

ANS: E

PTS: 1

52. The equation for the marginal cost function represented in the diagram is:

- a.  $MC = 100$
- b.  $MC = 10Q$
- c.  $MC = 10Q^2$
- d.  $MC = 100Q$
- e.  $MC = 100 + 5Q^2$

ANS: B                      PTS: 1

53. The fixed costs represented in the diagram are:

- a.  $FC = \$100$
- b.  $FC = 10Q$
- c.  $FC = 5Q^2$
- d.  $FC = \$500$
- e. not estimable from the information given

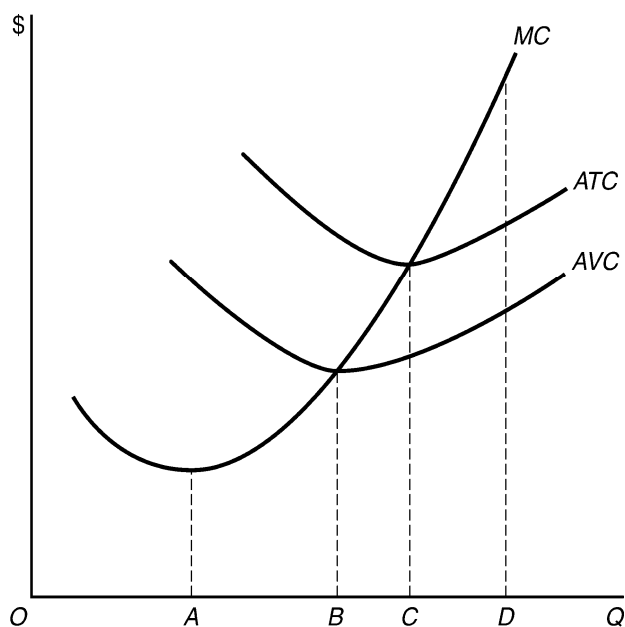
ANS: A                      PTS: 1

54. When output is 25, average fixed cost is:

- a. \$4
- b. \$25
- c. \$625
- d. \$3,125
- e. none of the above

ANS: A                      PTS: 1

Please use the diagram below to answer questions 55–57.



55. Marginal product is at a minimum at:

- a. output level *A*
- b. output level *B*
- c. output level *C*
- d. output level *D*
- e. an output level that cannot be determined from the information given

ANS: A                      PTS: 1

56. Total product is at a maximum at:

- a. output level *A*
- b. output level *B*
- c. output level *C*
- d. output level *D*
- e. an output level that cannot be determined from the information given

ANS: E                      PTS: 1



57. Marginal product is increasing:

- a. between *O* and *A*
- b. between *A* and *B*
- c. between *B* and *C*
- d. between *C* and *D*
- e. beyond point *D*

ANS: A                      PTS: 1

58. Hedge Fun is a landscaping firm that specializes in topiary. It contracts with the owners of 125 local homes and provides its service at an annual fee of \$1,300. Its average variable cost is \$800, and its annual fixed cost is \$28,000. What is the break-even level of output?

- a. 125
- b. 87
- c. 63
- d. 56
- e. none of the above

ANS: D                      PTS: 1

59. Hedge Fun is a landscaping firm that specializes in topiary. It contracts with the owners of 125 local homes and provides its service at an annual fee of \$1,300. Its average variable cost is \$800, and its annual fixed cost is \$28,000. What is the degree of operating leverage?

- a. 2.7
- b. 2.1
- c. 1.8
- d. 1.3
- e. none of the above

ANS: C                      PTS: 1

60. Hedge Fun is a landscaping firm that specializes in topiary. It contracts with the owners of 140 local homes and provides its service at an annual fee of \$1,300. Its average variable cost is \$900, and its annual fixed cost is \$28,000. What is the degree of operating leverage?
- a. 0.5
  - b. 1
  - c. 1.5
  - d. 2
  - e. 2.5

ANS: D

PTS: 1

## Chapter 6

### Perfect Competition

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#### MULTIPLE CHOICE

1. In the model of perfect competition, firms produce a:
- a. standardized product with considerable control over price
  - b. differentiated product with considerable control over price
  - c. standardized product with no control over price
  - d. differentiated product with no control over price
  - e. standardized or differentiated product with some control over price

ANS: C                      PTS: 1

2. In the model of perfect competition, there are:
- a. high barriers to entry and no nonprice competition
  - b. low barriers to entry and some advertising and product differentiation
  - c. very high barriers to entry and some advertising and product differentiation
  - d. high barriers to entry and some advertising and product differentiation
  - e. low barriers to entry and no nonprice competition

ANS: E                      PTS: 1

3. In the model of perfect competition, firms maximize profits by producing where:
- a. the difference between marginal revenue and marginal cost is maximized
  - b. marginal revenue equals price
  - c. the difference between price and marginal cost is maximized
  - d. price equals marginal cost
  - e. the difference between price and marginal revenue is maximized

ANS: D                      PTS: 1

4. In the model of perfect competition, there:
- a. are many firms producing differentiated products
  - b. are a few firms producing undifferentiated products
  - c. are a few firms producing differentiated products
  - d. are many firms producing undifferentiated products
  - e. is one firm producing a highly differentiated product

ANS: D                      PTS: 1

5. If price is above the average variable cost but below the average total cost of a representative firm in a competitive industry:
- a. there will be entry to the industry over time
  - b. there will be exit from the industry over time
  - c. the firms in the industry are just earning a normal rate of return
  - d. the firms in the industry are earning a supranormal rate of return
  - e. the industry is in long-run equilibrium

ANS: B                      PTS: 1

6. In a competitive market the equilibrium price is determined:
- a. at the intersection of the firm's demand and the market supply curves
  - b. at the intersection of the market demand and supply curves
  - c. at the intersection of the firm's demand and marginal cost curves
  - d. so as to cover the costs of the potential firms
  - e. so as to cover the costs of the firms currently in the industry

ANS: B                      PTS: 1

7. If the perfectly competitive market demand for gym shoes is given by  $Q_D = 100 - P$  and the market supply is given by  $Q_S = 10 + 2P$ , then the equilibrium price and quantity will be:
- a.  $P = 50$  and  $Q = 50$
  - b.  $P = 40$  and  $Q = 90$
  - c.  $P = 40$  and  $Q = 60$
  - d.  $P = 30$  and  $Q = 70$
  - e.  $P = 25$  and  $Q = 75$

ANS: D                      PTS: 1

8. If the perfectly competitive market demand for tanning beds shifts from  $Q_{D,91} = 1,230 - 5P$  to  $Q_{D,92} = 740 - 5P$  and the market supply is given by  $Q_S = -100 + 2P$ , then the change in equilibrium quantity will be:
- a. 140 units
  - b. 280 units
  - c. -98 units
  - d. -140 units
  - e. -150 units

ANS: D                      PTS: 1

9. If the perfectly competitive market demand for cholesterol-free cookies shifts from  $Q_{D,93} = 1,150 - 5P$  to  $Q_{D,94} = 1,640 - 5P$ , and the market supply is given by  $Q_S = -100 + 2P$ , then the change in equilibrium price will be:
- a. \$70
  - b. \$80
  - c. \$90
  - d. \$100
  - e. \$110

ANS: A                      PTS: 1

10. If the perfectly competitive market supply of pork bellies shifts from  $Q_{S,93} = 250 + 50P$  to  $Q_{S,94} = 400 + 40P$ , and the market demand is given by  $Q_D = -10,000 - 200P$ , then the change in equilibrium quantity will be:
- a. 200 units
  - b. 100 units
  - c. 0 units
  - d. -100 units
  - e. -200 units

ANS: E                      PTS: 1

11. If the perfectly competitive market supply of pork bellies shifts from  $Q_{S,93} = 250 + 50P$  to  $Q_{S,94} = 400 + 40P$ , and the market demand is given by  $Q_D = -10,000 - 200P$ , then the change in equilibrium price will be:
- a. \$2
  - b. \$1
  - c. \$0
  - d. -\$1
  - e. -\$2

ANS: B                      PTS: 1

12. If a representative firm with total cost given by  $TC = 20 + 20q + 5q^2$  operates in a competitive industry where the short-run market demand and supply curves are given by  $Q_D = 1,400 - 40P$  and  $Q_S = -400 + 20P$ , its short-run profit-maximizing level of output is:
- a. 0 units
  - b. 1 unit
  - c. 2 units
  - d. 4 units
  - e. 6 units

ANS: B                      PTS: 1

13. A representative firm with long-run total cost given by  $TC = 20 + 20q + 5q^2$  operates in a competitive industry where the short-run market demand and supply curves are given by  $Q_D = 1,400 - 40P$  and  $Q_S = -400 + 20P$ . If it continues to operate in the long run, its profit-maximizing level of output is:

- a. 1 unit
- b. 2 units
- c. 4 units
- d. 5 units
- e. 6 units

ANS: B                      PTS: 1

14. A representative firm with short-run total cost given by  $TC = 50 + 2q + 2q^2$  operates in a competitive industry where the short-run market demand and supply curves are given by  $Q_D = 1,410 - 40P$  and  $Q_S = -390 + 20P$ . Its short-run profit-maximizing level of output is:

- a. 0 units
- b. 1 unit
- c. 2 units
- d. 5 units
- e. 7 units

ANS: E                      PTS: 1



15. If a representative firm with long-run total cost given by  $TC = 50 + 2q + 2q^2$  operates in a competitive industry where the short-run market demand and supply curves are given by  $Q_D = 1,410 - 40P$  and  $Q_S = -390 + 20P$ , its long-run profit-maximizing level of output is:
- a. 0 units
  - b. 1 unit
  - c. 2 units
  - d. 5 units
  - e. 7 units

ANS: D                      PTS: 1

16. If a representative firm with long-run total cost given by  $TC = 50 + 2q + 2q^2$  operates in a competitive industry where the market demand is given by  $Q_D = 1,410 - 40P$ , in the long-run equilibrium there will be:
- a. 60 firms
  - b. 98 firms
  - c. 106 firms
  - d. 110 firms
  - e. 120 firms

ANS: C                      PTS: 1

17. If a representative firm with long-run total cost given by  $TC = 2,000 + 20q + 5q^2$  operates in a competitive industry where the market demand is given by  $Q_D = 10,000 - 40P$ , in the long-run equilibrium there will be:
- a. 60 firms
  - b. 98 firms
  - c. 106 firms
  - d. 110 firms
  - e. 120 firms

ANS: A                      PTS: 1

18. If a representative firm with long-run total cost given by  $TC = 50 + 2q + 2q^2$  operates in a competitive industry where the market demand is given by  $Q_D = 1,410 - 40P$ , the long-run equilibrium output of the industry will be:
- a. 490 units
  - b. 530 units
  - c. 570 units
  - d. 610 units
  - e. 650 units

ANS: B                      PTS: 1

19. A representative firm with long-run total cost given by  $TC = 2,000 + 20q + 5q^2$  operates in a competitive industry where the market demand is given by  $Q_D = 10,000 - 40P$ . The long-run equilibrium output of the industry will be:
- a. 1,200 units
  - b. 1,800 units
  - c. 2,200 units
  - d. 2,600 units
  - e. 3,200 units

ANS: A                      PTS: 1

20. If a representative firm with long-run total cost given by  $TC = 2,000 + 20q + 5q^2$  operates in a competitive industry where the market demand is given by  $Q_D = 10,000 - 40P$ , the long-run equilibrium output of the individual firm's will be:
- a. 10 units
  - b. 20 units
  - c. 30 units
  - d. 35 units
  - e. 40 units

ANS: B                      PTS: 1

21. If a representative firm with total cost given by  $TC = 20 + 20q + 5q^2$  operates in a competitive industry where the short-run market demand and supply curves are given by  $Q_D = 1,400 - 40P$  and  $Q_S = -400 + 20P$ , the number of firms operating in the short run will be:
- a. 100
  - b. 140
  - c. 200
  - d. 280
  - e. 240

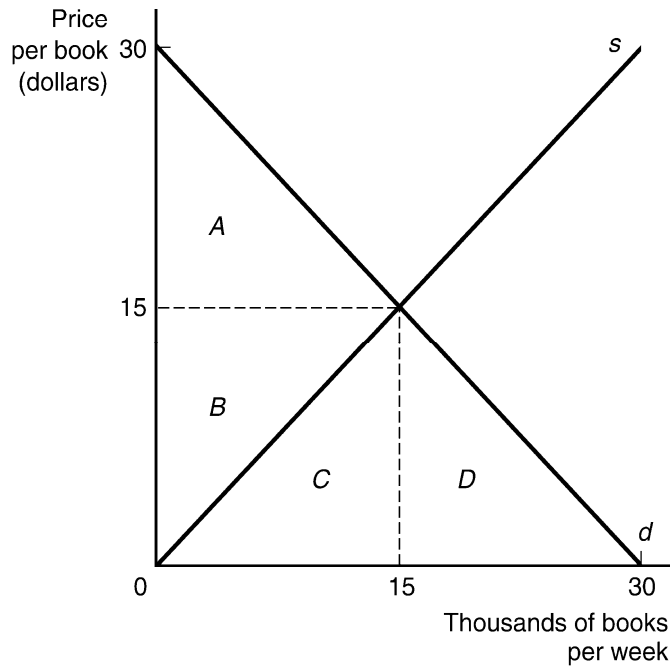
ANS: C                      PTS: 1

22. Producer surplus is defined as:
- a. the difference between the price the consumer actually pays for a product and the consumer's reservation price
  - b. the profit that the firm earns on each unit of a product sold
  - c. the profit that the firm earns after taxes
  - d. the difference between the price received by the producer and the producer's reservation price
  - e. the difference between the price paid by the consumer and the price received by the consumer

ANS: D                      PTS: 1

The diagram below represents the market for paperback books. Please use it to answer questions

23–25.



23. Which area represents producer surplus?

- a. *A*
- b. *B*
- c. *C*
- d. *D*
- e. none of the above

ANS: B                      PTS: 1

24. In the market for paperback books, producer surplus is:

- a. \$15.00
- b. \$30.00
- c. \$112.50
- d. \$225.00
- e. none of the above

ANS: C                      PTS: 1

25. In the market for paperback books, total surplus is:

- a. \$15.00
- b. \$30.00
- c. \$112.50
- d. \$225.00
- e. none of the above

ANS: D                      PTS: 1

26. Total surplus in a market is a measure of:

- a. social welfare created by the market
- b. profits that accrue to the owners of firms in a particular market
- c. the rebates that consumers receive when they purchase certain goods or services
- d. excess inventory that remains at the end of a season
- e. planned inventory that a firm carries from one year to the next

ANS: A                      PTS: 1

27. A constant-cost industry is one in which:

- a. input prices do not change over time
- b. technology does not change over time
- c. input prices and technology do not change as firms enter or exit the industry
- d. input prices and technology do not change over time
- e. firms have reached the maturity phase of the industry's life cycle

ANS: C                      PTS: 1

28. A decreasing-cost industry is one in which:
- a. input prices fall over time
  - b. technology deteriorates over time
  - c. input prices and technology do not change over time
  - d. firms are in the growth phase of the industry's life cycle
  - e. input prices fall or technology improves as firms enter the industry

ANS: E                      PTS: 1

29. If the demand increases for the product of a constant-cost industry:
- a. long-run output goes up, but long-run price may go up or down
  - b. short-run output goes up, but long-run output may go up or down
  - c. short-run price goes up, but long-run price remains constant
  - d. long-run output goes up, but short-run price remains constant
  - e. long-run price goes up, but short-run price may go up or down

ANS: C                      PTS: 1

30. If the demand increases for the product of a decreasing-cost industry:
- a. short-run price goes up, but long-run price falls
  - b. long-run output goes up, but long-run price may go up or down
  - c. short-run output goes up, but long-run output may go up or down
  - d. long-run output goes up, but short-run price remains constant
  - e. long-run price goes up, but short-run price may go up or down

ANS: A                      PTS: 1

31. If the demand increases for the product of an increasing-cost industry:

- a. short-run price goes up, but long-run price falls
- b. long-run output goes up, but long-run price may go up or down
- c. short-run output goes up, but long-run output may go up or down
- d. long-run output goes up, but short-run price remains constant
- e. short-run price goes up, and long-run price goes up

ANS: E

PTS: 1

32. If labor and capital produce output according to  $Q = 6KL^{1/2}$ , labor costs \$12, capital costs \$240, and output sells for \$2, the optimal level of  $L$  is:

- a. 25
- b. 400
- c. 5
- d.  $5K$
- e. 15

ANS: B

PTS: 1

33. If labor produces output according to  $Q = 8L^{1/2}$ , labor costs \$10, and output sells for \$100, then the optimal level of  $L$  is:

- a. 8
- b. 16
- c. 1,600
- d. 2
- e. 10

ANS: C

PTS: 1



34. Camel Records produces records according to  $Q = 4L - 0.15L^2$ . If labor costs \$5 and records sell for \$2, the optimal quantity of labor is:
- a. 0
  - b. 2
  - c. 10
  - d. 5
  - e. 17

ANS: D                      PTS: 1

35. Toy Productions makes toy trucks from steel according to  $Q = 50 + 100S - 0.5S^2$ . If steel costs \$49 and toy trucks sell for \$7, the optimal level of steel usage is:
- a. 50
  - b. 43
  - c. 100
  - d. 93
  - e. 133

ANS: D                      PTS: 1

36. Paul's Pizza Parlor bakes pizza pies according to  $Q = 3L - 0.3L^2$ . If labor costs \$6 and pizza sells for \$10, the optimal amount of labor is:
- a. 6
  - b. 5
  - c. 4
  - d. 3
  - e. 2

ANS: C                      PTS: 1

37. Meteor Tie Company produces ties from fabric according to  $Q = 10 + 4F - 1/3F^3$ . If fabric is free and ties sell for \$20, what is Meteor's optimal usage of fabric?
- a. 0
  - b. 2
  - c. 4
  - d. 6
  - e. 8

ANS: B                      PTS: 1

38. The long-run supply curve for a product is horizontal with  $ATC = 400$ . Market demand is defined as  $P = 1,000 - 4Q$ . The market is competitive and is in long-run equilibrium with 50 firms in the industry. If demand increases to  $P = 1,240 - 4Q$ , how many firms will be in the industry at the new long-run equilibrium?
- a. 30
  - b. 40
  - c. 50
  - d. 60
  - e. 70

ANS: E                      PTS: 1

39. The long-run supply curve for a product is horizontal with  $ATC = 200$ . Market demand is defined as  $P = 1,000 - 4Q$ . The market is competitive and is in long-run equilibrium with 50 firms in the industry. If demand increases to  $P = 1,240 - 4Q$ , how many firms will be in the industry at the new long-run equilibrium?
- a. 45
  - b. 55
  - c. 65
  - d. 75
  - e. 85

ANS: C                      PTS: 1

40. The long-run supply curve for a product is horizontal with  $ATC = 200$ . Market demand is defined as  $P = 1,000 - 5Q$ . The market is competitive and is in long-run equilibrium with 40 firms in the industry. If a \$50 tax is imposed on sellers, how many firms will be in the industry at the new long-run equilibrium?
- a. 44
  - b. 37
  - c. 32
  - d. 29
  - e. 28

ANS: B                      PTS: 1

## Chapter 7

### Monopoly and Monopolistic Competition

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#### MULTIPLE CHOICE

1. At the profit-maximizing level of output for the monopolist:

- a. total revenue is equal to total cost
- b. total costs are minimized
- c. total revenue is maximized
- d. marginal revenue is equal to marginal cost
- e. average revenue is equal to average cost

ANS: D                      PTS: 1

2. In the model of monopoly, there:

- a. are many firms producing differentiated products
- b. are a few firms producing undifferentiated products
- c. are a few firms producing differentiated products
- d. are many firms producing undifferentiated products
- e. is one firm producing a highly differentiated product

ANS: E                      PTS: 1

3. So long as price exceeds average variable cost, in the model of monopoly, the firm maximizes profits by producing where:

- a. the difference between marginal revenue and marginal cost is maximized
- b. marginal revenue equals price
- c. the difference between price and marginal cost is maximized
- d. price equals marginal cost
- e. marginal cost equals marginal revenue

ANS: E                      PTS: 1

4. In the model of monopoly, firms produce a:
- a. standardized product with considerable control over price
  - b. differentiated product with considerable control over price
  - c. standardized product with no control over price
  - d. differentiated product with no control over price
  - e. standardized or differentiated product with some control over price

ANS: B                      PTS: 1

5. For the Minnie Mice Company, the elasticity of demand is  $-6$  and the profit-maximizing price is 30. If  $MC$  is marginal cost and  $AVC$  is average variable cost, then:
- a.  $MC = 25$
  - b.  $AVC = 25$
  - c.  $MC = 30$
  - d.  $AVC = 36$
  - e.  $MC = 36$

ANS: A                      PTS: 1

6. For the Mickey Mice Company, the price elasticity of demand is  $-3$ , average cost is \$15, and marginal cost is \$30. Mickey's profit-maximizing price is:
- a. \$10.00
  - b. \$20.00
  - c. \$22.50
  - d. \$30.00
  - e. \$45.00

ANS: E                      PTS: 1

7. The Frank Failing Company has an average variable cost of \$8, average fixed cost of \$16, marginal cost of \$12, and elasticity of demand  $-3$ . Frank should:
- a. shut down
  - b. charge \$8
  - c. charge \$16
  - d. charge \$18
  - e. charge \$36

ANS: D                      PTS: 1

8. If Harry Doubleday's price elasticity of demand is  $-2$  and its profit-maximizing price is \$6, then its:
- a. average cost is \$3.00
  - b. average cost is \$0.33
  - c. marginal cost is \$3.00
  - d. marginal cost is \$0.33
  - e. average cost is \$5.67

ANS: C                      PTS: 1

9. My Big Banana (MBB) has a monopoly in Middletown on large banana splits. The demand for this delicacy is given by  $Q = 80 - P$ . MBB's costs are given by  $TC = 40 + 2Q + 2Q^2$ . Its maximum monopoly profit is:
- a. \$267
  - b. \$467
  - c. \$627
  - d. \$672
  - e. \$674

ANS: B                      PTS: 1

10. Bathworks has exclusive rights to sell its perfumes. The demand for its perfumes faced by Bathworks is given by  $Q = 250 - 0.5P$ . Bathworks's costs are given by  $TC = 50Q + 5.5Q^2$ . Its maximum monopoly profit is:
- a. \$6,750
  - b. \$7,050
  - c. \$7,500
  - d. \$7,750
  - e. \$8,750

ANS: A                      PTS: 1

11. Cal's Cab Company (CCC) has a taxi monopoly in Wen Kroy. The demand for taxi services in Wen Kroy is given by  $Q = 1,500 - P$ . CCC's costs are given by  $TC = 100 - Q^2 + 5Q^3$ . Its maximum monopoly profit is:
- a. \$0
  - b. \$5,500
  - c. \$6,600
  - d. \$7,700
  - e. \$9,900

ANS: E                      PTS: 1

12. Craig's Red Sea Restaurant is the only restaurant in Columbia, South Carolina, that sells Ethiopian food. The demand for Ethiopian food is given by  $Q = 25 - P$ . Craig's costs are given by  $TC = 25 + Q + 5Q^2$ . Its maximum monopoly profit is:
- a. -\$1
  - b. \$21
  - c. \$22
  - d. \$24
  - e. \$26

ANS: A                      PTS: 1

13. If a monopolist faces a constant-elasticity demand curve given by  $Q = 202,500P^{-3}$  and has total costs given by  $TC = 10Q$ , its profit-maximizing level of output is:
- a. 50
  - b. 60
  - c. 75
  - d. 100
  - e. 120

ANS: B                      PTS: 1

14. If a monopolist faces a constant-elasticity demand curve given by  $Q = 400P^{-2}$  and has total costs given by  $TC = 0.625Q^2$ , its profit-maximizing level of output is:
- a. 0
  - b. 2
  - c. 4
  - d. 6
  - e. 8

ANS: C                      PTS: 1



15. Joe's T-shirts has costs given by  $TC = \$100 + 3Q$ , where  $Q$  is the number of shirts. If Joe charges \$5 each, the percentage markup for 100 shirts is:
- a. 20 percent
  - b. 25 percent
  - c. 33 percent
  - d. 50 percent
  - e. 67 percent

ANS: E                      PTS: 1

16. Harriet Quarterly wants a 25 percent return on the \$100 of assets she has in her company. Her average variable costs are \$50 per unit, and she has no fixed costs. If she sells 10 units, what price should she charge?
- a. \$52.50
  - b. \$62.50
  - c. \$75.00
  - d. \$87.50
  - e. \$125.00

ANS: A                      PTS: 1

17. When producing 10 units, Jean has total variable costs of \$100, total fixed costs of \$100, and assets of \$100. She wants a return of 10 percent. What price should she charge?
- a. \$11
  - b. \$21
  - c. \$30
  - d. \$210
  - e. \$300

ANS: B                      PTS: 1

18. A firm with no costs producing  $Q$  units and charging price  $P$  gets a return of  $r$  on total assets of  $A$  if  $P$  equals:
- a.  $rA$
  - b.  $(1 + r)A$
  - c.  $(1 + r)A/Q$
  - d.  $rA/Q$
  - e.  $rAQ$

ANS: D                      PTS: 1

19. To maximize profit, the firm must:
- a. mark up average variable costs
  - b. mark up marginal costs
  - c. mark up average fixed costs
  - d. set the markup equal to  $-1/(\eta + 1)$
  - e. b and d

ANS: E                      PTS: 1

20. If  $\eta$  is the elasticity of demand, a profit maximizer sets a markup price of:
- a.  $MC[1/(1 + 1/\eta)]$
  - b.  $MC[1/(1 - 1/\eta)]$
  - c.  $AC[1/(1 - \eta)]$
  - d.  $AC[1/(1 - 1/\eta)]$
  - e.  $1/(1 - \eta)$

ANS: B                      PTS: 1

21. If elasticity of demand is  $-2$ , marginal cost is \$4, and average cost is \$6, a profit-maximizing markup price is:
- a. \$4
  - b. \$6
  - c. \$8
  - d. \$10
  - e. \$12

ANS: C                      PTS: 1

22. If the profit-maximizing markup price is marginal cost times 2, the elasticity of demand must be:
- a.  $-0$
  - b.  $-1/2$
  - c.  $-1$
  - d.  $-4/3$
  - e.  $-2$

ANS: E                      PTS: 1

23. If the demand curve is horizontal, the price elasticity used to calculate the profit-maximizing price is:
- a.  $-10$
  - b.  $-5$
  - c.  $-0$
  - d.  $-1$
  - e. infinity

ANS: E                      PTS: 1

24. If price  $P$ , unit costs  $C$ , and quantity  $Q$  are known, the markup of markup-cost pricing is:

- a.  $(PQ - CQ)/Q$
- b.  $P - C/Q$
- c.  $(P - C)/Q$
- d.  $(P - C)/C$
- e.  $1 - (P - C)/Q$

ANS: D                      PTS: 1

25. A chemical company can produce  $Q$  units of a chemical  $H$ , with marginal costs of  $MC = 9 + Q$ , and can distribute the chemical at marketing marginal costs of  $MC = 1$ . The demand for  $H$  is given by  $P = 30 - 1.5Q$ . If an external market exists where  $H$  can be bought or sold without marketing expenses for \$13, how much  $H$  should the firm produce?

- a. 0 units
- b. 4 units
- c. 5 units
- d. 7 units
- e. 10 units

ANS: B                      PTS: 1

26. If  $C$  is total cost,  $Q$  is quantity,  $P$  is price, and  $A$  is total assets, the target return  $r$  is defined by:

- a.  $(PQ - C)/A$
- b.  $[1 - (P - C)/Q]A$
- c.  $[1 - (P - C)Q]A$
- d.  $(P - C)Q/A$
- e.  $1 - (P - C)Q/A$

ANS: A                      PTS: 1

27. Jack O. Trades produces joint products  $A$  and  $B$  with linear demands  $D_A > D_B$ . Given  $MR_B$  is marginal revenue for  $B$  and  $MC_B$  is marginal cost of  $B$ , Jack's total marginal revenue curve changes slope at the quantity where:

- a.  $MR_B = MC_B$
- b.  $D_B = MC_B$
- c.  $MR_B = D_B$
- d.  $MR_B = 0$
- e.  $D_B = 0$

ANS: D                      PTS: 1

28. When a producer of joint goods refuses to sell all of one good, the producer:

- a. is not rational
- b. must destroy some of the high-demand good
- c. must destroy some of the low-demand good
- d. must give away some of the high-demand good
- e. must give away some of the low-demand good

ANS: C                      PTS: 1

29. A producer refuses to sell some of one joint product.  $MR_A$  is the marginal revenue for a low-demand good. If the producer were to sell all its production, what would be true of  $MR_A$ ?

- a.  $MR_A = \text{demand for } A$
- b.  $MR_A = 0$
- c.  $MR_A = \text{marginal cost of } A$
- d.  $MR_A < 0$
- e.  $MR_A = 1$

ANS: D                      PTS: 1

30. A widget firm has production marginal costs of  $MC = 100 + Q$ , where  $Q$  is the number of widgets produced, and marginal marketing (to the public) costs of  $MC = 5Q$ . If public demand generated marginal revenue of  $MR = 400 - 4Q$  and there is an external market where widgets can be bought or sold for \$200 without marketing costs, how many widgets should production make?
- a. 0
  - b. 30
  - c. 50
  - d. 100
  - e. as many as possible

ANS: D                      PTS: 1

31. If revenues from selling quantities  $x$  and  $y$  of jointly produced goods  $X$  and  $Y$  were  $TR_X = 100 - xy + 2x$  and  $TR_Y = 500 - xy + 3y$ , then marginal revenue with respect to  $X$  would be:
- a.  $-2 - y$
  - b.  $-y$
  - c.  $-x(2y + 5)$
  - d.  $-(2y + 5)$
  - e.  $2(1 - y)$

ANS: E                      PTS: 1

32. If revenues from selling quantities  $x$  and  $y$  of jointly produced goods  $X$  and  $Y$  were  $TR_X = 300 - xy + 50x$  and  $TR_Y = 1,000 - xy + 2y$ , and 10 units of  $y$  were produced, then marginal revenue with respect to  $X$  would be:
- a. \$10
  - b. \$20
  - c. \$30
  - d. \$40
  - e. \$50

ANS: C                      PTS: 1

33. For a producer of joint products  $X$  and  $Y$  with total costs  $C_X$  and  $C_Y$ , an isocost curve:
- a. isolates  $C_X$  and  $C_Y$  separately
  - b. shows points where  $C_X = C_Y$
  - c. shows points where cost curves are tangent
  - d. shows points where  $C_X/C_Y$  is constant
  - e. shows points where  $C_X + C_Y$  is constant

ANS: E                      PTS: 1

34. For a producer of joint products  $X$  and  $Y$  with total revenue and  $R_Y$ , an isorevenue curve:
- a. isolates  $R_X$  and  $R_Y$  separately
  - b. shows points where  $R_X = R_Y$
  - c. shows points where revenue curves are tangent
  - d. shows points where  $R_X/R_Y$  is constant
  - e. shows points where  $R_X + R_Y$  is constant

ANS: E                      PTS: 1

35. A producer of two fixed proportion outputs  $A$  and  $B$ , producing  $Q_A = Q_B$  with marginal revenues  $MR_A$  and  $MR_B$ , should equate marginal cost to:
- a. the maximum  $(MR_A, MR_B)$
  - b. the minimum  $(MR_A, MR_B)$
  - c.  $MR_A$ , which should equal  $MR_B$
  - d. the horizontal sum of  $MR_A$  and  $MR_B$
  - e. the vertical sum of  $MR_A$  and  $MR_B$

ANS: E                      PTS: 1

36. Fred Stickwick produces fixed proportion goods  $A$  and  $B$ , with  $Q_A = Q_B$ , marginal costs  $MC$ , and marginal revenues  $MR_A$  and  $MR_B$ . If demand for  $A$  is greater than demand for  $B$ , Fred should only:
- a. produce  $B$  to the quantity where  $MR_B = 0$
  - b. sell  $B$  to the quantity where  $MR_B = 0$  if  $MR_A$  is still  $> MC$
  - c. produce  $B$  to the quantity where  $MR_B = MC$
  - d. sell  $B$  to the quantity where  $MR_B = MC$
  - e. produce  $B$  to the quantity where  $MR_B = MR_A$

ANS: B                      PTS: 1



37. A producer of fixed proportion goods  $X$  and  $Y$  ( $Q = Q_X = Q_Y$ ) has marginal costs and revenues of  $MC = 12Q$ ,  $MR_X = 54 - 6Q_X$ ,  $MR_Y = 126 - 12Q_Y$ . The producer should produce how many units?
- a. 3
  - b. 5.25
  - c. 6
  - d. 8.25
  - e. 10

ANS: C                      PTS: 1

38. If John produces joint products  $A$  and  $B$  and refuses to sell all the  $A$  he produces, then:
- a.  $A$  is a high-demand good
  - b.  $A$  is a low-demand good
  - c.  $A$  is a high-cost good
  - d.  $A$  is a low-cost good
  - e. John is definitely not profit maximizing

ANS: B                      PTS: 1

39. In the model of monopolistic competition, firms produce a:
- a. standardized product with considerable control over price
  - b. differentiated product with considerable control over price
  - c. standardized product with no control over price
  - d. differentiated product with no control over price
  - e. differentiated product with some control over price

ANS: E                      PTS: 1

40. So long as price exceeds average variable cost, in the model of monopolistic competition, a firm maximizes profits by producing where:
- a. the difference between marginal revenue and marginal cost is maximized
  - b. marginal cost equals marginal revenue
  - c. marginal revenue equals price
  - d. the difference between price and marginal cost is maximized
  - e. price equals marginal cost

ANS: B                      PTS: 1

41. In the model of monopolistic competition, there can be short-run:
- a. losses or profits, but there must be profits in long-run equilibrium
  - b. profits, but there must be losses in long-run equilibrium
  - c. losses or profits, but there must be losses in long-run equilibrium
  - d. losses or profits, but there must be neither profits nor losses in long-run equilibrium
  - e. losses, but there must be profits in long-run equilibrium

ANS: D                      PTS: 1

42. Firms that produce similar, slightly differentiated products are called a(n):
- a. oligarchy
  - b. oligopoly
  - c. cabal
  - d. cartel
  - e. product group

ANS: E                      PTS: 1

43. If a firm in a monopolistically competitive industry is profit maximizing, it should choose its level of advertising such that the marginal revenue of an additional dollar of advertising:
- a. is equal to the elasticity of its demand curve minus 1
  - b. is exactly \$1
  - c. increases revenues by \$1
  - d. is equal to 1 plus the elasticity of its demand curve
  - e. is equal to the elasticity of its demand curve

ANS: E                      PTS: 1

44. Consider Fred, who is employed by a national tire store and who earns a commission selling tires. He earns 25 percent of his gross sales revenue as a bonus. Fred's objective is to maximize:
- a. total profits for the store
  - b. total revenues for the store
  - c. marginal revenue from sales
  - d. the difference between marginal revenues and marginal cost for the store
  - e. the number of customers he waits on per day

ANS: B                      PTS: 1

45. The ABC Company estimates that a newspaper advertising campaign would cost \$25,000 and would generate \$35,000 in new revenues. The firm should begin this campaign as long as:
- a. price elasticity of demand is at least 2.5 (in absolute value)
  - b. price elasticity of supply is 1
  - c. price elasticity of demand is at least 1.4 (in absolute value)
  - d. marginal cost of production is no more than \$25,000
  - e. price elasticity of supply is 1.4

ANS: C                      PTS: 1

46. A supplier of fur coats estimates that the price elasticity of demand for its coats is  $-3.75$ . The firm has determined that an additional \$100,000 in advertising would generate \$275,000 in additional revenues. You would advise the firm to:
- a. advertise, since the marginal revenues are greater than the cost of advertising
  - b. spend only \$50,000 on advertising, since the marginal revenue from an additional dollar of advertising is less than \$3.75
  - c. abandon the advertising plan, since the demand elasticity is greater than 1 (in absolute value)
  - d. abandon the advertising plan, since the marginal revenue from an additional dollar of advertising is less than \$3.75
  - e. advertise, since the fur coats are a luxury item

ANS: D                      PTS: 1

47. Firms advertise in order to:
- a. build brand loyalty
  - b. appeal to the price-sensitive consumers
  - c. increase the demand elasticities of their loyal customers
  - d. shift the market supply curve to the left
  - e. shift the market demand curve to the left

ANS: A                      PTS: 1

48. Firms offer promotions in order to:
- a. build brand loyalty
  - b. appeal to the price-sensitive consumers
  - c. increase the demand elasticities of their loyal customers
  - d. shift the market supply curve to the left
  - e. shift the market demand curve to the left

ANS: B                      PTS: 1

49. A monopsonist faces a market labor supply curve  $w = 40 + 2L$ , where  $w$  is the wage rate and  $L$  is the number of workers employed. If the firm's labor demand curve is  $w = 200 - L$ , what is the optimal wage rate and quantity of labor employed?
- a.  $w = 146.7$  and  $L = 53.3$
  - b.  $w = 168$  and  $L = 32$
  - c.  $w = 104$  and  $L = 32$
  - d.  $w = 40$  and  $L = 160$
  - e.  $w = 32$  and  $L = 168$

ANS: C                      PTS: 1

50. A monopsonist faces a market labor supply curve  $w = 20 + L$ , where  $w$  is the wage rate and  $L$  is the number of workers employed. If the firm's labor demand curve is  $w = 200 - 4L$ , what is the optimal wage rate and quantity of labor employed?
- a.  $w = 50$  and  $L = 30$
  - b.  $w = 56$  and  $L = 36$
  - c.  $w = 80$  and  $L = 30$
  - d.  $w = 104$  and  $L = 32$
  - e. none of the above

ANS: A                      PTS: 1

## Chapter 8

### Managerial Use of Price Discrimination

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#### MULTIPLE CHOICE

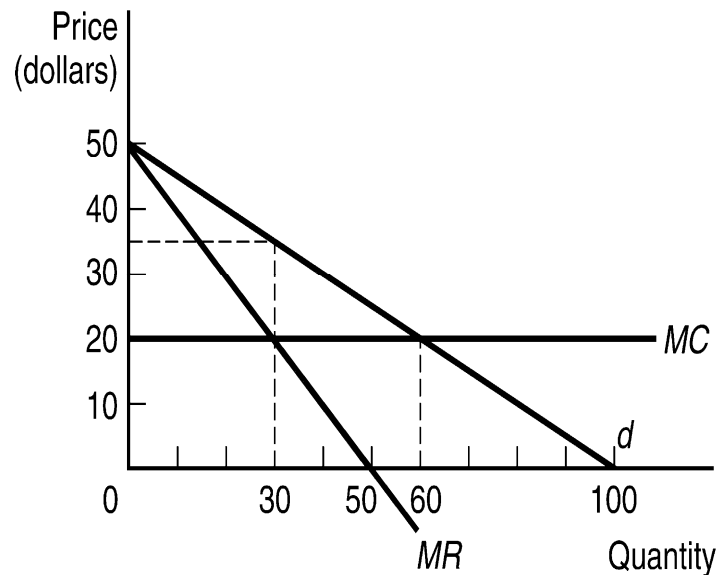
1. When a monopolist requires a customer to pay an initial fee for the right to buy a product as well as a usage fee for each unit of the product bought, this is known as a(n):
- a. bundling contract
  - b. price differentiation
  - c. oligopolistic device
  - d. two-part tariff
  - e. maximizing device

ANS: D                      PTS: 1

2. Price discrimination is defined as:
- a. selling a product at the same price to each and every consumer
  - b. selling a product at more than one price
  - c. selling a product at its marginal cost plus a markup
  - d. selling more than one version of a product
  - e. producing goods and services for sale within the firm

ANS: B                      PTS: 1

Please use the diagram below to answer questions 3–6.



3. The optimal level of output and price for the profit-maximizing monopolist would be:

- a.  $Q = 30$  and  $P = \$35$
- b.  $Q = 60$  and  $P = \$20$
- c.  $Q = 30$  and  $P = \$20$
- d.  $Q = 100$  and  $P = \$35$
- e. none of the above

ANS: A                      PTS: 1

4. If the monopolist shown in the diagram could practice first-degree price discrimination, consumer surplus would be:

- a. \$0
- b. \$225
- c. \$450
- d. \$900
- e. \$1,200

ANS: A                      PTS: 1

5. If the monopolist shown in the diagram could practice first-degree price discrimination, producer surplus would be:
- a. \$0
  - b. \$225
  - c. \$450
  - d. \$900
  - e. \$1,200

ANS: D                      PTS: 1

6. If the monopolist shown in the diagram could implement a two-part tariff, the entry fee would be:
- a. \$0
  - b. \$225
  - c. \$450
  - d. \$900
  - e. \$1,200

ANS: D                      PTS: 1

7. A firm with production located in a poor Georgia town sells toys locally for \$10 each and ships the same toys to sell in a wealthy North Carolina town for \$15 each. They are not price discriminating if:
- a. laws in Georgia allow it
  - b. laws in North Carolina allow it
  - c. total advertising costs are \$5 per unit
  - d. total transportation costs are \$5 per unit
  - e. consumers in North Carolina would pay more than \$15 for the toys

ANS: D                      PTS: 1



8. If a firm supplies separable markets with price elasticities  $\eta_1$  and  $\eta_2$ , it should set prices  $P_1$  and  $P_2$  so that:
- a.  $P_1 \eta_1 = P_2 \eta_2$
  - b.  $P_1 / \eta_1 = P_2 / \eta_2$
  - c.  $P_1 (1 + 1/\eta_1) = P_2 (1 + 1/\eta_2)$
  - d.  $P_1 / (1 - 1/\eta_1) = P_2 / (1 - 1/\eta_2)$
  - e.  $P_1 = 1 - 1/\eta_1$  and  $P_2 = 1 - 1/\eta_2$

ANS: C                      PTS: 1

9. If a firm supplies separable markets with price elasticities  $\eta_1 = -3$  and  $\eta_2 = -2$ , it should set prices  $P_1$  and  $P_2$  so that:
- a.  $P_1 = P_2$
  - b.  $3P_1 = 2P_2$
  - c.  $2P_1 = 3P_2$
  - d.  $2/3P_1 = 1/2P_2$
  - e.  $2P_1 = 2/3P_2$

ANS: D                      PTS: 1

10. When Pan United Airlines gives a \$400 fare discount to persons with student IDs, they are practicing:
- a. first-degree price discrimination
  - b. second-degree price discrimination
  - c. third-degree price discrimination
  - d. markup pricing
  - e. tying

ANS: C                      PTS: 1

11. When Exxoff Oil Corporation offers discounts based on credit card records of gas quantities purchased, they are practicing:
- a. first-degree price discrimination
  - b. second-degree price discrimination
  - c. third-degree price discrimination
  - d. markup pricing
  - e. tying

ANS: B                      PTS: 1

12. Cereal manufacturers' use of coupons can be partially explained by:
- a. first-degree price discrimination
  - b. second-degree price discrimination
  - c. third-degree price discrimination
  - d. markup pricing
  - e. tying

ANS: C                      PTS: 1

13. Gliberace's Fashion Accessories of Las Vegas produces gemstone-encrusted formal wear for sale in Los Angeles and San Francisco subject to total cost  $TC = 100 + 5(Q_{LA} + Q_{SF})$ . Demand for Gliberace's stones in the two cities is given by  $Q_{LA} = 70 - 2P_{LA}$  and  $Q_{SF} = 55 - P_{SF}$ . If Gliberace price discriminates between the two cities, what will its maximum profits be?
- a. \$750
  - b. \$825
  - c. \$1,075
  - d. \$975
  - e. \$1,175

ANS: D                      PTS: 1

14. Gliberace's Fashion Accessories of Las Vegas produces gemstone-encrusted formal wear for sale in Los Angeles and San Francisco subject to total cost  $TC = 100 + 6(Q_{LA} + Q_{SF})$ . Demand for Gliberace's stones in the two cities is given by  $Q_{LA} = 70 - 2P_{LA}$  and  $Q_{SF} = 50 - P_{SF}$ . If Gliberace cannot price discriminate between the two cities, and so charges the same price in each, how many stones will it sell in Los Angeles?

- a. 12
- b. 15
- c. 18
- d. 21
- e. 24

ANS: E                      PTS: 1

15. Gliberace's Fashion Accessories of Las Vegas produces gemstone-encrusted formal wear for sale in Los Angeles and San Francisco subject to total cost  $TC = 100 + 5(Q_{LA} + Q_{SF})$ . Demand for Gliberace's stones in the two cities is given by  $Q_{LA} = 70 - 2P_{LA}$  and  $Q_{SF} = 55 - P_{SF}$ . If Gliberace price discriminates between the two cities, how many stones will it sell in Los Angeles?

- a. 30
- b. 36
- c. 38
- d. 43
- e. 48

ANS: A                      PTS: 1

16. Xenophobic Car Palace (XCP) purchases late-model domestic automobiles at wholesale auctions and sells them in Charleston and Savannah. XCP's total cost is given by  $TC = 100(Q_C + Q_S) + (Q_C + Q_S)^2$ . The demand in each city for such gems is given by  $Q_C = 1,000 - 2P_C$  and  $Q_S = 500 - P_S$ . If XCP price discriminates between the two cities, how many cars will it sell in Charleston and Savannah?
- a.  $Q_C = 100, Q_S = 50$
  - b.  $Q_C = 50, Q_S = 100$
  - c.  $Q_C = 75, Q_S = 75$
  - d.  $Q_C = 100, Q_S = 100$
  - e.  $Q_C = 50, Q_S = 50$

ANS: A                      PTS: 1

17. Xenophobic Car Palace purchases late-model domestic automobiles at wholesale auctions and sells them in Charleston and Savannah. XCP's total cost is given by  $TC = 100(Q_C + Q_S) + (Q_C + Q_S)^2$ . The demand in each city for such gems is given by  $Q_C = 1,000 - 2P_C$  and  $Q_S = 500 - P_S$ . If XCP price discriminates between the two cities, by how much are its maximized profits greater than if it did not price discriminate?
- a. \$0
  - b. \$7,500
  - c. \$15,000
  - d. \$22,500
  - e. \$30,000

ANS: A                      PTS: 1

18. Crusty Cakes sells donuts in Easttown and Westtown. Its total costs are given by  $TC = 10(Q_E + Q_W)$ . The demand in each neighborhood is given by  $Q_E = 100 - 2P_E$  and  $Q_W = 100 - P_W$ . If Crusty price discriminates between the two neighborhoods, how much are its maximized profits?
- a. \$850
  - b. \$1,200
  - c. \$2,475
  - d. \$2,825
  - e. \$3,250

ANS: D                      PTS: 1

19. When a utility charges homeowners less than big industrial users, it is practicing:
- a. first-degree price discrimination
  - b. fourth-degree price discrimination
  - c. third-degree price discrimination
  - d. markup pricing
  - e. tying

ANS: C                      PTS: 1

20. Women are often charged more than men for haircuts performed by the same haircutter. This is not considered price discrimination because:
- a. women receive more consumer surplus from haircuts than men receive
  - b. haircutters claim to spend more time on women's hair, raising the cost of the haircut to the firm
  - c. firms make up the extra cost to consumers by giving women free samples of products
  - d. men receive more consumer surplus from haircuts than women receive
  - e. women have a lower price elasticity of demand for haircuts

ANS: B

PTS: 1

21. The per-week demand for use of the Golden Gate Bridge in San Francisco is  $P = 12 - 0.15Q$  during peak traffic periods and  $P = 9 - 0.1Q$  during off-peak hours, where  $Q$  is the number of cars crossing the bridge in thousands and  $P$  is the toll in dollars. If the marginal congestion cost of using the bridge is  $MC = 5 + 0.2Q$ , what is the optimal peak load toll for crossing the bridge?
- a. 6.5
  - b. 8.0
  - c. 8.7
  - d. 9.9
  - e. 10.6

ANS: D

PTS: 1

22. The per-week demand for use of the Golden Gate Bridge in San Francisco is  $P = 12 - 0.15Q$  during peak traffic periods and  $P = 9 - 0.1Q$  during off-peak hours, where  $Q$  is the number of cars crossing the bridge in thousands and  $P$  is the toll in dollars. If the marginal congestion cost of using the bridge is  $MC = 5 + 0.2Q$ , what is the optimal off-peak load toll for crossing the bridge?
- a. 6.5
  - b. 8.0
  - c. 8.7
  - d. 9.9
  - e. 10.6

ANS: B                      PTS: 1

23. The per-week demand for use of the Golden Gate Bridge in San Francisco is  $P = 13 - 0.15Q$  during peak traffic periods and  $P = 10 - 0.1Q$  during off-peak hours, where  $Q$  is the number of cars crossing the bridge in thousands and  $P$  is the toll in dollars. If the marginal congestion cost of using the bridge is  $MC = 5 + 0.2Q$ , what is the optimal peak load toll for crossing the bridge?
- a. 6.5
  - b. 8.0
  - c. 8.7
  - d. 9.9
  - e. 10.6

ANS: E                      PTS: 1

24. The per-week demand for use of the Golden Gate Bridge in San Francisco is  $P = 13 - 0.15Q$  during peak traffic periods and  $P = 7 - 0.1Q$  during off-peak hours, where  $Q$  is the number of cars crossing the bridge in thousands and  $P$  is the toll in dollars. If the marginal congestion cost of using the bridge is  $MC = 5 + 0.2Q$ , what is the optimal off-peak load toll for crossing the bridge?
- a. 6.5
  - b. 8.0
  - c. 8.7
  - d. 9.9
  - e. 10.6

ANS: A                      PTS: 1

25. When an electrical utility charges higher prices during the day than at night, it is practicing:
- a. peak load pricing
  - b. first-degree price discrimination
  - c. second-degree price discrimination
  - d. third-degree price discrimination
  - e. fourth-degree price discrimination

ANS: A                      PTS: 1

26. When a movie theater charges a higher price during the evening than during the day, it is practicing:
- a. peak load pricing
  - b. first-degree price discrimination
  - c. second-degree price discrimination
  - d. third-degree price discrimination
  - e. fourth-degree price discrimination

ANS: D                      PTS: 1



27. The demand for health club services is  $Q = 350 - 2P$  and the marginal cost of providing these services is  $MC = 110 + 2Q$ . If a two-part tariff pricing system is used, what is the optimal price and quantity combination?
- a.  $P = 52$  and  $Q = 240$
  - b.  $P = 199$  and  $Q = 52$
  - c.  $P = 26$  and  $Q = 162$
  - d.  $P = 162$  and  $Q = 26$
  - e. none of the above

ANS: C                      PTS: 1

28. The demand for health club services is  $Q = 100 - 2P$  and the marginal cost of providing these services is  $MC = -110 + 2Q$ . If a two-part tariff pricing system is used, what is the optimal fixed fee?
- a. 1,555
  - b. 2,624
  - c. 10,264
  - d. 12,069
  - e. none of the above

ANS: D                      PTS: 1

29. The demand for health club services is  $Q = 100 - 2P$  and the marginal cost of providing these services is  $MC = -110 + 2Q$ . If a two-part tariff pricing system is used, what is the optimal price and quantity combination?
- a.  $P = 18$  and  $Q = 64$
  - b.  $P = 199$  and  $Q = 52$
  - c.  $P = 26$  and  $Q = 162$
  - d.  $P = 162$  and  $Q = 26$
  - e. none of the above

ANS: A                      PTS: 1

30. The demand for health club services is  $Q = 100 - 2P$  and the marginal cost of providing these services is  $MC = -110 + 2Q$ . If a two-part tariff pricing system is used, what is the optimal fixed fee?
- a. 1,555
  - b. 2,624
  - c. 10,264
  - d. 12,069
  - e. none of the above

ANS: B                      PTS: 1

## Chapter 9

### Bundling and Intrafirm Pricing

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#### MULTIPLE CHOICE

1. Products should be regarded as a bundle when they are:

- a. produced in variable proportions
- b. consumed in variable proportions
- c. produced in fixed proportions
- d. consumed in fixed proportions
- e. interrelated in competitive markets

ANS: C

PTS: 1

2. When the NCAA basketball tournament will only sell tickets to all three games held at a given site as a package, it is practicing:

- a. first-degree price discrimination
- b. second-degree price discrimination
- c. third-degree price discrimination
- d. markup pricing
- e. tying

ANS: E

PTS: 1

3. Tying can sometimes be justified as helping consumers by:

- a. brand name quality protection
- b. different consumer evaluations of the main good
- c. transportation costs
- d. standard industry practice
- e. offsetting price reductions in the main good

ANS: A

PTS: 1

4. If a firm has a marketing division and a production division with increasing costs, and a competitive external market for the production division's output exists, then the marketing division should always buy:
- a. from the production division at production's price
  - b. all it wants at the external market price from the production division
  - c. only externally
  - d. all the production division can produce at the external price
  - e. what it wants at the external market price, first from whatever the production division wishes to sell and then, if necessary, externally

ANS: E                      PTS: 1

5. A firm has a division that produces  $X$ , whose total costs are  $TC = 10 + Q^2$  (where  $Q$  is the quantity of  $X$ ). The marketing division adds its own total costs of  $5 + 3Q$ . In the competitive external market for  $X$  the wholesale price is \$10. The transfer price of  $X$  should be:
- a. \$2
  - b. \$5
  - c. \$10
  - d. \$12
  - e. \$15

ANS: C                      PTS: 1

6. A firm has a division which produces chemical  $Y$ , whose average total costs are  $ATC = 50 + 2Q$  (where  $Q$  is the quantity of  $Y$ ), and a marketing division which adds its own average total costs of  $ATC = 20 + 3Q$ . There is no external market price of  $Y$ . The transfer price of  $Y$  should be:
- a. \$50
  - b.  $4Q$
  - c.  $50 + 4Q$
  - d.  $2Q$
  - e.  $5Q$

ANS: C                      PTS: 1

7. When a monopolist requires a customer to buy additional products in order to buy one of its products, this is known as a(n):
- a. bundling contract
  - b. price differentiation
  - c. oligopolistic device
  - d. two-part tariff
  - e. maximizing device

ANS: A                      PTS: 1

8. If Chip and Cathy have different valuations on dancing and dinner as in the table below, what is the maximum profit Sammy can extract from Chip and Cathy for an evening's entertainment at Sammy's dinner theater if Sammy's marginal cost is \$25 for dinner and \$5 for dancing per person?

	<u>Chip</u>	<u>Cathy</u>
Dinner	\$40	\$30
Dancing	\$35	\$50

- a. \$60
- b. \$70
- c. \$80
- d. \$90
- e. \$100

ANS: D

PTS: 1

9. There are 12,000 fans attending a basketball tournament featuring three regional powerhouses in Charlotte, North Carolina. There are 4,000 of each of three types of fans, identified by the school for which they cheer. The fans value a ticket to see a game according to which teams are competing as shown in the table below. The stadium holds 12,000, and the marginal cost of seating another viewer is zero. What is the change in the maximum profits that organizers can earn for the tourney if they sell the three games as a package instead of as individual games?

Game Participants			
Fan Type	SH-KC	SH-WF	KC-WF
Scrapple Hill	\$30	\$25	\$ 5
Kudzu College	25	5	30
Worst Fake	5	30	25

- a. \$20,000
- b. \$120,000
- c. \$160,000
- d. \$200,000
- e. \$220,000

ANS: B                      PTS: 1

10. The Two Stage Photo Company has a division for each stage of photo processing. There is no external market for the first stage's output. For a fixed quantity of photo processing, the transfer price should depend on:
- a. whatever management wants
  - b. marginal costs at stage 1 only
  - c. marginal costs at each stage
  - d. average costs at stage 1 only
  - e. average costs at each stage

ANS: B                      PTS: 1

11. If a firm uses optimal transfer pricing between production division A and marketing division B, and a competitive external market for the output of division A exists, then production division A will surely:
- a. make positive economic profits
  - b. make normal economic profits
  - c. sell at marginal costs
  - d. sell at the external price
  - e. sell at less than the external price

ANS: C                      PTS: 1

12. Transfer prices are needed when:
- a. firms purchase raw materials from other firms
  - b. consumers sell goods and services to one another
  - c. markets must be stimulated within firms
  - d. products are bundled and sold as a package
  - e. firms charge different prices to customers where there are no differences in production costs

ANS: C                      PTS: 1



13. The transfer price of an upstream product should always equal the market price when:
- a. there is an outside market for the upstream product
  - b. the price elasticity of demand for the upstream product is greater than 1 (in absolute value)
  - c. there is a perfectly competitive market for the downstream product
  - d. the marginal cost of the downstream product is greater than 1
  - e. the firm is a monopolist in its downstream market

ANS: A                      PTS: 1

Please use the following information to answer questions 14–17:

The XYZ Steel Company produces its own coal for use in its production facility. The demand for steel is given by  $P_s = 500 - 2Q_s$  and the total cost of producing steel is given by  $TC_s = 100Q_s$ , where  $Q_s$  is tons of steel per week. The price of coal in a perfectly competitive market outside the firm is \$250 per ton, and the total cost of producing coal is given by  $TC_c = 40 + 5Q_c^2$ , where  $Q_c$  is tons of coal per week.

14. How much coal should the XYZ Company produce?
- a. 2 tons
  - b. 25 tons
  - c. 100 tons
  - d. 200 tons
  - e. 250 tons

ANS: B                      PTS: 1

15. How much steel should the XYZ Company produce?

- a. 6.25 tons
- b. 18.75 tons
- c. 25 tons
- d. 43.75 tons
- e. 75 tons

ANS: B                      PTS: 1

16. How much should XYZ steel charge itself for coal?

- a. \$250 per ton
- b. \$350 per ton
- c. \$500 per ton
- d. \$750 per ton
- e. \$1,000 per ton

ANS: A                      PTS: 1

17. How much coal will XYZ sell outside the firm?

- a. 6.25 tons
- b. 18.75 tons
- c. 25 tons
- d. 43.75 tons
- e. 75 tons

ANS: A                      PTS: 1

18. Play It Again Sam is a producer of high-end CD burners. They require customers to purchase high-quality blank CDs from them in order to maintain warranty agreements. This is an example of a:
- a. bundle
  - b. two-part tariff
  - c. tying contract
  - d. transfer price
  - e. joint product

ANS: C                      PTS: 1

19. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for two restaurants (1 and 2) are given in the table below. What is the maximum revenue that can be generated by setting a separate price for each restaurant?

Class	Restaurant	
	1	2
<i>A</i>	12	5
<i>B</i>	7	10
<i>C</i>	9	6

- a. \$49
- b. \$45
- c. \$36
- d. \$34
- e. \$30

ANS: C                      PTS: 1

20. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for two restaurants (1 and 2) are given in the table below. What is the maximum revenue that can be generated by setting a bundled price for the two restaurants?

Class	Restaurant	
	1	2
<i>A</i>	12	5
<i>B</i>	7	10
<i>C</i>	9	6

- a. \$49
- b. \$45
- c. \$36
- d. \$34
- e. \$30

ANS: B                      PTS: 1

21. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for two restaurants (1 and 2) are given in the table below. What is the maximum revenue that can be generated by setting a separate price for each restaurant?

Class	Restaurant	
	1	2
<i>A</i>	4	16
<i>B</i>	12	10
<i>C</i>	11	9

- a. \$49
- b. \$45
- c. \$36
- d. \$84
- e. \$60

ANS: A                      PTS: 1

22. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for two restaurants (1 and 2) are given in the table below. What is the maximum revenue that can be generated by setting a bundled price for the two restaurants?

Class	Restaurant	
	1	2
<i>A</i>	4	16
<i>B</i>	12	10
<i>C</i>	11	9

- a. \$49
- b. \$45
- c. \$36
- d. \$84
- e. \$60

ANS: D                      PTS: 1

23. When consumers can purchase a set of goods as a bundle or separately, then the seller is engaging in:
- a. simple bundling
  - b. complex bundling
  - c. performance bundling
  - d. mixed bundling
  - e. engaged bundling

ANS: D                      PTS: 1

24. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for three restaurants (1, 2, and 3) are given in the table below. What is the maximum revenue that can be generated by setting a bundled price for the three restaurants?

Class	Restaurant		
	1	2	3
<i>A</i>	12	5	8
<i>B</i>	7	10	10
<i>C</i>	9	15	6

- a. 59
- b. 75
- c. 81
- d. 89
- e. none of the above

ANS: B                      PTS: 1

25. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for three restaurants (1, 2, and 3) are given in the table below. What is the maximum revenue that can be generated by setting a separate price for each of the three restaurants?

Class	Restaurant		
	1	2	3
<i>A</i>	12	5	8
<i>B</i>	7	10	10
<i>C</i>	9	15	6

- a. 59
- b. 75
- c. 81
- d. 89
- e. none of the above

ANS: A                      PTS: 1

26. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for three restaurants (1, 2, and 3) are given in the table below. What is the maximum revenue that can be generated by setting a bundled price for the three restaurants?

Class	Restaurant		
	1	2	3
<i>A</i>	12	5	7
<i>B</i>	7	11	20
<i>C</i>	9	15	6

- a. 46
- b. 52
- c. 63
- d. 72
- e. 84

ANS: D                      PTS: 1

27. The reservation prices, in dollars, for three classes of demanders (*A*, *B*, and *C*) for three restaurants (1, 2, and 3) are given in the table below. What is the maximum revenue that can be generated by setting a separate price for each of the three restaurants?

Class	Restaurant		
	1	2	3
<i>A</i>	12	5	7
<i>B</i>	7	11	20
<i>C</i>	9	15	6

- a. 46
- b. 52
- c. 63
- d. 72
- e. 84

ANS: C                      PTS: 1

28. A firm with marginal cost  $MC = 2 + Q$  plans to practice price discrimination by charging different prices to two separate types of consumers that have demand curves  $P_1 = 10 - 0.5Q_1$  and  $P_2 = 20 - 1.5Q_2$ . What price and quantity will be optimal on market 1?

- a.  $P_1 = 8$  and  $Q_1 = 4$
- b.  $P_1 = 9$  and  $Q_1 = 2$
- c.  $P_1 = 7$  and  $Q_1 = 6$
- d.  $P_1 = 6$  and  $Q_1 = 8$
- e. none of the above

ANS: B                      PTS: 1

29. A firm with marginal cost  $MC = 2 + Q$  plans to practice price discrimination by charging different prices to two separate types of consumers that have demand curves  $P_1 = 10 - 0.5Q_1$  and  $P_2 = 20 - 1.5Q_2$ . What price and quantity will be optimal on market 2?

- a.  $P_2 = 14$  and  $Q_2 = 4$
- b.  $P_2 = 11$  and  $Q_2 = 6$
- c.  $P_2 = 17$  and  $Q_2 = 2$
- d.  $P_2 = 8$  and  $Q_2 = 8$
- e. none of the above

ANS: A                      PTS: 1



30. A firm with marginal cost  $MC = 1 + Q$  plans to practice price discrimination by charging different prices to two separate types of consumers that have demand curves  $Q_1 = 10 - 0.5P_1$  and  $Q_2 = 20 - 1.5P_2$ . What is the total quantity that the firm will sell on both markets?
- a. 4
  - b. 5
  - c. 6
  - d. 7
  - e. 8

ANS: D                      PTS: 1

## Chapter 10

### Oligopoly

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#### MULTIPLE CHOICE

1. If duopolists engage in price competition, the result is:
  - a. always zero profits
  - b. always zero profits unless the firms produce differentiated products
  - c. always zero profits unless the two goods are perfect substitutes
  - d. always zero profits unless the two firms collude
  - e. never zero profits

ANS: B                      PTS: 1

2. Duopolists  $A$  and  $B$  face the following demand curves:  $Q_A = 100 - 2P_A + 5P_B$  and  $Q_B = 120 - 3P_B + 4P_A$ . If both firms have zero marginal cost, what are the profit-maximizing prices and quantities?
  - a.  $P_A = 300, Q_A = 600, P_B = 220, Q_B = 660$
  - b.  $P_A = 200, Q_A = 400, P_B = 200, Q_B = 400$
  - c.  $P_A = 200, Q_A = 700, P_B = 200, Q_B = 320$
  - d.  $P_A = 300, Q_A = 750, P_B = 250, Q_B = 570$
  - e.  $P_A = 300, Q_A = 1250, P_B = 350, Q_B = 270$

ANS: A                      PTS: 1

3. Duopolists  $A$  and  $B$  face the following demand curves:  $Q_A = 100 - 2P_A + 2P_B$  and  $Q_B = 100 - 2P_B + 2P_A$ . If both firms have zero marginal cost, what are the profit-maximizing prices and quantities?
- a.  $P_A = 100, Q_A = 60, P_B = 80, Q_B = 140$
  - b.  $P_A = 25, Q_A = 100, P_B = 25, Q_B = 100$
  - c.  $P_A = 50, Q_A = 80, P_B = 40, Q_B = 120$
  - d.  $P_A = 50, Q_A = 100, P_B = 50, Q_B = 100$
  - e.  $P_A = 60, Q_A = 60, P_B = 40, Q_B = 140$

ANS: D                      PTS: 1

4. A market where there are only a few sellers is known as:
- a. perfectly competitive
  - b. monopolistically competitive
  - c. oligopolistic
  - d. monopolistic
  - e. cartelized

ANS: C                      PTS: 1

5. In the model of oligopoly, there:
- a. are many firms producing differentiated products
  - b. is one firm producing undifferentiated products
  - c. are a few firms producing differentiated or undifferentiated products
  - d. are many firms producing undifferentiated products
  - e. is one firm producing a highly differentiated product

ANS: C                      PTS: 1

6. Duopolists  $A$  and  $B$  face the following demand curves:  $Q_A = 120 - 2P_A + P_B$  and  $Q_B = 120 - 2P_B + P_A$ . If both firms have zero marginal cost and they form a cartel, what is the profit-maximizing price and quantity?
- a.  $P = 30, Q = 180$
  - b.  $P = 40, Q = 160$
  - c.  $P = 60, Q = 120$
  - d.  $P = 80, Q = 80$
  - e.  $P = 75, Q = 90$

ANS: C                      PTS: 1

7. Duopolists  $A$  and  $B$  face the following demand curves:  $Q_A = 150 - 5P_A + 4P_B$  and  $Q_B = 150 - 5P_B + 4P_A$ . If both firms have zero marginal cost and they form a cartel, what is the profit-maximizing price and quantity?
- a.  $P = 25, Q = 250$
  - b.  $P = 40, Q = 100$
  - c.  $P = 60, Q = 120$
  - d.  $P = 80, Q = 80$
  - e.  $P = 75, Q = 150$

ANS: E                      PTS: 1

8. In the United States most cartels were declared illegal by the:
- a. Sherman Antitrust Act
  - b. Interstate Commerce Commission
  - c. Supreme Court
  - d. Constitution
  - e. Declaration of Independence

ANS: A                      PTS: 1

9. Two firms ( $A$  and  $B$ ) have marginal costs  $MC_A$  and  $MC_B$ , marginal revenues  $MR_A$  and  $MR_B$ , and market marginal revenue  $MR$ . If both firms produce as a cartel, they should produce so that:

- a.  $MC_A = MC_B = MR$
- b.  $MC_A = MR_A$  and  $MC_B = MC_B$
- c.  $MC_A + MC_B = MR$
- d.  $MC_A + MC_B = MR_A + MR_B$ , not necessarily  $MC_A = MR_A$
- e.  $MC_A = MC_B = MR_A + MR_B$

ANS: A                      PTS: 1

10. If a cartel is working properly, its firms will likely be producing where ( $MC_i$  is each firm  $i$ 's marginal cost,  $MR$  is market marginal revenue, and  $P$  is price):

- a.  $MC_i = MR$
- b.  $MC_i > MR$
- c.  $MC_i < MR$
- d.  $P = MR$
- e.  $P < MR$

ANS: A                      PTS: 1

11. While a cartel is holding together, its individual members' demand curves are likely to be:

- a. significantly elastic
- b. significantly inelastic
- c. close to unitary in elasticity
- d. kinked
- e. upward-sloping

ANS: A                      PTS: 1

12. The OPEC oil cartel lost its market power and world oil prices fell in the 1980s because:
- a. OPEC expanded its membership to include all international producers of oil
  - b. world consumers boycotted OPEC oil
  - c. a limit pricing strategy was pursued by some members of the cartel
  - d. members began to cheat on cartel agreements
  - e. the United States refused to buy oil from OPEC

ANS: D                      PTS: 1

13. Oligopoly is a market structure that necessarily has:
- a. cartels
  - b. a large number of firms with homogeneous products
  - c. a large number of firms with slightly different products
  - d. a small number of firms but more than one
  - e. only one firm

ANS: D                      PTS: 1

14. Oligopoly is the only market structure in which one finds:
- a. barriers to entry
  - b. competing brand names
  - c. minimum average total cost pricing
  - d. advertising
  - e. firm interdependence

ANS: E                      PTS: 1

15. Cartels can only exist:
- a. in oligopoly markets
  - b. when products are homogeneous
  - c. when products are not homogeneous
  - d. in countries where they are legal
  - e. when demand curves are perfectly inelastic

ANS: A                      PTS: 1

16. If Gulfstream and Bombardier, both producers of upscale jet airplanes, were to collude rather than compete, consumers could expect:
- a. higher prices and lower quantities offered for sale
  - b. lower prices and lower quantities offered for sale
  - c. higher prices and higher quantities offered for sale
  - d. each firm to cheat on the cartel agreement
  - e. one firm to emerge as the price leader in the oligopoly

ANS: A                      PTS: 1

17. When an economist says an oligopoly has a “small” number of firms, the economist means:
- a. exactly 1
  - b. exactly 2, 3, or 4
  - c. few enough to allow for interdependence
  - d. few enough to allow for perfectly inelastic demand curves
  - e. few enough to allow for four stages of industry development

ANS: C                      PTS: 1

18. What is the advantage to a particular firm of cheating on an otherwise effective cartel?
- a. The industry can then act like a monopoly.
  - b. It decreases risk.
  - c. It enhances credibility.
  - d. It always pays in the short run and may pay in the long run.
  - e. It always pays in the long run and may pay in the short run.

ANS: D                      PTS: 1

19. A cartel is:
- a. the name for firms in any oligopoly market
  - b. a collusive organization
  - c. an oligopolist that competes with other oligopolists
  - d. a group of firms using price leadership
  - e. a group of firms using preemptive strategies

ANS: B                      PTS: 1

20. Profit-maximizing cartels choose price equal to:
- a. marginal cost
  - b. average total cost of the last unit
  - c. marginal revenue
  - d. the monopolistically competitive price
  - e. the monopoly price

ANS: E                      PTS: 1



21. Profit-maximizing cartels allocate sales according to:
- a. precartel sales
  - b. potential to cheat on the cartel
  - c. geographic location
  - d. quantities where all firms' marginal revenues are equal
  - e. quantities where all firms' marginal costs are equal

ANS: E                      PTS: 1

22. Whopper Stoppers Inc. chooses a price for its sink stoppers, and other firms always charge the same price. Whopper Stoppers Inc. is:
- a. colluding
  - b. losing money in the long run
  - c. threatening competitors
  - d. a price leader
  - e. preempting the competitors

ANS: D                      PTS: 1

23. Two local ready-mix cement manufacturers, Here and There, have combined demand given by  $Q = 105 - P$ . Their total costs are given by  $TC_{\text{Here}} = 5Q_{\text{Here}} + 0.5Q_{\text{Here}}^2$  and  $TC_{\text{There}} = 5Q_{\text{There}} + 0.5Q_{\text{There}}^2$ . If they successfully collude, their total output will be:
- a. 10 units
  - b. 20 units
  - c. 40 units
  - d. 50 units
  - e. 66.67 units

ANS: C                      PTS: 1

24. Two local ready-mix cement manufacturers, Here and There, have combined demand given by  $Q = 105 - P$ . Their total costs are given by  $TC_{\text{Here}} = 5Q_{\text{Here}} + 0.5Q_{\text{Here}}^2$  and  $TC_{\text{There}} = 5Q_{\text{There}} + 0.5Q_{\text{There}}^2$ . If they successfully collude, their maximum joint profits will be:
- a. \$500
  - b. \$1,000
  - c. \$1,600
  - d. \$2,000
  - e. \$2,500

ANS: D                      PTS: 1

25. Two local ready-mix cement manufacturers, Here and There, have combined demand given by  $Q = 105 - P$ . Their total costs are given by  $TC_{\text{Here}} = 5Q_{\text{Here}} + 0.5Q_{\text{Here}}^2$  and  $TC_{\text{There}} = 5Q_{\text{There}} + 0.5Q_{\text{There}}^2$ . If they cannot successfully collude and instead produce where the market price equals marginal cost, their total output will be:
- a. 50
  - b. 60
  - c. 66.67
  - d. 75
  - e. 85

ANS: C                      PTS: 1

26. Two local ready-mix cement manufacturers, Here and There, have combined demand given by  $Q = 105 - P$ . Their total costs are given by  $TC_{\text{Here}} = 5Q_{\text{Here}} + 0.5Q_{\text{Here}}^2$  and  $TC_{\text{There}} = 5Q_{\text{There}} + 0.5Q_{\text{There}}^2$ . If they cannot successfully collude and instead produce where the market price equals marginal cost, each firm's profits will be:

- a. \$111.11
- b. \$222.22
- c. \$333.33
- d. \$444.44
- e. \$555.55

ANS: E                      PTS: 1

27. Two ready-to-eat breakfast cereal manufacturers, Lots of Sugar and Buckets of Goo, face combined demand for their products given by  $Q = 75 - P$ . Their total costs are given by  $TC_{\text{Lots of Sugar}} = 0.1Q_{\text{Lots of Sugar}}^2$  and  $TC_{\text{Buckets of Goo}} = 5Q_{\text{Buckets of Goo}}$ . If they successfully collude, their total profits will be:

- a. \$1,287.50
- b. \$1,250.00
- c. \$125.00
- d. \$62.50
- e. \$287.50

ANS: A                      PTS: 1

28. Two ready-to-eat breakfast cereal manufacturers, Lots of Sugar and Buckets of Goo, face combined demand for their products given by  $Q = 75 - P$ . Their total costs are given by  $TC_{\text{Lots of Sugar}} = 0.1Q^2_{\text{Lots of Sugar}}$  and  $TC_{\text{Buckets of Goo}} = 5Q_{\text{Buckets of Goo}}$ . If they cannot successfully collude and so produce where marginal cost equals price, their total profits will be:
- a. \$1,287.50
  - b. \$1,250.00
  - c. \$125.00
  - d. \$62.50
  - e. \$287.50

ANS: D                      PTS: 1

29. Two ready-to-eat breakfast cereal manufacturers, Lots of Sugar and Buckets of Goo, face combined demand for their products given by  $Q = 75 - P$ . Their total costs are given by  $TC_{\text{Lots of Sugar}} = 0.1Q^2_{\text{Lots of Sugar}}$  and  $TC_{\text{Buckets of Goo}} = 5Q_{\text{Buckets of Goo}}$ . If they successfully collude, their total output will be:
- a. 10 units
  - b. 25 units
  - c. 35 units
  - d. 45 units
  - e. 70 units

ANS: C                      PTS: 1

30. Two ready-to-eat breakfast cereal manufacturers, Lots of Sugar and Buckets of Goo, face combined demand for their products given by  $Q = 75 - P$ . Their total costs are given by  $TC_{\text{Lots of Sugar}} = 0.1Q^2_{\text{Lots of Sugar}}$  and  $TC_{\text{Buckets of Goo}} = 5Q_{\text{Buckets of Goo}}$ . If they cannot successfully collude and so produce where marginal cost equals price, their total output will be:
- a. 10 units
  - b. 25 units
  - c. 35 units
  - d. 45 units
  - e. 70 units

ANS: E                      PTS: 1

31. The price leadership strategy is most appropriate when a market is:
- a. perfectly competitive
  - b. monopolistic
  - c. monopolistic competitive
  - d. oligopolistic
  - e. any of the above

ANS: D                      PTS: 1

32. With the price leadership strategy:
- a. the many small firms set the market price, and the large firm must follow their behavior
  - b. the large firm sets the market price, and the many small firms must follow its behavior
  - c. firms collude to determine optimal price and output for the industry
  - d. firms determine price and output independent of one another
  - e. firms are not profit maximizers

ANS: B                      PTS: 1

33. Glyde Air Fresheners is the dominant firm in the solid room aromatizer industry, which has a total market demand given by  $Q = 80 - 2P$ . Glyde has competition from a fringe of four small firms that produce where their individual marginal costs equal the market price. The fringe firms each have total costs given by  $TC_i = 10Q_i + 2Q_i^2$ . If Glyde's total costs are given by  $TC_G = 100 + 6Q_G$ , what price should Glyde establish for air fresheners?

- a. \$10
- b. \$12
- c. \$14
- d. \$16
- e. \$18

ANS: E                      PTS: 1

34. Glyde Air Fresheners is the dominant firm in the solid room aromatizer industry, which has a total market demand given by  $Q = 80 - 2P$ . Glyde has competition from a fringe of four small firms that produce where their individual marginal costs equal the market price. The fringe firms each have total costs given by  $TC_i = 10Q_i + 2Q_i^2$ . If Glyde's total costs are given by  $TC_G = 100 + 6Q_G$ , what is Glyde's maximum profit?

- a. \$148
- b. \$184
- c. \$240
- d. \$332
- e. \$362

ANS: D                      PTS: 1

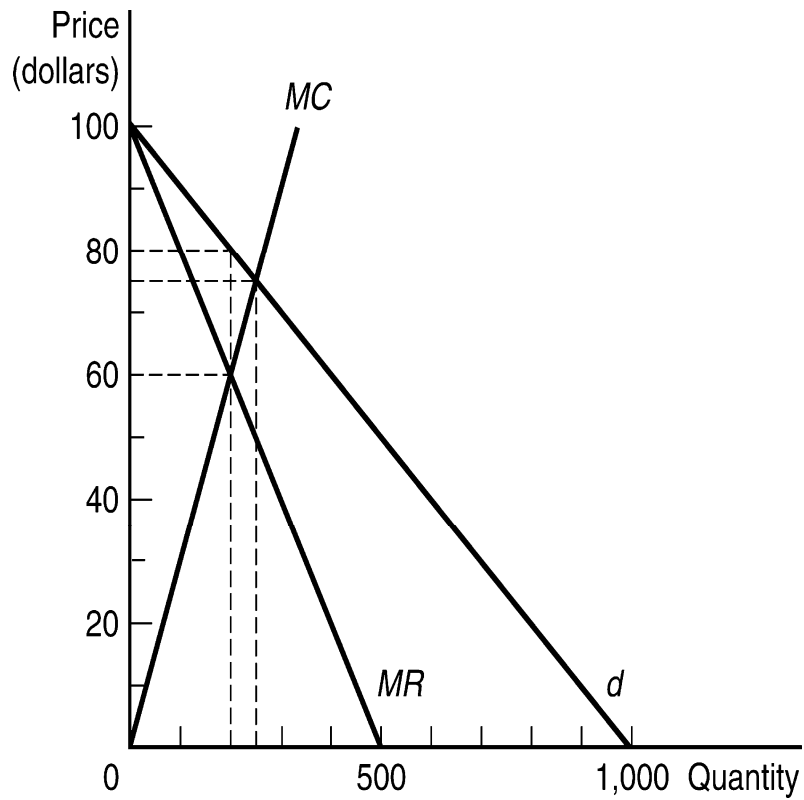
35. Glyde Air Fresheners is the dominant firm in the solid room aromatizer industry, which has a total market demand given by  $Q = 80 - 2P$ . Glyde has competition from a fringe of four small firms that produce where their individual marginal costs equal the market price. The fringe firms each have total costs given by  $TC_i = 10Q_i + 2Q_i^2$ . If Glyde's total costs are given by  $TC_G = 100 + 6Q_G$ , what are the total profits of the fringe firms?
- a. \$32
  - b. \$64
  - c. \$96
  - d. \$128
  - e. \$160

ANS: A                      PTS: 1

36. An oligopolist that faces a kinked demand curve is charging price  $P = 6$ . Demand for an increase in price is  $Q = 280 - 40P$  and demand for a decrease in price is  $Q = 100 - 10P$ . Over what range of marginal cost would the optimal price remain unchanged?
- a. between 3 and 5
  - b. between 2 and 5
  - c. between 1 and 4
  - d. between 2 and 4
  - e. between 3 and 4

ANS: B                      PTS: 1

Please use the diagram below to answer questions 37–39.



37. The optimal output and price for the cartel shown in the diagram is:

- a.  $Q = 200$  and  $P = \$80$
- b.  $Q = 260$  and  $P = \$60$
- c.  $Q = 250$  and  $P = \$80$
- d.  $Q = 500$  and  $P = \$75$
- e. none of the above

ANS: A

PTS: 1



38. If the cartel described by the diagram is broken up and forced into a perfectly competitive market situation, the optimal output and price will be:
- a.  $Q = 200$  and  $P = \$80$
  - b.  $Q = 260$  and  $P = \$60$
  - c.  $Q = 250$  and  $P = \$80$
  - d.  $Q = 250$  and  $P = \$75$
  - e.  $Q = 500$  and  $P = \$60$

ANS: D                      PTS: 1

39. If the market described in the diagram is dominated by a cartel, the loss in total surplus relative to perfectly competitive market conditions will be:
- a. \$500
  - b. \$1,000
  - c. \$2,000
  - d. \$3,000
  - e. \$4,000

ANS: A                      PTS: 1

40. Duopolists who compete on the basis of price will:
- a. end up with price equal to marginal cost
  - b. charge a price greater than marginal cost
  - c. charge a price less than marginal cost
  - d. price discriminate
  - e. charge a price equal to marginal revenue

ANS: A                      PTS: 1

Please use the following information to answer questions 41–43. Suppose duopolists in the market for spring water share a market demand curve given by  $P = 50 - 0.02Q$ , where  $P$  is the price per gallon and  $Q$  is thousands of gallons of water per day. The marginal cost of producing water is near zero for both firms.

41. If firm  $A$  produces zero, firm  $B$ 's best response is producing:

- a. 0 gallons of water per day
- b. 48 gallons of water per day
- c. 833 gallons of water per day
- d. 1,250 gallons of water per day
- e. 2,500 gallons of water per day

ANS: D                      PTS: 1

42. Optimal output for Cournot duopolists moving simultaneously is:

- a. 0 gallons of water per day per firm
- b. 625 gallons of water per day per firm
- c. 833 gallons of water per day per firm
- d. 1,250 gallons of water per day per firm
- e. 2,500 gallons of water per day per firm

ANS: C                      PTS: 1

43. If one firm acts as a first mover, the second firm will produce:

- a. 0 gallons of water per day per firm
- b. 625 gallons of water per day
- c. 833 gallons of water per day
- d. 1,250 gallons of water per day
- e. 2,500 gallons of water per day

ANS: A                      PTS: 1

44. The kinked demand model assumes firms will:

- a. ignore the price increases of rivals
- b. follow the price decreases of rivals
- c. ignore all price changes of rivals
- d. follow all price changes of rivals
- e. a and b

ANS: E                      PTS: 1

45. Sticky prices are an outcome of the kinked demand model because:

- a. firms in an oligopoly will collude to hold prices fixed
- b. marginal costs are constant in oligopolistic industries
- c. marginal costs can vary to some extent but firms will have no incentive to change their prices in oligopolistic industries
- d. demand is perfectly elastic in oligopolistic industries
- e. firms will set price equal to marginal cost in oligopolistic industries

ANS: C                      PTS: 1

## Chapter 11

### Game Theory

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#### MULTIPLE CHOICE

1. A player in a game theoretic model is:
  - a. anyone working for a firm that is operating strategically
  - b. a decision-making entity at a firm involved in a strategic game
  - c. a firm that is operating as a perfect competitor
  - d. a monopolist who produces a unique product with no close substitutes
  - e. a stockholder at a firm involved in a strategic game

ANS: B                      PTS: 1

2. The difference between game trees and decision trees is:
  - a. that game trees are not useful in strategic situations
  - b. that decision trees describe actions that depend on the behavior of rivals
  - c. that game trees have interactive payoffs
  - d. that decision trees are a function of many individuals and the state of nature
  - e. none of the above

ANS: C                      PTS: 1

3. A feasible strategy set is:
  - a. all actions with a nonzero probability of occurring
  - b. only actions that have a 50 percent or greater probability of occurring
  - c. actions that result in positive profits for the firm
  - d. actions that a decision maker is willing to take
  - e. the one outcome that the decision maker chooses

ANS: A                      PTS: 1

4. Game theory is useful for understanding oligopoly behavior because:
- a. there are so many firms in an oligopoly that all are price takers
  - b. firms must differentiate their products if they are to remain in business
  - c. firms recognize that because there are only a few firms mutual interdependence is important
  - d. without it firms would not be able to maintain cartel agreements
  - e. it allows firms to develop greater monopoly power

ANS: C                      PTS: 1

5. If a firm has a dominant strategy:
- a. its optimal strategy depends on the play of rivals
  - b. its optimal strategy is always the same, even if payoffs change
  - c. it is determined by the behavior of only one key rival
  - d. it receives the same profits regardless of the strategy of rivals
  - e. its optimal strategy is independent of the play of rivals

ANS: E                      PTS: 1

6. A Nash equilibrium occurs when:
- a. each player has a dominant strategy
  - b. each player receives the same final payoff
  - c. each player believes it is doing the best it can given the behavior of rivals
  - d. there is no dominant strategy for any player
  - e. payoffs are independent of the actions taken by rivals

ANS: C                      PTS: 1

7. If player 1 has a dominant strategy, then player 2:
- a. must also have a dominant strategy
  - b. may or may not have a dominant strategy, but will always lead to a Nash equilibrium
  - c. may or may not have a dominant strategy
  - d. will not be able to reach an optimal solution to the game
  - e. will block this dominant strategy and force player 1 to another strategy

ANS: C                      PTS: 1

8. A dominant strategy is one that:
- a. beats all others, regardless of the opponent's choice
  - b. beats all others, given the opponent's choice
  - c. is beaten by all others, regardless of the opponent's choice
  - d. is beaten by all others, given the opponent's choice
  - e. beats at least one other, given the opponent's choice

ANS: A                      PTS: 1

9. In a two-player game in which each player has four options, how many outcomes can there be?
- a. 1
  - b. 4
  - c. 8
  - d. 16
  - e. 64

ANS: D                      PTS: 1

10. By definition, a Nash equilibrium in a duopoly is the situation in which each player:
- a. plays a dominant strategy
  - b. plays the best strategy given the other's strategies
  - c. gets the highest possible payoff
  - d. gets the highest payoff possible without lowering the opponent's payoff
  - e. is happy with the outcome

ANS: B                      PTS: 1

11. Getting to a Nash equilibrium requires:
- a. each knowing the opponent's payoffs and cooperation
  - b. knowing the opponent's payoffs but not cooperation
  - c. cooperation but not knowing the opponent's payoffs
  - d. neither cooperation nor knowing the opponent's payoffs
  - e. either cooperation or knowing the opponent's payoffs, depending on the game

ANS: D                      PTS: 1

12. Given the following payoff matrix, who has a dominant strategy?

A's Strategies	B's strategies	
	Enter	Don't Enter
Raise price	(A gets 5, B gets 50)	(A gets 200, B gets 0)
Lower price	(A gets 20, B gets -50)	(A gets 50, B gets 0)

- a. it depends on what the other player does
- b. both players
- c. neither player
- d. A does; B doesn't
- e. B does; A doesn't

ANS: C                      PTS: 1

13. Given the following payoff matrix, what will  $A$ 's profits be?

$A$ 's Strategies	$B$ 's Strategies	
	Enter	Don't Enter
Raise price	( $A$ gets 1, $B$ gets 10)	( $A$ gets 4, $B$ gets 5)
Lower price	( $A$ gets 2, $B$ gets 6)	( $A$ gets 3, $B$ gets 4)

- a. 1
- b. 2
- c. 3
- d. 4
- e. unknown until  $B$ 's action is observed

ANS: B                      PTS: 1

14. How many Nash equilibria are there in this payoff matrix?

$A$ 's Strategies	$B$ 's Strategies	
	Enter	Don't Enter
Raise price	( $A$ gets 6, $B$ gets 4)	( $A$ gets 10, $B$ gets 8)
Lower price	( $A$ gets 8, $B$ gets 6)	( $A$ gets 3, $B$ gets 5)

- a. 0
- b. 1
- c. 2
- d. 3
- e. 4

ANS: C                      PTS: 1



15. How many Nash equilibria are there in this payoff matrix?

<i>A</i> 's Strategies	<i>B</i> 's Strategies	
	Enter	Don't Enter
Raise price	( <i>A</i> gets 12, <i>B</i> gets 4)	( <i>A</i> gets 21, <i>B</i> gets 5)
Lower price	( <i>A</i> gets 15, <i>B</i> gets 6)	( <i>A</i> gets 14, <i>B</i> gets 6)

- a. 0
- b. 1
- c. 2
- d. 3
- e. 4

ANS: C                      PTS: 1

16. Which pair of strategies would cooperative cartel members *A* and *B* choose given this payoff matrix?

<i>A</i> 's Strategies	<i>B</i> 's Strategies	
	<i>Y</i>	<i>Z</i>
<i>W</i>	( <i>A</i> gets −2, <i>B</i> gets 2)	( <i>A</i> gets 1, <i>B</i> gets 1)
<i>X</i>	( <i>A</i> gets 0, <i>B</i> gets 0)	( <i>A</i> gets 3, <i>B</i> gets −6)

- a. *W*, *Y*
- b. *W*, *Z*
- c. *X*, *Y*
- d. *X*, *Z*
- e. either *X*, *Y* or *W*, *Z*

ANS: B                      PTS: 1

17. Which pair of strategies would competing firms *A* and *B* choose given this payoff matrix?

<i>A</i> 's Strategies	<i>B</i> 's Strategies	
	<i>Y</i>	<i>Z</i>
<i>W</i>	( <i>A</i> gets $-2$ , <i>B</i> gets $2$ )	( <i>A</i> gets $1$ , <i>B</i> gets $1$ )
<i>X</i>	( <i>A</i> gets $0$ , <i>B</i> gets $0$ )	( <i>A</i> gets $3$ , <i>B</i> gets $-6$ )

- a. *W*, *Y*
- b. *W*, *Z*
- c. *X*, *Y*
- d. *X*, *Z*
- e. Either *X*, *Y* or *W*, *Z*

ANS: C                      PTS: 1

18. Strategic foresight is the ability to make decisions today that are rational based on:

- a. complete uncertainty about the future
- b. our best information about what will happen in the future
- c. what we know only about behavior in the past
- d. information that we have only about our own behavior in the past
- e. incorrect information about the past

ANS: B                      PTS: 1

19. Suppose that firm *A* finds itself facing the following payoff matrix in its rivalry with firm *B*:

<i>A</i> 's Strategies	<i>B</i> 's Strategies	
	<i>Y</i>	<i>Z</i>
<i>W</i>	( <i>A</i> gets $-2$ , <i>B</i> gets $2$ )	( <i>A</i> gets $1$ , <i>B</i> gets $1$ )
<i>X</i>	( <i>A</i> gets $0$ , <i>B</i> gets $0$ )	( <i>A</i> gets $3$ , <i>B</i> gets $-6$ )

*A* threatens to play strategy *W*. This threat is:

- credible because the Nash equilibrium occurs where *A* plays *W* and *B* plays *Z*
- credible because the joint optimal solution occurs where *A* plays *W* and *B* plays *Z*
- not credible because *A*'s dominant strategy is to play *X*
- credible because *A*'s dominant strategy is to play *W*
- not credible because *B* will never play strategy *Z*

ANS: C                      PTS: 1

20. A preemptive strategy has the same goal as:

- rigid pricing
- price wars
- price leadership
- limit pricing
- most-favored-customer clauses

ANS: D                      PTS: 1

21. Radio City promises if you can find a lower advertised price for anything you bought at Radio City, anywhere in town within 30 days, it will return the difference plus 20 percent. A sophisticated game theoretic analysis suggests Radio City may be:
- a. losing money in the long run
  - b. colluding with other stores
  - c. using a commitment to threaten competitors
  - d. preempting competitors
  - e. using price leadership

ANS: B                      PTS: 1

22. Potential entrant  $E$  threatens to enter incumbent  $I$ 's market and  $I$  threatens to lower price to  $P$  should  $E$  enter. It is crucial for  $E$  to believe  $I$ 's threat that:
- a.  $P > I$ 's average total cost
  - b.  $P > I$ 's average variable cost
  - c.  $P$  is low enough to discourage  $E$
  - d.  $I$  could conceivably charge  $P$  without  $E$ 's threat
  - e.  $I$ 's profit with  $P$  and no entry are better than expected profits with entry

ANS: B                      PTS: 1

23. A most-favored-customer clause:
- a. is a commitment but not a threat
  - b. is a threat but not a commitment
  - c. is both a threat and a commitment
  - d. is neither a threat nor a commitment
  - e. could be either a threat or a commitment depending on the terms

ANS: C                      PTS: 1

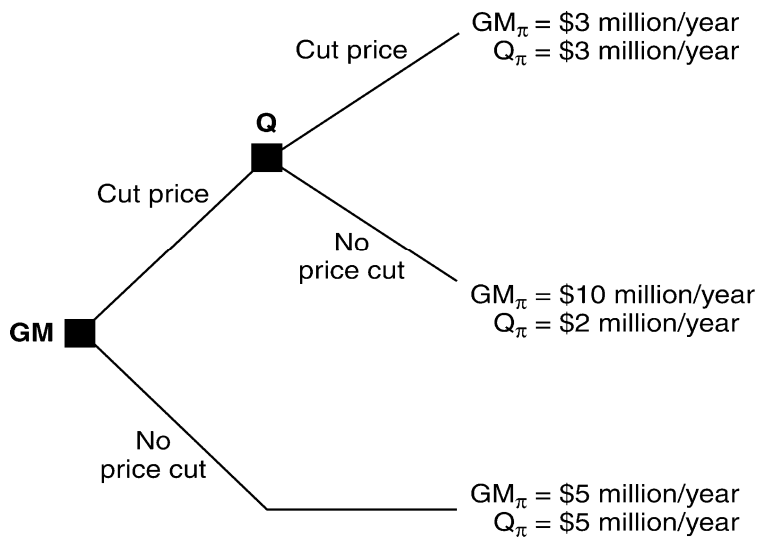
24. Useful strategies to deter entry include:

- a. increasing advertising
- b. increasing prices
- c. decreasing capacity
- d. increasing capacity
- e. a and d

ANS: E

PTS: 1

25. Consider the decision tree below. This tree illustrates hypothetical payoffs to General Mills (GM) and Quaker Oats (Q) if they engage in a price war.



If GM cuts prices, the greatest potential gain is:

- a. \$5 million per year
- b. \$10 million per year
- c. \$2 million per year
- d. \$3 million per year
- e. none of the above

ANS: A

PTS: 1

26. Consider the decision tree in problem 25. If GM cuts prices and Quaker Oats follows this behavior:
- GM loses \$10 million
  - Quaker Oats loses \$10 million
  - GM loses \$2 million
  - Quaker Oats loses \$2 million
  - both firms gain \$3 million

ANS: C                      PTS: 1

27. Refer to the payoff matrix below. Which of the following is a Nash equilibrium?

		<b>Company B</b>	
		<b>Strategy 1</b>	<b>Strategy 2</b>
<b>Company A</b>	<b>Strategy 1</b>	<div>Company B's Profit: \$10 million</div> <div>Company A's Profit: \$10 million</div>	<div>Company B's Profit: \$8 million</div> <div>Company A's Profit: \$7 million</div>
	<b>Strategy 2</b>	<div>Company B's Profit: \$5 million</div> <div>Company A's Profit: \$9 million</div>	<div>Company B's Profit: \$7 million</div> <div>Company A's Profit: \$5 million</div>

- Company A chooses Strategy 1 and Company B chooses Strategy 1
- Company A chooses Strategy 1 and Company B chooses Strategy 2
- Company A chooses Strategy 2 and Company B chooses Strategy 2
- Company A chooses Strategy 2 and Company B chooses Strategy 1
- none of the above

ANS: A                      PTS: 1

28. Refer to the payoff matrix below. Which of the following is a Nash equilibrium?

		Company B	
		Strategy 1	Strategy 2
Company A	Strategy 1	<div>Company B's Profit: \$9 million</div> <div>Company A's Profit: \$8 million</div>	<div>Company B's Profit: \$8 million</div> <div>Company A's Profit: \$7 million</div>
	Strategy 2	<div>Company B's Profit: \$8 million</div> <div>Company A's Profit: \$10 million</div>	<div>Company B's Profit: \$7 million</div> <div>Company A's Profit: \$8 million</div>

- Company A chooses Strategy 1 and Company B chooses Strategy 1
- Company A chooses Strategy 1 and Company B chooses Strategy 2
- Company A chooses Strategy 2 and Company B chooses Strategy 2
- Company A chooses Strategy 2 and Company B chooses Strategy 1
- none of the above

ANS: D

PTS: 1

29. Refer to the payoff matrix below. Which of the following is a Nash equilibrium?

		Company B	
		Strategy 1	Strategy 2
Company A	Strategy 1	<div>Company B's Profit: \$7 million</div> <div>Company A's Profit: \$8 million</div>	<div>Company B's Profit: \$8 million</div> <div>Company A's Profit: \$9 million</div>
	Strategy 2	<div>Company B's Profit: \$10 million</div> <div>Company A's Profit: \$6 million</div>	<div>Company B's Profit: \$8 million</div> <div>Company A's Profit: \$8 million</div>

- a. Company A chooses Strategy 1 and Company B chooses Strategy 1
- b. Company A chooses Strategy 1 and Company B chooses Strategy 2
- c. Company A chooses Strategy 2 and Company B chooses Strategy 2
- d. Company A chooses Strategy 2 and Company B chooses Strategy 1
- e. none of the above

ANS: B

PTS: 1



## Chapter 12

### Auctions

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#### MULTIPLE CHOICE

1. As far as we know, auctions first emerged:
  - a. as e-commerce exploded in recent years
  - b. when capitalism became a popular form of economic organization
  - c. after the emergence of communism, since black markets were popular in centrally planned economies
  - d. in Babylonian marriage markets
  - e. to increase efficiency in the trading of commodities

ANS: D                      PTS: 1

2. In an English auction:
  - a. buyers bid against each other with a succession of increasingly higher prices until only one remains
  - b. a bid is announced, and if no buyer accepts the bid in a given period of time, a new, slightly lower, bid is announced; this procedure continues until a bidder accepts the announced price
  - c. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bid is accepted
  - d. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bidder wins, but the transaction occurs at the second highest (lowest) price
  - e. none of the above

ANS: A                      PTS: 1

3. In a Dutch auction:

- a. buyers bid against each other with a succession of increasingly higher prices until only one remains
- b. a bid is announced, and if no buyer accepts the bid in a given period of time, a new, slightly lower, bid is announced; this procedure continues until a bidder accepts the announced price
- c. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bid is accepted
- d. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bidder wins, but the transaction occurs at the second highest (lowest) price
- e. none of the above

ANS: B                      PTS: 1

4. In a sealed-bid auction:

- a. buyers bid against each other with a succession of increasingly higher prices until only one remains
- b. a bid is announced, and if no buyer accepts the bid in a given period of time, a new, slightly lower, bid is announced; this procedure continues until a bidder accepts the announced price
- c. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bid is accepted
- d. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bidder wins, but the transaction occurs at the second highest (lowest) price
- e. none of the above

ANS: C                      PTS: 1

5. In a second-price, sealed-bid auction:
- a. buyers bid against each other with a succession of increasingly higher prices until only one remains
  - b. a bid is announced, and if no buyer accepts the bid in a given period of time, a new, slightly lower, bid is announced; this procedure continues until a bidder accepts the announced price
  - c. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bid is accepted
  - d. each bidder submits a price that is known only to that bidder; bids are opened and the highest (lowest) bidder wins, but the transaction occurs at the second highest (lowest) price
  - e. none of the above

ANS: D                      PTS: 1

6. Betty has bid \$2,000 on a painting that she is buying for investment purposes. If she has a 40 percent chance of winning the auction and the price paid by the auction winner is \$1,500, the expected profit of the auction is:
- a. \$0
  - b. \$200
  - c. \$500
  - d. \$800
  - e. \$2,000

ANS: B                      PTS: 1

7. Eddie is auctioning a Willie Mays baseball card. If the expected profit from the auction is \$10,000 and the probability of a win is 10 percent, the surplus to be split between buyer and seller is:
- a. \$0
  - b. \$1,000
  - c. \$10,000
  - d. \$100,000
  - e. none of the above

ANS: D                      PTS: 1

8. In an English auction:
- a. the dominant strategy is to bid up to your reservation price
  - b. the dominant strategy is to bid beyond your reservation price
  - c. there is no dominant strategy
  - d. the dominant strategy is to bid up to half of your reservation price
  - e. the dominant strategy is to maximize expected utility

ANS: A                      PTS: 1

9. Regardless of the rules of an auction, the winner will pay:
- a. his or her reservation price for the good at auction
  - b. the true value of the good at auction
  - c. the expected value of the good at auction
  - d. the maximum amount that he or she is willing to pay for the good at auction
  - e. the reservation price of the second highest bidder for the good at auction

ANS: E                      PTS: 1

10. Second-price, sealed-bid auctions have rules that are incentive-compatible because:

- a. they encourage buyers and sellers to maximize profits
- b. they encourage buyers and sellers to collude to fix the results of the auction
- c. they encourage individuals to reveal their true preferences
- d. individual bidders are encouraged to work with rivals to submit bids that maximize joint profits
- e. each buyer is encouraged to submit the same bid

ANS: C

PTS: 1

11. In a Dutch auction:

- a. the dominant strategy is to bid up to your reservation price
- b. the dominant strategy is to bid beyond your reservation price
- c. there is no dominant strategy
- d. the dominant strategy is to bid up to half of your reservation price
- e. the dominant strategy is to maximize expected utility

ANS: C

PTS: 1

12. The optimal reservation price for a seller is:

- a. the value of the object being auctioned off if it does not sell
- b. managerial estimates of the highest reservation price among buyers
- c. managerial estimates of the lowest reservation price among buyers
- d. the average of a and b
- e. equal to marginal cost

ANS: D

PTS: 1

The table below describes the reservation prices and four bids for an auction of three tickets to the recent Madonna concert. Please use it to answer questions 13 and 14.

Consumers	Reservation Price	Winning Bid
1	\$500	—
2	\$600	\$501
3	\$700	\$601
4	\$800	\$701

13. The total consumer surplus that results from this auction is:

- a. \$0
- b. \$99
- c. \$297
- d. \$100
- e. none of the above

ANS: C                      PTS: 1

14. If the marginal cost of providing a seat for one more Madonna fan is \$0, the total producer surplus that results from this auction is:

- a. \$0
- b. \$297
- c. \$1,803
- d. \$2,100
- e. none of the above

ANS: C                      PTS: 1

15. Relative to the posted-price selling mechanism, an auction market will provide:

- a. more surplus to the market
- b. more consumer surplus and less producer surplus to the market
- c. more producer surplus and less consumer surplus to the market
- d. less surplus to the market
- e. no change in the allocation of consumer and producer surplus to the market

ANS: C                      PTS: 1

16. If bidders are likely to be risk-averse:

- a. sellers should use a first-price auction
- b. sellers should use a second-price auction
- c. auctions will not provide surplus for sellers
- d. sellers should use a posted-price strategy
- e. Dutch auction rules will yield the greatest profit to sellers

ANS: A                      PTS: 1

17. In recent years, auction sites, such as ebay, have flooded the Internet. Sellers expect to gain by using the Internet for conducting auctions because:

- a. more bidders means that price discrimination is an option
- b. with more bidders, each submits a bid closer to his or her reservation price to increase the probability of a win
- c. with more bidders, sellers expect to realize greater profits
- d. consumer surplus will increase
- e. b and c

ANS: E                      PTS: 1

18. The winner's curse occurs because:

- a. competitors in auctions often make poor bids
- b. there are too many competitors in most auctions
- c. competitors in auctions usually make bids that are below the expected value of the prize
- d. sealed-bid auctions have too much uncertainty attached to them
- e. the winning competitor in an auction will make a bid that is greater than the average bid

ANS: E                      PTS: 1

19. The winner's curse says that:

- a. the highest bidder in a competitive auction is likely to realize negative profits
- b. the winner of any lottery is likely to realize negative profits
- c. successful firms often lose their intensity over time
- d. to stay first in its industry, a leader must innovate constantly
- e. firms should strive to be second best

ANS: A                      PTS: 1

20. When significant uncertainty exists surrounding the true value of an object at auction, buyers contemplating a bid should bid less when:

- a. they have less information about the true value of the item
- b. they are less confident in their own estimates of the true value of the object
- c. there are many other buyers bidding against them
- d. all the above
- e. none of the above

ANS: D                      PTS: 1



21. Herodotus, the Greek historian, wrote that ancient Babylonians engaged in auctions in which men purchased:
- a. cattle
  - b. horses
  - c. grains of various sorts
  - d. wives
  - e. precious jewels

ANS: D                      PTS: 1

22. A reverse auction is one in which the:
- a. price starts high and then is reduced until only one bidder remains
  - b. price starts low and then the seller raises price until only one bidder remains
  - c. price starts high and then is reduced until only one seller remains
  - d. price starts low and then the buyer raises the price until only one seller remains
  - e. bidders submit sealed bids for the right to participate in the auction

ANS: C                      PTS: 1

23. Which of the following is an example of an ascending-bid auction?
- a. sealed-bid auction
  - b. Japanese auction
  - c. Dutch auction
  - d. Vickrey auction
  - e. rabbit auction

ANS: B                      PTS: 1

24. Which of the following is an example of a descending-bid auction?

- a. sealed-bid auction
- b. Japanese auction
- c. Dutch auction
- d. Vickrey auction
- e. rabbit auction

ANS: C                      PTS: 1

25. Which of the following is the dominant strategy when bidding in an auction?

- a. Bid less than your reservation price to earn a larger surplus.
- b. Bid more than your reservation price if you really want to win the auction.
- c. Never bid your reservation price, because you will realize no surplus if you win the auction.
- d. Always bid up to, but not above, your reservation price.
- e. The dominant strategy depends on the type of auction.

ANS: D                      PTS: 1

26. What is the optimal strategy in a second-price, sealed-bid auction?

- a. Bid an amount that is equal to your reservation price.
- b. Bid an amount that is greater than your reservation price, since you will be paying the second-highest bid if you win.
- c. Bid an amount that is less than your reservation price.
- d. Bid an amount that is less than your reservation price, depending on the number of bidders.
- e. If there are fewer than five bidders, bid below your reservation price. Otherwise, bid your reservation price.

ANS: A                      PTS: 1

27. The winner's curse is an issue only when:
- a. an auction is conducted by sealed bid
  - b. an auction is an increasing value auction
  - c. an auction is a decreasing bid auction
  - d. the true value of the good or service being auctioned is unknown
  - e. bidders are able to collude

ANS: D                      PTS: 1

28. Repurchase tender offers require sellers to:
- a. submit a sealed bid indicating the minimum amount that they would accept for their shares
  - b. submit a schedule indicating their willingness to supply different numbers of shares at different prices
  - c. accept or reject the tender offer price specified by the corporation
  - d. contractually limit their opportunity to sell shares on the open market
  - e. purchase warrants that specify the future price of shares

ANS: B                      PTS: 1

29. What is the optimal bid for a descending-price auction if the bidder's reservation price is 8, the lowest possible bid is 3, and there are five bidders?
- a. 3
  - b. 6
  - c. 7
  - d. 8
  - e. none of the above

ANS: C                      PTS: 1

30. What is the optimal bid for a descending-price auction if the bidder's reservation price is 8, the lowest possible bid is 2, and there are three bidders?
- a. 2
  - b. 6
  - c. 7
  - d. 8
  - e. none of the above

ANS: B                      PTS: 1

## Chapter 13

### Risk Analysis

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#### MULTIPLE CHOICE

1. A frequency definition of probability is:
  - a. a weighted average of different peoples' degrees of certainty of an event's occurring
  - b. a theoretical probability distribution
  - c. a person's degree of certainty of an event's occurring
  - d. an expected value of a particular outcome
  - e. the number of occurrences of an event in a large number of repetitions of an experiment

ANS: E                      PTS: 1

2. A subjective definition of probability is:
  - a. a weighted average of different peoples' degrees of certainty of an event's occurring
  - b. a theoretical probability distribution
  - c. a person's degree of certainty of an event's occurring
  - d. an expected value of a particular outcome
  - e. the number of occurrences of an event in a large number of repetitions of an experiment

ANS: C                      PTS: 1

3. If a coin were weighted so heads had 3 times the chance  $[P(H)]$  of coming up as tails  $[P(T)]$ , the probability distribution would be given by:
- a.  $P(H) = 0.67$  and  $P(T) = 0.33$
  - b.  $P(H) = 1$  and  $P(T) = 3$
  - c.  $P(H) = 0.5$  and  $P(T) = 0.5$
  - d.  $P(H) = 0.75$  and  $P(T) = 0.25$
  - e.  $P(H) = 1$  and  $P(T) = 0.33$

ANS: D                      PTS: 1

4. You pay \$3.75 to roll a normal die 1 time. You get \$1 for each dot that turns up. Your expected profit from this venture is:
- a.  $-\$0.75$
  - b.  $-\$0.25$
  - c.  $\$0.25$
  - d.  $\$3.00$
  - e.  $\$3.50$

ANS: B                      PTS: 1

5. Billy Joe Bob thinks he will win \$3 with probability  $P$ , otherwise he will win \$11. His expected payoff is:
- a.  $\$3 + \$8P$
  - b.  $\$11 - \$8P$
  - c.  $\$7$
  - d.  $\$3 + \$11P$
  - e.  $\$11 - \$3P$

ANS: B                      PTS: 1

6. Betty Gamble is willing to pay exactly, but not more than, \$20 to get a deal where she has a  $\frac{1}{3}$  chance of winning \$30 and a  $\frac{1}{6}$  chance of winning \$6 and will win \$20 otherwise. Betty is:
- a. risk-averse and profit maximizing
  - b. risk-averse, not profit maximizing
  - c. risk loving and profit maximizing
  - d. risk loving, not profit maximizing
  - e. risk-neutral

ANS: B                      PTS: 1

7. I. M. Hogg, who is risk-neutral over votes, is running for office with 500,000 sure voters. To add voters, he wants to choose  $n$ , the number of negative campaign ads to run, where  $0 \leq n \leq 4$ . The ads will backfire with probability  $n/5$  and give him no extra votes. Otherwise, the ads will work and give him  $100,000 + 40,000n$  extra votes. So  $n = 0$  implies a total of 600,000 votes. He should choose  $n =$
- a. 0
  - b. 1
  - c. 2
  - d. 3
  - e. 4

ANS: B                      PTS: 1

8. A game has two players. Player 1 chooses between two options, and then player 2, with the knowledge of what player 1 chose, chooses between two options. If this were depicted in a decision tree, how many forks would there be?
- a. 2
  - b. 3
  - c. 7
  - d. 12
  - e. 24

ANS: A                      PTS: 1

9. A company chooses one of four options; then nature decides whether the choice works. If it does not work, the company has two updating options, each with three possible payoffs. How many decision forks are on the tree depicting this?
- a. 5
  - b. 12
  - c. 17
  - d. 28
  - e. 36

ANS: A                      PTS: 1



10. Nature gives company *A* one of three endowments; then company *A* picks one of two options. Depending on *A*'s choice, company *B* picks one of three options with each one having two possible payoffs, decided by nature. How many chance forks does the decision tree depicting this have?

- a. 4
- b. 9
- c. 19
- d. 28
- e. 36

ANS: C                      PTS: 1

11. Two people alternate choosing either to quit or to continue a process at various stages numbered 1 to 4. If a person quits at stage  $n$ , that person gets  $$(n + 1)$ , the opponent gets  $$(n - 1)$ , and no other payoffs are possible. If neither player ever quits, they reach stage 5, and each gets \$4. Player 1 can choose to quit or continue at stages 1 and 3; player 2 can choose at stages 2 and 4. Both players care only for their own payoffs and expect their opponent to do the same. No coordinating of strategies is allowed. Backward induction predicts the stage at which the game stops will be stage number:

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

ANS: A                      PTS: 1

12. Two people alternate choosing either to quit or to continue a process at various stages numbered 1 to 1,001. If a person quits at stage  $n$ , that person gets  $\$(n + 1)$ , the opponent gets  $\$(n - 1)$ , and no other payoffs are possible. If neither player ever quits, they reach stage 1,001, and each gets \$1,000. Player 1 can choose to quit or continue at odd-numbered stages; player 2 can choose at even-numbered stages. Both players care only for their own payoffs and expect their opponent to do the same. No coordinating of strategies is allowed. Backward induction predicts the average payoff to the two players will be:
- a. \$1
  - b. \$200
  - c. \$500
  - d. \$750
  - e. \$1,000

ANS: A                      PTS: 1

13. In a decision tree, a decision fork is represented by a(n):
- a. X
  - b. open circle
  - c. closed circle
  - d. triangle
  - e. square

ANS: E                      PTS: 1

14. A chance fork with payoffs given for each branch is assigned a value based on:

- a. the highest-payoff branch
- b. the lowest-payoff branch
- c. an average of the highest- and lowest-payoff branches
- d. an evenly weighted average of all payoff branches
- e. a probability weighted average of all payoff branches

ANS: E                      PTS: 1

15. A decision fork with payoffs given for each branch is assigned a value based on:

- a. the highest-payoff branch
- b. the lowest-payoff branch
- c. an average of the highest- and lowest-payoff branches
- d. an evenly weighted average of all payoff branches
- e. a probability weighted average of all payoff branches

ANS: A                      PTS: 1

16. An investor has utility function  $U = 10 + 5P - 0.02P^2$ . What is the expected utility of the following investment option:

Probability	Payoff ( $P$ )
0.4	10
0.3	20
0.2	30
0.1	40

- a. 20
- b. 100
- c. 102
- d. 114
- e. none of the above

ANS: B                      PTS: 1

17. Trope Oil Company is considering drilling an exploratory well. The symbol  $P$  is the chance of a successful well,  $R$  is the revenue from a successful well,  $L$  is the price previously paid for the land, and  $C$  is the cost of drilling. The well will either be successful or dry. A company that is risk-neutral should drill if:

- a.  $PR > C$
- b.  $PR > C + L$
- c.  $P(R - C) > 0$
- d.  $P(R - C - L) > 0$
- e.  $P(R - C) > L$

ANS: A                      PTS: 1

18. A diamond miner has  $p$  chance of finding diamonds with  $R$  revenue if the miner finds diamonds; otherwise the miner gets zero. The mine costs  $C$ ; the expected value of perfect information is:

- a. 0
- b.  $C$
- c.  $p(R - C)$
- d.  $(1 - p)C$
- e.  $(1 - p)(R - C)$

ANS: D                      PTS: 1

19. Exploring a new coal mine costs \$100,000 and has a 40 percent chance of finding \$500,000 of coal and a 60 percent chance of finding \$100,000 of coal. The expected value of perfect information is:
- a. \$0
  - b. \$100,000
  - c. \$150,000
  - d. \$200,000
  - e. \$300,000

ANS: A                      PTS: 1

20. Susan is indifferent between \$500 for sure and a bet with a 60 percent chance of \$400 and a 40 percent chance of \$700. Susan is:
- a. risk-averse
  - b. risk loving
  - c. risk-neutral
  - d. a profit maximizer
  - e. irrational

ANS: A                      PTS: 1

21. Harold is indifferent between \$2,500 for sure and a bet with a 60 percent chance of \$2,400 and a 40 percent chance of \$2,600. Harold is:
- a. risk-averse
  - b. risk loving
  - c. risk-neutral
  - d. a profit maximizer
  - e. irrational

ANS: B                      PTS: 1

22. Thelma is indifferent between \$100 and a bet with a 0.6 chance of no return and a 0.4 chance of \$200. If  $U(0) = 20$  and  $U(200) = 220$ , then  $U(100) =$
- a. 88
  - b. 94
  - c. 100
  - d. 110
  - e. 132

ANS: C                      PTS: 1

23. George is indifferent between \$100 and a bet with a 0.6 chance of \$50 and a 0.4 chance of \$200. If  $U(50) = a$  and  $U(200) = b$ , then  $U(100) =$
- a.  $0.4a + 0.6b$
  - b.  $0.6a + 0.4b$
  - c.  $(a + b)/2$
  - d.  $a + b$
  - e.  $6a + 4b$

ANS: B                      PTS: 1

24. Expected utility is:
- a. the profit from a given decision
  - b. a probability weighted average of possible profits
  - c. an evenly weighted average of possibility profits
  - d. a probability weighted average of possible utility levels
  - e. the expected profits plus a number that depends on risk

ANS: D                      PTS: 1

25. A risk-averse person has a utility function that, with income on the horizontal axis and utility on the vertical axis, as income increases:
- a. is a horizontal line
  - b. is a vertical line
  - c. has constant, positive slope
  - d. is increasing at a decreasing rate
  - e. is increasing at an increasing rate

ANS: D                      PTS: 1

26. A risk-loving person has a utility function that, with income on the horizontal axis and utility on the vertical axis, as income increases:
- a. is horizontal
  - b. is vertical
  - c. has constant, positive slope
  - d. is curved down
  - e. is curved up

ANS: E                      PTS: 1

27. A person who is risk-neutral has a utility function (with income on the horizontal axis and utility on the vertical axis) that, as income increases:
- a. is horizontal
  - b. is vertical
  - c. has constant, positive slope
  - d. is curved down
  - e. is curved up

ANS: C                      PTS: 1

28. A person who has a utility function (with income on the horizontal axis and utility on the vertical axis) that curves up as income increases is:
- a. risk-averse and profit maximizing
  - b. risk-averse and not profit maximizing
  - c. risk loving and profit maximizing
  - d. risk loving and not profit maximizing
  - e. risk-neutral

ANS: D                      PTS: 1

29. A person who has a utility function (with income on the horizontal axis and utility on the vertical axis) that is linear is:
- a. risk-averse
  - b. risk loving
  - c. risk-neutral
  - d. irrational
  - e. always sad

ANS: C                      PTS: 1

30. For constants  $a$  and  $b$ ,  $0 < b$ ,  $b \neq 1$ , and expected profit  $E(\pi)$ , the expected utility function of a person who is risk-neutral can be written as  $E(U) =$
- a.  $a + bE(\pi)$
  - b.  $a - bE(\pi)$
  - c.  $a + b^\pi$
  - d.  $a + [E(\pi)]^b$
  - e.  $a + [E(\pi)]^{-b}$

ANS: A                      PTS: 1



31. For constants  $a$  and  $b$ ,  $0 < b$ ,  $b \neq 1$ , and expected profit  $E(\pi)$ , the utility function of a person who is risk-neutral can be written as  $U =$
- a.  $a + bE(\pi)$
  - b.  $a - bE(\pi)$
  - c.  $a + b\pi$
  - d.  $a + [E(\pi)]^b$
  - e.  $a + [E(\pi)]^{-b}$

ANS: C                      PTS: 1

32. Joe is risk-neutral with utility  $U = bR$ , where  $b$  is a positive constant and  $R$  is profit from a venture. If a gamble has a 0.4 chance of  $R = 1$  and a 0.6 chance of  $R = 2$ , Joe's expected utility  $E(U)$  is:
- a.  $b$
  - b.  $1.4b$
  - c.  $1.5b$
  - d.  $1.6b$
  - e.  $2b$

ANS: D                      PTS: 1

33. A project could yield a profit of \$1, \$2, \$3, or \$6, with equal probability. Then the variance,  $\sigma^2$ , is:
- a. 1
  - b.  $3/2$
  - c.  $7/2$
  - d.  $9/2$
  - e. 14

ANS: C                      PTS: 1

34. If expected profit is  $R$  and variance  $\sigma^2 = 0$ , then:

- a.  $R_i = 0$  for all  $i$
- b.  $R - R_i$  is a positive constant for all  $i$
- c.  $R - R_i$  is a negative constant for all  $i$
- d.  $R_i = 0$  for all  $i$
- e.  $R_i = R$  for all  $i$

ANS: E

PTS: 1

35. If an option pays \$6 one-quarter of the time and loses \$6 three-quarters of the time, then the variance  $\sigma^2 =$

- a. 0
- b. -3
- c. 9
- d. 12
- e. 27

ANS: E

PTS: 1

36. If  $x_i$  is defined as  $x_i = \pi_i - E(\pi_i)$ , and  $p_i$  is the probability of occurrence of any  $x_i$ , the formula for the square of the standard deviation can be written as:

- a.  $\sum x_i p_i$
- b.  $\sum x_i p_i^2$
- c.  $\sum x_i^2 p_i^2$
- d.  $\sum x_i^2 p_i$
- e.  $\sum (x_i p_i)^2$

ANS: D

PTS: 1

37. The range of values the standard deviation(s) can take is:

- a.  $-\infty < \sigma < \infty$
- b.  $0 < \sigma < \infty$
- c.  $0 < \sigma < 1$
- d.  $0 < \sigma < 100$
- e.  $0 < \sigma < 1,000$

ANS: B                      PTS: 1

38. If a payoff is equally likely to be \$1, \$2, \$3, \$4, or \$5, the square of the standard deviation is:

- a. 0
- b. 2
- c. 4
- d. 10
- e. 100

ANS: B                      PTS: 1

39. If you get \$10 for heads but lose \$10 for tails on the flip of a fair coin, the coefficient of variation is:

- a. undefined
- b. 0
- c. 1
- d. 10
- e. 100

ANS: A                      PTS: 1

40. If  $\sigma$  is the standard deviation of a project with expected returns \$100, and  $\sigma^2 = 4$ , the coefficient of variation is:
- a. 1/25
  - b. 1/50
  - c. \$200
  - d. \$400
  - e. \$5,000

ANS: B                      PTS: 1

41. If  $\sigma$  is the standard deviation of a project with expected returns  $R$ , the coefficient of variation is:
- a.  $\sigma/R$
  - b.  $\sigma^2/R$
  - c.  $\sigma R$
  - d.  $\sigma^2 R$
  - e.  $R^2 \sigma$

ANS: A                      PTS: 1

42. Using the coefficient of variation instead of the standard deviation accounts for the:
- a. timing of payoffs
  - b. risk attendance of managers
  - c. riskiness of different projects
  - d. size of different projects
  - e. use of a weighted average of different profits

ANS: D                      PTS: 1

43. A manager is indifferent between rates of return satisfying  $i = 0.08 + 0.02\sigma$  ( $\sigma$  is the standard deviation). The manager's risk premium for  $\sigma = 2$  is:
- a. 0 percent
  - b. 2 percent
  - c. 4 percent
  - d. 8 percent
  - e. 12 percent

ANS: C                      PTS: 1

44. Donald Trumpet is indifferent between rates of return satisfying  $R = 0.10 + 0.01\sigma$  ( $\sigma$  is the standard deviation). Donald is:
- a. risk-averse and profit maximizing
  - b. risk-averse and not profit maximizing
  - c. risk loving and profit maximizing
  - d. risk loving and not profit maximizing
  - e. risk-neutral

ANS: B                      PTS: 1

45. An investor has utility function  $U = 10 + 5P - 0.02P^2$ . What is the expected utility of the following investment option:

40	0.1
30	0.2
20	0.3
10	0.4
Payoff ( $P$ )	Probability

- a. 30
- b. 110
- c. 140
- d. 142
- e. none of the above

ANS: C                      PTS: 1

46. A sensitivity analysis is designed to:

- a. measure a manager's risk sensitivity
- b. identify key factors affecting outcome probabilities
- c. predict how those outside a firm will act
- d. combine factor frequency distributions to get a payoff distribution
- e. check the manager's arithmetic

ANS: B                      PTS: 1

47. Fred Kruger is indifferent between return rates satisfying  $R = 0.10 + (-0.01)\sigma$ , where  $\sigma$  measures risk. Fred is:
- a. risk-averse and profit maximizing
  - b. risk-averse and not profit maximizing
  - c. risk loving and profit maximizing
  - d. risk loving and not profit maximizing
  - e. risk-neutral

ANS: D                      PTS: 1

48. Fred has a utility function  $U = 10P^{0.5}$  and also has an investment opportunity that will pay 25 with probability 0.4 and 100 with probability 0.6. What is the expected utility of this opportunity?
- a. 70
  - b. 75
  - c. 80
  - d. 83.7
  - e. none of the above

ANS: C                      PTS: 1

49. If a payoff is equally likely to be \$1, \$2, \$3, \$4, or \$5, the coefficient of variation is:
- a. 0
  - b.  $2^{1/2}/3$
  - c.  $2/3$
  - d. 2
  - e.  $10/3$

ANS: B                      PTS: 1

50. Fred has a utility function  $U = 10P^{0.5}$  and also has an investment opportunity that will pay 25 with probability 0.4 and 100 with probability 0.6. What is the certainty equivalent of this opportunity?
- a. 64
  - b. 70
  - c. 80
  - d. 83.7
  - e. none of the above

ANS: A                      PTS: 1



## Chapter 14

### Principal–Agent Issues and Managerial Compensation

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#### MULTIPLE CHOICE

1. The principal–agent problem occurs as a result of:
  - a. the absence of a contract between managers and owners
  - b. the separation of ownership from management
  - c. the difficulty of identifying the principal agent with whom to negotiate
  - d. competition between managers at various levels
  - e. none of the above

ANS: B                      PTS: 1

2. Principal–agent problems can exist between:
  - a. workers and managers
  - b. workers and owners
  - c. workers and customers
  - d. owners and customers
  - e. all the above

ANS: E                      PTS: 1

3. A technique for dealing with the principal–agent problem is to:
  - a. require managers to purchase shares of stock in the firm
  - b. establish a profit-sharing plan for managers
  - c. establish year-end bonuses based on the profits of the firm
  - d. all the above
  - e. none of the above

ANS: D                      PTS: 1

4. The moral-hazard problem occurs when:
- a. a consumer of insurance changes his or her behavior in such a way as to decrease the probability of a payoff
  - b. a consumer of insurance changes his or her behavior in such a way as to increase the probability of a payoff
  - c. insurance companies change their behaviors in such a way as to increase the probabilities of a payoff
  - d. insurance companies change their behaviors in such a way as to decrease the probabilities of a payoff
  - e. none of the above

ANS: B                      PTS: 1

5. Consider Mr. Ed, who purchases an insurance policy on a thoroughbred that he has acquired. He then proceeds to run the horse even though the horse has tendinitis. This is an example of:
- a. an adverse-selection problem
  - b. a moral-hazard problem
  - c. coinsurance
  - d. signaling
  - e. all the above

ANS: B                      PTS: 1

6. The savings and loan crisis of the early 1990s was caused by a moral-hazard problem because:
- a. government insurance encouraged bank managers to take on more risk than they would have without such insurance
  - b. bank managers no longer attempted to maximize the profits of the firm
  - c. insurance attracted depositors who would not have used banks otherwise
  - d. depositors had more information about the banks than shareholders had
  - e. government insurance encouraged bank managers to take on less risk than they would have without such insurance

ANS: A                      PTS: 1

Suppose that Wilma's utility function is given by

$$U(E) = 100 - 2E^2,$$

where  $E$  = Wilma's work effort in producing homemade dinners, measured in hours per day.

Please use this utility function to answer questions 7–9.

7. The marginal utility of effort for Wilma is:
- a.  $2E^2$
  - b.  $-2E$
  - c. 100
  - d.  $-4E$
  - e. none of the above

ANS: D                      PTS: 1

8. If Wilma is forced to work an 8-hour day producing homemade dinners, her total utility will be:
- a. 100
  - b. -28
  - c. -128
  - d. 228
  - e. none of the above

ANS: B                      PTS: 1

9. Given her utility function, Wilma has an incentive to supply:
- a. maximum effort, since working hard is important to her
  - b. maximum effort, since she is afraid of getting fired
  - c. minimum effort, since she knows she will get fired under any circumstances
  - d. minimum effort, since her utility decreases as effort increases
  - e. maximum effort, since she can increase her salary by working harder

ANS: D                      PTS: 1

Please use the following profit function (per worker) for the Blue Delta Faucet Company to answer questions 10 and 11:

$$P(e) = 40e - (2e^2 + 100)$$

Note that  $P$  = firm profits and  $e$  = worker-hours per day. Assume that effort is observed perfectly.

10. What is the profit-maximizing level of effort for the firm to set for workers?

- a. There is no effort level that maximizes profits in this case.
- b. 3.16 hours per day
- c. 8 hours per day
- d. 10 hours per day
- e. 12 hours per day

ANS: D                      PTS: 1

11. At this profit-maximizing level of effort for the firm, profits per worker will be:

- a. \$40
- b. \$100
- c. \$300
- d. \$400
- e. none of the above

ANS: B                      PTS: 1

12. At the profit-maximizing level of effort for the firm, daily per-worker compensation will be:

- a. \$100
- b. \$200
- c. \$300
- d. \$340
- e. none of the above

ANS: C                      PTS: 1

13. If effort is unobservable and revenues are riskless, firms can design incentive-compatible compensation schemes by offering workers:
- a. profit shares
  - b. increased nonmonetary benefits
  - c. increased fixed salary
  - d. decreased effort requirements
  - e. increased future compensation in the form of retirement pay

ANS: A                      PTS: 1

14. Incentive-compatible employment contracts exist when:
- a. the firm and workers have the same objective
  - b. owners and managers have the same level of income
  - c. incentives of owners and managers are compatible with, though not necessarily the same as, one another
  - d. owners and managers have the same objectives as consumers of the products they produce
  - e. base pay for managers is equal to the profit share they realize

ANS: C                      PTS: 1

15. Optimal employment contracts for managers, given revenue risk and unobservable output, consist of:
- a. a flat salary alone
  - b. a flat salary plus some return to estimates of effort
  - c. only a profit share
  - d. a flat salary plus a profit share related only indirectly to individual effort
  - e. a flat salary plus a profit share that is equal to the share accruing to owners

ANS: D                      PTS: 1

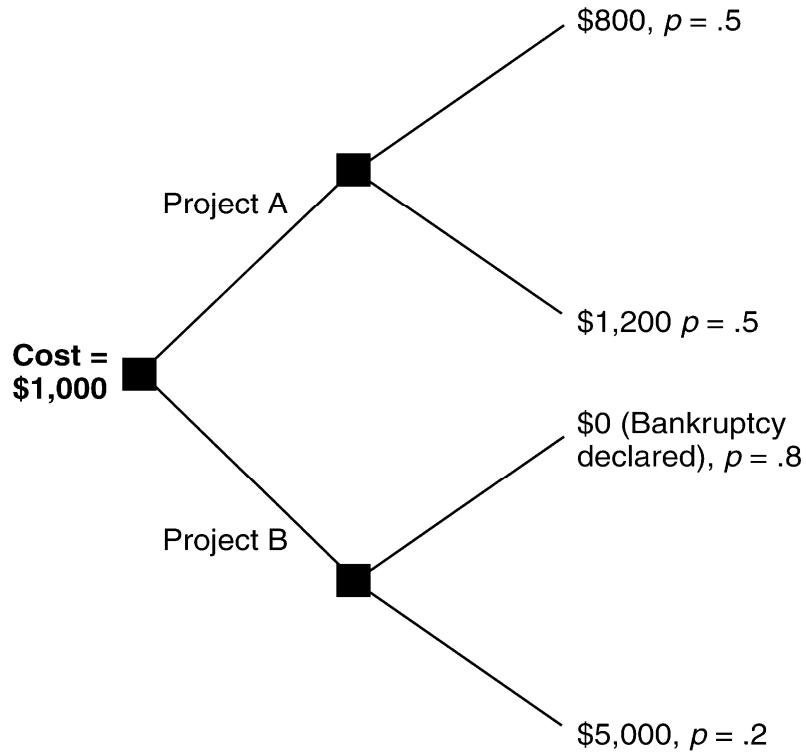
16. Donald has a beach house on the Outer Banks of North Carolina that was severely damaged in the most recent hurricane to strike the coast. Due to beach erosion he has rebuilt twice in the past 20 years. He is intent on rebuilding, confident that government-provided flood insurance will cover his expenses. This is an example of:
- a. how market-based solutions to problems are superior to government solutions
  - b. moral hazard
  - c. adverse selection
  - d. asset substitution
  - e. none of the above

ANS: B                      PTS: 1

17. Creditors and shareholders may have an incentive incompatibility because:
- a. shareholders can declare bankruptcy and hence have limited liability
  - b. creditors must bear less risk than shareholders
  - c. creditors can call debt if better opportunities arise
  - d. shareholders choose projects with less risk than creditors would like
  - e. none of the above; creditors and shareholders are both interested in maximizing the profits of the enterprise

ANS: A                      PTS: 1

Please use the diagram below to answer questions 18–20. Consider the following decision tree, which represents the outcomes of two alternative projects that the Ink, Inc., a producer of printers, might pursue. Ink, Inc., needs to borrow \$1,000 to pursue either project and is going to sell bonds to finance the venture.



18. According to the expected value criteria, which project should be chosen?
- project A
  - project B
  - neither project A nor B; both have a negative expected value
  - either project A or B; both have the same expected value

ANS: D

PTS: 1



19. Ink, Inc., is carrying a large amount of debt because of overexpansion during the dot-com explosion. Under these circumstances, the shareholders would tend to choose:
- a. project A, since it has the highest expected value
  - b. project B, since it has the greatest degree of risk
  - c. project A, since it has the lowest degree of risk
  - d. neither project A nor B, since both are risky
  - e. either project A or B; both have the same degree of risk

ANS: B                      PTS: 1

20. Under these circumstances, bondholders and shareholders may have incompatible incentives since:
- a. shareholders know that they have limited liability because of their ability to declare bankruptcy
  - b. bondholders are not profit maximizers
  - c. shareholders are not profit maximizers
  - d. bondholders have limited liability because insurance against risk is provided by the federal government
  - e. shareholders insure bondholders against risk

ANS: A                      PTS: 1

21. Firms can avoid or limit the asset substitution problem by:
- a. funding with equity
  - b. establishing a reputation for protecting creditors
  - c. insuring bondholders against risk
  - d. applying to the government for insurance for bondholders
  - e. a, b, or c

ANS: E                      PTS: 1

22. In recent years, individuals and state governments have sued various tobacco companies to compensate for illness and injury allegedly caused by cigarette smoking. Courts have awarded millions of dollars to victims in these cases. This product liability law:
- a. encourages firms to ignore safety issues when developing products
  - b. creates an incentive incompatibility between producers and consumers
  - c. encourages incentive compatibility between producers and consumers
  - d. is the only way to achieve compatible incentives when consumer safety is at issue
  - e. forces firms to declare bankruptcy and to default on bondholders

ANS: C                      PTS: 1

23. A manager has a utility function  $U = C^{0.5}$  if she doesn't work hard and  $U = C^{0.5} - 1$  if she does. Expected profit will increase from 1,500 to 1,600 if she works hard. The manager receives compensation  $C$  equal to 81 plus a portion  $x$  of any profit in excess of 1,500. What is the value of  $x$  that will make the manager indifferent between shirking and working hard?
- a. 0.09
  - b. 0.105
  - c. 0.19
  - d. 0.242
  - e. none of the above

ANS: C                      PTS: 1

24. A manager has a utility function  $U = C^{0.5}$  if she doesn't work hard and  $U = C^{0.5} - 1$  if she does. Expected profit will increase from 1,400 to 1,600 if she works hard. The manager receives compensation  $C$  equal to 82 plus a portion  $x$  of any profit in excess of 1,400. What is the value of  $x$  that will make the manager indifferent between shirking and working hard?
- a. 0.09
  - b. 0.105
  - c. 0.19
  - d. 0.242
  - e. none of the above

ANS: A                      PTS: 1

25. A manager has a utility function  $U = C^{0.5}$  if she doesn't work hard and  $U = C^{0.5} - 3$  if she does. Expected profit will increase from 1,000 to 1,500 if she works hard. The manager receives compensation  $C$  equal to 144 plus a portion  $x$  of any profit in excess of 1,000. What is the value of  $x$  that will make the manager indifferent between shirking and working hard?
- a. 0.09
  - b. 0.105
  - c. 0.19
  - d. 0.242
  - e. none of the above

ANS: D                      PTS: 1

## Chapter 15

### Adverse Selection

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#### MULTIPLE CHOICE

1. Adverse selection implies that:
  - a. the market for used cars is perfectly competitive
  - b. the market for used cars will contain more cars of higher than average quality
  - c. the market for used cars will contain more cars of lower than average quality
  - d. all used cars will be of equal quality
  - e. the government overinsures the market for used cars

ANS: C                      PTS: 1

2. From whom would you prefer to buy a used car, everything else being equal?
  - a. a mechanic
  - b. a used car dealer
  - c. a family that is moving to China
  - d. a person who is buying a new car
  - e. You would have no preference among these choices.

ANS: C                      PTS: 1

3. Suppose that in Milford, Connecticut, owners of used cars that are lemons value their cars at \$2,500, and owners of used cars that are reliable value their cars at \$6,000. There are equal quantities of each type of car on the market. Buyers value low-quality cars at \$1,500 and high-quality cars at \$7,000. In this market:
- a. only low-quality cars will be sold at a price of \$1,500
  - b. only low-quality cars will be sold at a price of \$2,500
  - c. all cars will sell at a price of \$4,250
  - d. only high-quality cars will be sold at a price of \$6,000
  - e. only high-quality cars will be sold at a price of \$7,000

ANS: E                      PTS: 1

Please use the following information for questions 4–8.

Suppose the Ajax Insurance Company provides insurance for skydivers whose wealth before diving is \$400. An accident will leave divers with a wealth of \$100. The company divides the divers into two classes, safe (probability of an accident = 0.2) and unsafe (probability of an accident = 0.5). The utility of wealth for all divers is given by the function:  $U(w) = w^{0.5}$ .

4. Given this information, the divers are:
- a. risk-averse
  - b. risk seeking
  - c. risk-neutral
  - d. indifferent to risk
  - e. risk-averse, risk seeking, or risk-neutral; we cannot tell from this information

ANS: A                      PTS: 1

5. The utility of no insurance for the safe diver is:

- a. 15
- b. 17.3
- c. 18
- d. 18.3
- e. none of the above

ANS: C                      PTS: 1

6. If the insurance premium is \$100:

- a. both types of divers buy insurance
- b. neither type of diver buys insurance
- c. only the safe divers buy insurance
- d. only the unsafe divers buy insurance

ANS: D                      PTS: 1

7. If the insurance premium is \$50:

- a. both types of divers buy insurance
- b. neither type of diver buys insurance
- c. only the safe divers buy insurance
- d. only the unsafe divers buy insurance

ANS: A                      PTS: 1

8. If only the unsafe divers buy insurance and the premium is \$100, the insurance company will:
- a. earn a profit of \$100 per unsafe diver
  - b. break even
  - c. incur a loss of \$200 per unsafe diver
  - d. incur a loss of \$300 per unsafe diver
  - e. experience none of the above

ANS: C                      PTS: 1

9. Most states require car owners to provide evidence that they have auto insurance when they register their cars and obtain license plates. For the sellers of insurance policies, this may help to limit the severity of the:
- a. information asymmetry
  - b. moral hazard problem
  - c. signaling problem
  - d. adverse selection problem
  - e. Akerlof problem

ANS: D                      PTS: 1

10. Which of the following is the best example of adverse selection?
- a. Smokers are more likely to obtain health insurance.
  - b. Safe drivers tend to get auto insurance.
  - c. All drivers are required to have auto insurance if they are to register their cars legally in Connecticut.
  - d. Both healthy and unhealthy people tend to buy life insurance.
  - e. Given the existence of government-funded flood insurance, people continue to build homes in flood plains.

ANS: A                      PTS: 1

11. Insurance companies are able to offset the adverse selection in markets for life insurance by:
- a. requiring premiums that are above the expected value of receipts
  - b. only insuring people who appear to be sick
  - c. insuring a wide variety of people so that gains on some policies offset losses on others
  - d. requiring medical exams from people whom they insure
  - e. requiring higher premiums from healthy people than from sick people

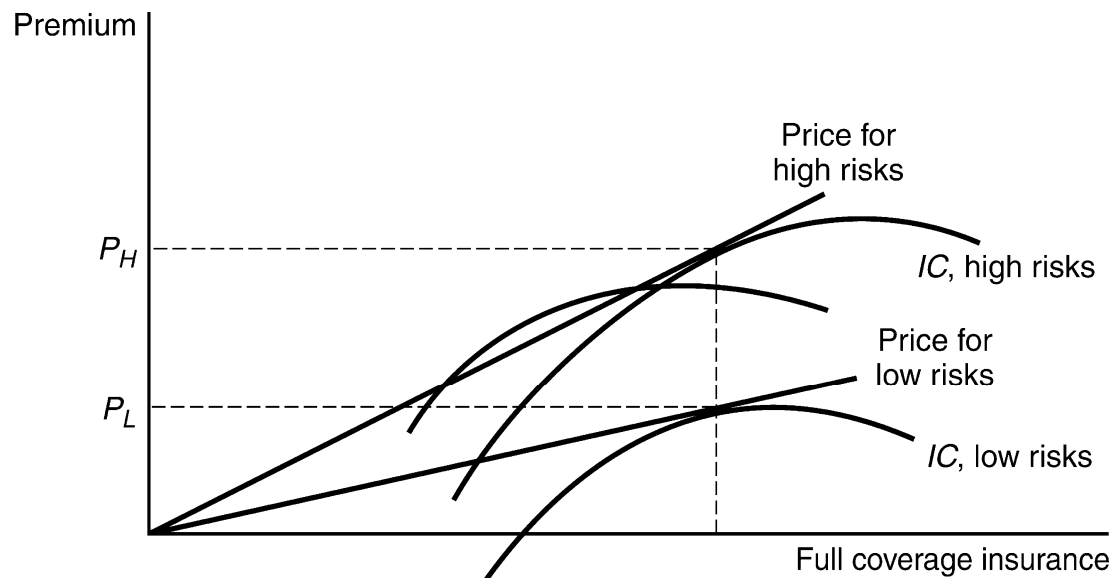
ANS: D                      PTS: 1

12. One way to solve the problem of adverse selection in markets for homeowner's insurance is to:
- a. only insure customers who make claims against their policies
  - b. use deductibles to encourage safe behavior
  - c. offer premium discounts to people who install house alarm systems
  - d. require homeowner's insurance as a condition of acquiring a mortgage
  - e. b, c, and d

ANS: E                      PTS: 1



Please use the following diagram to answer questions 13–15.



13. In this case, the best possible pricing scheme would:
- encourage high-risk individuals to obtain full coverage
  - encourage all individuals to obtain full coverage
  - establish a single premium for all individuals
  - encourage only low-risk individuals to buy any insurance
  - result in no coverage purchased by low- or high-risk individuals

ANS: A                      PTS: 1

14. In this case, the high-risk individuals choose:
- the full coverage policy
  - the partial coverage policy
  - no coverage
  - none of the above

ANS: A                      PTS: 1

15. In this case, the low-risk individuals choose:

- a. the full coverage policy
- b. the partial coverage policy
- c. no coverage
- d. none of the above

ANS: A                      PTS: 1

16. The signaling model of education would be ineffective if:

- a. skills learned in school were useful in employment and could be effectively tested
- b. the costs of acquiring education were equal for individuals of different abilities
- c. individuals could not identify their own abilities
- d. b and c
- e. all of the above

ANS: D                      PTS: 1

17. Requiring applicants for life insurance to undergo a physical examination is an effective way to:

- a. reduce moral hazard
- b. increase information asymmetry
- c. reduce adverse selection
- d. increase sales
- e. none of the above

ANS: C                      PTS: 1

18. Which of the following is a credible signal of product quality?

- a. a money back guarantee
- b. high price
- c. a warrantee
- d. assurances by a salesperson
- e. a and c

ANS: E                      PTS: 1

Use the information that follows to answer questions 19 and 22. Good drivers have a 20 percent chance, and bad drivers have a 50 percent chance, of getting in an accident. A car is worth \$900, and an accident would reduce its value to \$400. Both types of drivers have utility  $U = (\text{car value})^{0.5}$ ?

19. What is a good driver's expected utility without insurance?

- a. 20
- b. 25
- c. 28
- d. 30
- e. none of the above

ANS: C                      PTS: 1

20. What is a bad driver's expected utility without insurance?

- a. 20
- b. 25
- c. 28
- d. 30
- e. none of the above

ANS: B                      PTS: 1

21. If an insurance policy costs \$200 and will pay \$400 in case of an accident, what decision will be made by the two drivers?
- a. Both drivers will buy insurance.
  - b. Neither driver will buy insurance.
  - c. The good driver will buy insurance and the bad driver won't.
  - d. The bad driver will buy insurance and the good driver won't.

ANS: D                      PTS: 1

22. If an insurance policy costs \$80 and will pay \$400 in case of an accident, what decision will be made by the two drivers?
- a. Both drivers will buy insurance.
  - b. Neither driver will buy insurance.
  - c. The good driver will buy insurance and the bad driver won't.
  - d. The bad driver will buy insurance and the good driver won't.

ANS: A                      PTS: 1

## Chapter 16

### Government and Business

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#### MULTIPLE CHOICE

1. When economies of scale persist to such high levels of output that it is efficient to have only one firm produce, the resulting firm is known as a(n):
- a. patent holder
  - b. regulated monopolist
  - c. reluctant monopolist
  - d. natural monopolist
  - e. acceptable monopolist

ANS: D                      PTS: 1

2. When setting rates that natural monopolists can charge, regulatory commissions attempt to establish a maximum price:
- a. at the minimum long-run average cost of the monopolist
  - b. at the minimum short-run average cost of the monopolist
  - c. where price equals average total cost plus a fair rate of return on the invested capital of the monopolist
  - d. where price equals average variable cost plus a fair rate of return on the invested capital of the monopolist
  - e. at the minimum long-run average variable cost of the monopolist

ANS: D                      PTS: 1

3. Breckner Gas Company faces a demand for their gas given by  $P = 30 - 0.25Q$ . It has total costs (exclusive of the required rate of return on its invested capital) of  $TC = -60 + 8Q + 0.75Q^2$ . If the commission that regulates Breckner determines that \$100 is sufficient to compensate equity holders for their invested capital, what are the regulated price and output?
- a.  $P = 23.75, Q = 25$
  - b.  $P = 25, Q = 20$
  - c.  $P = 27.5, Q = 10$
  - d.  $P = 22.5, Q = 30$
  - e.  $P = 20, Q = 40$

ANS: B                      PTS: 1

4. Catalina Cable Company (CCC) faces a demand for basic cable service given by  $P = 160 - Q$ . It has total costs (exclusive of the required rate of return on its invested capital) of  $TC = 250 + Q^2$ . If the commission that regulates CCC determines that \$500 is sufficient to compensate equity holders for their invested capital, what are the regulated price and output?
- a.  $P = 85, Q = 75$
  - b.  $P = 75, Q = 85$
  - c.  $P = 65, Q = 95$
  - d.  $P = 55, Q = 105$
  - e.  $P = 45, Q = 115$

ANS: A                      PTS: 1

5. Teal Taxi Company has a regulated taxi monopoly in Colortown. It faces a demand for rides given by  $P = 3 - 0.02Q$ . It has total costs (exclusive of the required rate of return on its invested capital) of  $TC = -110 + 0.1Q + 0.01Q^2$ . If the commission that regulates Teal Taxi determines that \$100 is sufficient to compensate equity holders for their invested capital, what are the regulated price and output?
- a.  $P = 0, Q = 150$
  - b.  $P = .5, Q = 125$
  - c.  $P = 1, Q = 100$
  - d.  $P = 1.5, Q = 75$
  - e.  $P = 2, Q = 50$

ANS: C                      PTS: 1

6. The major disadvantage of rate regulation of natural monopolies is that:
- a. natural monopolists spend too much time lobbying for higher rates
  - b. unlike a competitive firm, the natural monopoly has too much incentive to increase efficiency
  - c. the regulatory bureaucracy grinds slowly and generates regulatory lags
  - d. state public service commissions are poorly staffed and supervised
  - e. natural monopolists spend too much money on philanthropic activities

ANS: C                      PTS: 1

7. The lengthy delays for hearings and appeals over proposed rate increases by a natural monopoly are known as:
- a. regulatory lags
  - b. leaves of appeal
  - c. leaves of repeal
  - d. prudent delays
  - e. the public's right to be heard

ANS: A                      PTS: 1

8. According to the latest figures on industrial concentration in the United States, the 100 largest manufacturing firms control \_\_\_\_\_ of the manufacturing assets.
- a. 25 percent
  - b. 50 percent
  - c. 40 percent
  - d. 30 percent
  - e. 65 percent

ANS: B                      PTS: 1

9. The market concentration ratio:
- a. shows the percentage of total sales or production accounted for by the four largest firms in an industry
  - b. is a widely used, reliable measure of an industry's market structure
  - c. was developed by a Swedish and a German statistician in the late 1890s
  - d. shows the percentage of total sales or production accounted for by the ten largest firms in the United States
  - e. is so flawed a measure of an industry's market structure that it is almost never used

ANS: A                      PTS: 1



10. Many economists believe that competition is preferable to monopoly:
- a. because competition allocates resources more efficiently than monopoly does
  - b. because diffuse economic power leads to more diffuse political power
  - c. because competition yields a greater variety of goods and services
  - d. regardless of the costs of deconcentrating a concentrated industry
  - e. because monopolies tend to pay too little in taxes

ANS: A                      PTS: 1

11. The Herfindahl-Hirschman index measures market structure as the:
- a. sum of the squared market shares of the ten largest firms in an industry
  - b. sum of the squared market shares of all firms in an industry
  - c. sum of the squared market shares of the four largest firms in an industry
  - d. squared market share of the largest firm in an industry
  - e. sum of the market shares of the four largest firms in an industry

ANS: B                      PTS: 1

12. If there are ten equal-sized firms in an industry, the Herfindahl-Hirschman index would be:
- a. 1,000
  - b. 100
  - c. 10,000
  - d. 10
  - e. 1

ANS: A                      PTS: 1

13. If there are two equal-sized firms in an industry, the Herfindahl-Hirschman index would be:
- a. 50
  - b. 100
  - c. 2,500
  - d. 5,000
  - e. 250

ANS: D                      PTS: 1

14. If there are two large firms, each with one-quarter of the market, and ten firms, each with one-twentieth of the market, in an industry, the Herfindahl-Hirschman index will be:
- a. 250
  - b. 1,350
  - c. 1,500
  - d. 1,600
  - e. 1,850

ANS: C                      PTS: 1

15. The first federal antitrust law was the:
- a. Sherman Act
  - b. Clayton Act
  - c. Federal Trade Commission Act
  - d. Robinson-Patman Act
  - e. Celler-Kefauver Act

ANS: A                      PTS: 1

16. The antitrust law that made “every contract, combination . . . or conspiracy, in restraint of trade” illegal was the:
- a. Sherman Act
  - b. Clayton Act
  - c. Federal Trade Commission Act
  - d. Robinson-Patman Act
  - e. Celler-Kefauver Act

ANS: A                      PTS: 1

17. The antitrust law that made certain specified practices that tend to reduce competition or create monopoly illegal was the:
- a. Sherman Act
  - b. Clayton Act
  - c. Federal Trade Commission Act
  - d. Robinson-Patman Act
  - e. Celler-Kefauver Act

ANS: B                      PTS: 1

18. The antitrust law that made giving discounts to large buyers on the basis of volume purchases illegal was the:
- a. Sherman Act
  - b. Clayton Act
  - c. Federal Trade Commission Act
  - d. Robinson-Patman Act
  - e. Celler-Kefauver Act

ANS: D                      PTS: 1

19. The law that closed a loophole in an earlier law that allowed firms to merge to monopoly by buying a firm's assets rather than its shares was the:
- a. Sherman Act
  - b. Clayton Act
  - c. Federal Trade Commission Act
  - d. Robinson-Patman Act
  - e. Celler-Kefauver Act

ANS: E                      PTS: 1

20. The antitrust law aimed at preventing unfair competitive practices, including those not yet dreamed up by creative entrepreneurs, was the:
- a. Sherman Act
  - b. Clayton Act
  - c. Federal Trade Commission Act
  - d. Robinson-Patman Act
  - e. Celler-Kefauver Act

ANS: C                      PTS: 1

21. The rule of reason, which states that only unreasonable combinations in restraint of trade are illegal, was enunciated in the:
- a. Alcoa case
  - b. Standard Oil case
  - c. Von's Grocery case
  - d. Brown Shoe case
  - e. IBM case

ANS: B                      PTS: 1

22. The Supreme Court case that reestablished sheer size as a per se violation of the antitrust laws was the:
- a. Alcoa case
  - b. Standard Oil case
  - c. Von's Grocery case
  - d. Brown Shoe case
  - e. IBM case

ANS: A                      PTS: 1

23. One hundred coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If a new piece of environmental regulation reduces the fixed costs of each firm to 4.5, what will be the change in the number of plants operating in the long-run, zero-profit equilibrium?
- a. There will be no change in the number of firms.
  - b. There will be 25 more firms.
  - c. There will be 50 fewer firms.
  - d. There will be 75 more firms.
  - e. There will be 100 more firms.

ANS: E                      PTS: 1

24. An external economy occurs whenever a(n):
- a. action taken by a firm or individual results in uncompensated benefits to others
  - b. action taken by a firm or individual results in compensated benefits to others
  - c. action taken by a firm or individual results in compensated costs to others
  - d. firm trains workers in a highly specialized, firm-specific skill
  - e. action taken by a firm or individual results in uncompensated costs to others

ANS: A                      PTS: 1

25. An external diseconomy occurs whenever a(n):
- a. action taken by a firm or individual results in uncompensated benefits to others
  - b. action taken by a firm or individual results in compensated benefits to others
  - c. action taken by a firm or individual results in compensated costs to others
  - d. firm trains workers in a highly specialized, firm-specific skill
  - e. action taken by a firm or individual results in uncompensated costs to others

ANS: E                      PTS: 1

26. If an activity produces an external diseconomy, then there will be too:
- a. much of the activity undertaken by private parties from a social viewpoint
  - b. little of the activity undertaken by private parties from a social viewpoint
  - c. much of the activity undertaken by government from a private viewpoint
  - d. much of the activity undertaken by private parties from a private viewpoint
  - e. much of the activity undertaken by government from a social viewpoint

ANS: A                      PTS: 1

27. If an activity produces an external economy, then there will be too:
- a. much of the activity undertaken by private parties from a social viewpoint
  - b. little of the activity undertaken by private parties from a social viewpoint
  - c. much of the activity undertaken by government from a private viewpoint
  - d. much of the activity undertaken by private parties from a private viewpoint
  - e. much of the activity undertaken by government from a social viewpoint

ANS: B                      PTS: 1

28. The socially optimal level of pollution control occurs where the marginal:

- a. benefit of pollution control is zero
- b. cost of pollution is minimized
- c. cost of pollution control equals the marginal cost of pollution
- d. cost of pollution control is minimized
- e. cost of pollution control equals the marginal benefit of pollution

ANS: C                      PTS: 1

29. An effluent fee is a:

- a. fine polluters must pay the government for discharging waste
- b. brokerage fee paid to the EPA by parties exchanging transferable emissions permits
- c. fine paid to the EPA by firms caught violating the pollution laws
- d. fine paid to the injured parties by firms caught violating the pollution laws
- e. way to reduce the costs of regulated firms

ANS: A                      PTS: 1

30. Transferable emissions permits establish property rights to:

- a. generate a certain amount of pollution
- b. generate more business for the Chicago Board of Trade
- c. reduce the regulatory burden of the FTC
- d. allocate the costs of pollution control equitably
- e. generate unlimited amounts of specified pollutions

ANS: A                      PTS: 1

31. A public good is any good that:
- a. is provided by the federal government
  - b. can be consumed by everyone
  - c. can be consumed by any person without reducing the amount available to be consumed by everyone else
  - d. can be easily withheld from consumers
  - e. citizens demand of their public institutions

ANS: C                      PTS: 1

32. The cost of pollution originating in the chemical industry is  $C_p = 4P + 2P^2$ , where  $P$  is the quantity of pollutants emitted. The cost of pollution control for this industry is  $C_c = 120 - 12P$ . What is the optimal level of pollution?
- a. 0 units
  - b. 1 unit
  - c. 2 units
  - d. 3 units
  - e. 4 units

ANS: C                      PTS: 1

33. The cost of pollution originating in the chemical industry is  $C_p = 4P + 2P^2$ , where  $P$  is the quantity of pollutants emitted. The cost of pollution control for this industry is  $C_c = 120 - 12P$ . What is the optimal effluent fee?
- a. \$4
  - b. \$8
  - c. \$12
  - d. \$16
  - e. \$24

ANS: C                      PTS: 1



34. If there are two large firms, each with one-quarter of the market, and ten firms, each with one-twentieth of the market, in an industry, the market concentration ratio will be:
- a. 40
  - b. 50
  - c. 60
  - d. 10
  - e. 12

ANS: C                      PTS: 1

35. One hundred coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If a new piece of environmental regulation increases the total costs of each firm by 25 percent, what are the new long-run, zero-profit equilibrium price and industry output?
- a.  $P = \$0.80, Q = 6,000$
  - b.  $P = \$0.90, Q = 5,500$
  - c.  $P = \$1.00, Q = 5,000$
  - d.  $P = \$1.25, Q = 3,750$
  - e.  $P = \$1.50, Q = 2,500$

ANS: D                      PTS: 1

36. One hundred coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If a new piece of environmental regulation increases the total costs of each firm by 25 percent, what will be the change in the number of plants operating in the long-run, zero-profit equilibrium?
- a. There will be no change in the number of firms.
  - b. There will be 10 more firms.
  - c. There will be 10 fewer firms.
  - d. There will be 25 fewer firms.
  - e. There will be 25 more firms.

ANS: D                      PTS: 1

37. One hundred coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If environmental regulation reform reduces the total costs of each firm by 25 percent, what are the new long-run, zero-profit equilibrium price and industry output?
- a.  $P = \$0.75, Q = 6,250$
  - b.  $P = \$0.80, Q = 6,000$
  - c.  $P = \$1.00, Q = 5,000$
  - d.  $P = \$1.25, Q = 3,750$
  - e.  $P = \$1.50, Q = 2,500$

ANS: A                      PTS: 1

38. One hundred coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If environmental regulation reform reduces the total costs of each firm by 25 percent, what will be the change in the number of plants operating in the long-run, zero-profit equilibrium?
- a. There will be no change in the number of firms.
  - b. There will be 10 more firms.
  - c. There will be 10 fewer firms.
  - d. There will be 25 fewer firms.
  - e. There will be 25 more firms.

ANS: E                      PTS: 1

39. Coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If a new piece of environmental regulation increases the fixed costs of each firm to \$50, what are the new long-run, zero-profit equilibrium price and industry output?
- a.  $P = \$0.75, Q = 6,250$
  - b.  $P = \$0.80, Q = 6,000$
  - c.  $P = \$1.00, Q = 5,000$
  - d.  $P = \$1.25, Q = 3,750$
  - e.  $P = \$1.50, Q = 2,500$

ANS: E                      PTS: 1

40. Coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If a new piece of environmental regulation increases the fixed costs of each firm to \$50, what will be the change in the number of plants operating in the long-run, zero-profit equilibrium?
- a. There will be no change in the number of firms.
  - b. There will be 25 fewer firms.
  - c. There will be 40 fewer firms.
  - d. There will be 50 fewer firms.
  - e. There will be 75 fewer firms.

ANS: E                      PTS: 1

41. Coal-fired power plants currently produce power, with each firm's total costs given by  $TC = 12.5 + 0.5q + 0.005q^2$ , where  $q$  is the firm's output. The demand for their electricity is given by  $Q_D = 10,000 - 5,000P$ . If a new piece of environmental regulation reduces the fixed costs of each firm to 4.5, what are the new long-run, zero-profit equilibrium price and industry output?
- a.  $P = \$0.75, Q = 6,250$
  - b.  $P = \$0.80, Q = 6,000$
  - c.  $P = \$1.00, Q = 5,000$
  - d.  $P = \$1.25, Q = 3,750$
  - e.  $P = \$1.50, Q = 2,500$

ANS: B                      PTS: 1

42. A competitive market with demand  $Q = 120 - 4P$  and supply  $Q = -30 + 2P$  is in equilibrium. If government imposes a price floor of 23, what quantity will be traded on the market?
- a. 28
  - b. 16
  - c. 20
  - d. 22
  - e. none of the above

ANS: C                      PTS: 1

43. A competitive market with demand  $Q = 120 - 4P$  and supply  $Q = -30 + 2P$  is in equilibrium. If government imposes a price floor of 26, what quantity will be traded on the market?
- a. 28
  - b. 16
  - c. 20
  - d. 22
  - e. none of the above

ANS: B                      PTS: 1

44. A competitive market with demand  $Q = 120 - 4P$  and supply  $Q = -30 + 2P$  is in equilibrium. If government imposes a price ceiling at 22, what quantity will be traded on the market?
- a. 28
  - b. 32
  - c. 20
  - d. 14
  - e. none of the above

ANS: D                      PTS: 1