

Multiple Choice

1. 1. The analytical tools underlying nearly all microeconomic studies are:
- a. a) Unconstrained optimization and comparative statics.
 - b. b) Comparative statics and game theory.
 - c. c) Opportunity cost and equilibrium analysis.
 - d. d) Constrained optimization, equilibrium analysis, and comparative statics.

Ans: D

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 2. Economics is often described as *受限的*
- b. a) The science of choice
 - c. b) The science of constrained choice
 - d. c) The science of supply and demand
 - e. d) The science of market forces

Ans: B

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 3. Microeconomics examines
- b. a) the economic behavior of an entire nation.
 - c. b) the economic behavior of individual economic decision units.
 - d. c) topics such as national income and inflation.
 - e. d) monetary policy.

Ans: B

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 4. An endogenous variable is
 - b. a) a variable that an economic agent chooses.
 - c. b) consumption, investment or government spending.
 - d. c) a variable determined within the economic system being studied.
 - e. d) a variable pertaining to the home country economy.

Ans: C

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 5. In general, economics is the study of
 - b. a) the allocation of scarce wants to unlimited resources.
 - c. b) the allocation scarce resources to unlimited wants.
 - d. c) the allocation of resources between the government and the private sector.
 - e. d) the allocation of workers between firms.

Ans: B

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 6. Identifying the appropriate way to allocate an economy's resources is an example of
 - b. a) a constrained optimization problem.
 - c. b) a comparative statics problem.
 - d. c) an equilibrium analysis.
 - e. d) marginal analysis.

Ans: A

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 7. Every society must answer
 - b. a) Which variables are exogenous and which are endogenous?
 - c. b) Who will receive the goods and services?

- d. c) What goods and services will be produced, how much will be produced, who will produce them and who will receive them?
- e. d) How centralized should government bureaucracy be?

Ans: C

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 8. Which of the following statements regarding exogenous and endogenous variables is correct?
 - b. a) The set of exogenous variables in any economic model should take into account the rich detail of the world and so should be limitless.
 - c. b) Endogenous variables will always be determined within the model.
 - d. c) Exogenous variables change as a result of changes in endogenous variables.
 - e. d) The only variables that are relevant to the market equilibrium are the endogenous variables, as they are determined within the model.

Ans: B

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 9. The definition of an exogenous variable is
 - b. a) a variable whose value is determined within the model under study.
 - c. b) a variable whose value is determined outside the model under study.
 - d. c) a variable whose value is determined through constrained optimization.
 - e. d) a variable whose value is determined through comparative statics.

Ans: B

Difficulty: Easy

Heading: Why Study Microeconomics?

LO 1 Define the terms microeconomics and macroeconomics, including the concept of the science of constrained choice.

- a. 10. Constrained optimization, equilibrium analysis and comparative statistics are the three essential tools of
 - b. a) Macroeconomic analysis
 - c. b) Microeconomic analysis

- d. c) Equilibrium analysis
- e. d) Industry analysis

Ans: B

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 11. Constrained optimization occurs when:
 - b. a) An individual makes choices that are influenced by his/her parents and family.
 - c. b) An individual makes choices that best suit his/her preferences.
 - d. c) Firms choose the best products to meet their client's needs.
 - e. d) An individual is forced to choose between competing alternatives subject to some limitation such as budgetary considerations.

constrained.

Ans: D

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 12. The three tools used repeatedly in microeconomic analysis are:
 - b. a) unconstrained optimization, comparative equilibrium, equilibrium statics.
 - c. b) opportunity cost, scarce resources, shifting equilibrium.
 - d. c) restricted analysis, constrained equilibrium, optimization.
 - e. d) constrained optimization, equilibrium analysis, comparative statics.

Ans: D

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 13. An example of constrained optimization would be
 - b. a) a firm trying to maximize its profits subject to its budget constraint.
 - c. b) a ball coming to rest at the bottom of a cup.
 - d. c) an analysis of how market prices change when supply conditions change.
 - e. d) An analysis of the effect of facilitating internet trading on market price.

Ans: A

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 14. A manager cares about the number of workers under her command. She can choose between two projects: Project A allows her to hire workers who must be paid W_A each, Project B allows her to hire workers who must be paid W_B each. She is allocated a budget of \$100 that she can allocate to either project. Which of the following accurately represents the manager's problem?
- b. a) The objective function is $\text{Max } (N_A + N_B)$, where N_i is the number of workers on project i ($i = A, B$); the constraint is $W_A N_A + W_B N_B \leq \$100$, where W_i is the wage on project i ($i = A, B$).
 - c. b) The objective function is $\text{Max } (N)$, where N is the number of workers under the manager's control; the constraint is $W_A + W_B \leq \$100$, where W_i is the wage on project i ($i = A, B$).
 - d. c) The objective function is $\text{Max } (W_A N + W_B N)$, where N is the number of workers and W_i is the wage of the worker on project i ($i = A, B$); the constraint is $W_A + W_B \leq \$100$.
 - e. d) $\text{Max } (B/N)$, where B is the manager's budget and N is the number of workers under the manager's command; the constraint is $W_A N + W_B N \leq \$100$.

Ans: A

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 15. Which of the following is not typically found in a constrained optimization problem?
- b. a) Resource constraint
 - c. b) Endogenous variable
 - d. c) Comparative statics analysis
 - e. d) Objective function

Ans: C

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 16. Which of the following is an example of a constraint?

- b. a) $L+W$
- c. b) $\text{Max } LW$
- d. c)
- e. d) $L + W \geq 5$

Ans: D

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 17. Which of the following is the best example of a consumer's objective function?
 - b. a) profits.
 - c. b) consumption.
 - d. c) satisfaction
 - e. d) budget constraint.

Ans: C

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 18. Suppose the price of is \$3, the price of is \$5, the consumer's income is \$30, and the consumer's level of satisfaction is measured by. The consumer's income constraint is
 - b. a)
 - c. b)
 - d. c)
 - e. d)

Ans: D

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 19. Suppose a consumer's level of satisfaction is given by AB^2 and he/she has a total of \$10 to spend on goods A and B. If the price of A is \$1 and the price of B is \$2, and assuming you can only purchase whole units (not fractional) of A and B, how many units of A and B should he/she purchase?
 - b. a) 2 units of A and 4 units of B.

- c. b) 4 units of A and 3 units of B.
- d. c) 6 units of A and 2 units of B.
- e. d) 0 units of A and 5 units of B.

Ans: B

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 20. An exogenous variable in a consumer's choice problem would typically be:
 - b. a) satisfaction level.
 - c. b) consumption level.
 - d. c) price level.
 - e. d) quantity consumed.

Ans: C

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 21. Suppose the price of X is \$15 per unit, the price of Y is \$12 per unit, the consumer's income is \$100, and the consumer's level of satisfaction is measured by $XY + Y$. The consumer's constraint is
 - b. a) $X + Y \leq 100$
 - c. b) $\max XY$
 - d. c) $15X + 12Y \leq 100$
 - e. d) $\max XY + Y$

Ans: C

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 22. A good example of marginal reasoning would be
 - b. a) the addition to total sales from spending an additional dollar on advertising.
 - c. b) the sales resulting from total spending on advertising.
 - d. c) the decision to shut down production.
 - e. d) the decision to maximize profits rather than sales.

Ans: A

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 23. What term in microeconomics tells us how a dependent variable changes as a result of adding one unit of an independent variable
 - b. a) Equilibrium impact.
 - c. b) Comparative statics.
 - d. c) Independent impact.
 - e. d) Marginal impact.

Ans: D

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 24. An equilibrium
 - b. a) is a condition that is reached eventually in any market.
 - c. b) is a state that will continue indefinitely as long as exogenous factors remain unchanged.
 - d. c) is a concept that is often meaningless because most markets never reach equilibrium.
 - e. d) is a temporary state.

Ans: B

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 25. Identify the truthfulness of the following statements:
 - I. Marginal analysis can explain why you would always choose to eat Chinese food rather than pizza.
 - II. Marginal analysis can explain the incremental impact of an increase in total cost when one more unit of output is produced.
 - a. a) Both I and II are true.
 - b. b) Both I and II are false.
 - c. c) I is true; II is false.

- d. d) I is false; II is true.

Ans: D

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 26. Identify the truthfulness of the following statements:
- I. Equilibrium analysis helps economists determine the market-clearing(equilibrium price) .
- II. Comparative statics help economists analyze how a change in an exogenous variable affects the level of a related endogenous variable in an economic model.
- a. a) Both I and II are false.
- b. b) Both I and II are true.
- c. c) I is true; II is false.
- d. d) I is false; II is true.

Ans: B

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 27. Another term for equilibrium would be
- b. a) a point of infinite supply.
- c. b) a point of insatiable wants.
- d. c) a point of stability.
- e. d) a point of scarcity.

Ans: C

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 28. Comparative statics
- b. a) examines how exogenous variables change as endogenous factors change.
- c. b) examines how endogenous variables change as exogenous factors change.
- d. c) presents a comparison of two separate markets at a single point in time.
- e. d) is often rendered useless because exogenous variables can never be expected to remain constant for long.

Ans: B

Difficulty: Easy

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 29. Suppose that market demand for a good slopes downward and market supply slopes upward. Equilibrium price is now \$10 and 500,000 units of the good are traded at this price. Suppose now that the cost at which each unit of the good is produced falls. What is the likely effect of this change on the market equilibrium?
- b. a) Excess supply.
 - c. b) A fall in price.
 - d. c) A shift in demand to the right.
 - e. d) An increase in price.

Ans: B

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 30. Suppose the equilibrium price in a market is \$5, and the government imposes a \$4.50 price floor on the market. This will
- b. a) create excess supply.
 - c. b) create excess demand.
 - d. c) shift the demand curve to the right.
 - e. d) have no effect on the market.

Ans: D

Difficulty: Hard

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 31. Suppose the equilibrium price in a market is \$5, and the government imposes a \$4.50 price ceiling. This will
- b. a) Create excess demand.
 - c. b) Create excess supply.
 - d. c) Shift the supply curve to the left.
 - e. d) Have no effect.

Ans: A

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 32. Suppose the equilibrium rent for apartments in New York City is \$2000 per month. If the city authorities declared effective tomorrow that rents would not be allowed to exceed \$1800 per month, what do you think would happen to the relationship between supply and demand for rental apartments in New York City?
 - b. a) The supply of rental apartments would go up and rents would fall below \$1800 per month.
 - c. b) There would be very little new construction of apartments in New York City and shortages would develop.
 - d. c) People would move out of New York City because of the new restrictions.
 - e. d) The demand for apartments would fall short of available supply.

Ans: B

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 33. Movements along a demand curve caused by a change in price probably means that:
 - b. a) There has been an endogenous shift in the demand curve.
 - c. b) There has been an exogenous shift in the demand curve.
 - d. c) There has been a shift in an exogenous factor that affects supply.
 - e. d) The supply curve is not shifting.

Ans: C

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 34. Which of the following statements is true?
 - b. a) Endogenous changes to demand and supply curves cause them to shift.
 - c. b) Exogenous changes can never affect both the demand and supply curves.
 - d. c) Exogenous changes can sometimes affect both the demand and supply curves.
 - e. d) Movement along a demand curve means that only an endogenous factor is

changing.

Ans: C

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 35. Currently, 100,000 units of a good are traded on a market. The government imposes a limit of a maximum of 50,000 units that may be traded on the market. This will:
- b. a) create excess supply.
 - c. b) create excess demand.
 - d. c) raise price
 - e. d) have no effect on the market.

Ans: C

Difficulty: Hard

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 36. Currently, 100,000 units of a good are traded on the market. The government imposes a tax on producers that raises the unit cost of production of the good. This will:
- b. a) shift the supply curve to the left.
 - c. b) shift the supply curve to the right.
 - d. c) shift the demand curve to the left.
 - e. d) increase the quantity traded.

Ans: A

Difficulty: Hard

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 37. If we were to build a model measuring the supply of corn, which of the following could be an example of an exogenous variable in the model?
- b. a) The price of corn.
 - c. b) The quantity supplied of corn.
 - d. c) The quantity of rain.
 - e. d) The demand for corn.

Ans: C

Difficulty: Hard

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 38. Suppose that we illustrate demand and supply with quantity on the horizontal axis and price on the vertical axis. Which of the following statements is *false*?
 - b. a) Changes in exogenous variables are represented by shifts in the demand and/or supply curves.
 - c. b) Changes in endogenous variables are represented by movements along the supply and/or demand curves.
 - d. c) Price and quantity are the exogenous variables in this representation.
 - e. d) The equilibrium is represented as the intersection of supply and demand curves.

Ans: C

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 39. Suppose that we illustrate demand and supply with quantity on the horizontal axis and price on the vertical axis. Which of the following statements is *false*?
 - b. a) The equilibrium remains unchanged unless an exogenous variable changes.
 - c. b) The equilibrium is represented as the intersection of supply and demand curves.
 - d. c) When a shift in demand or supply occurs, a comparative statics analysis compares the old and the new equilibrium points.
 - e. d) A change in price will cause a shift in the demand curve.

Ans: D

Difficulty: Medium

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 40. Suppose that we illustrate demand and supply with quantity on the horizontal axis and price on the vertical axis. Let demand be a function of price and income, $Q^d(P, I)$. Which of the following statements is *true*?
 - b. a) A change in income will cause a shift in the supply curve.

- c. b) A change in income level is represented by a movement along the demand curve.
- d. c) Income is not represented on one of the axes, and so is treated as an exogenous variable in the graphical analysis.
- e. d) Price and income together must change in order to create a shift in the demand curve.

Ans: C

Difficulty: Hard

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 41. Suppose that we illustrate demand and supply with quantity on the horizontal axis and *income* on the vertical axis. Let demand be a function of price and income, $Q^d(P, I)$. Which of the following statements is *true*?
 - b. a) A change in income will cause a shift in the demand curve.
 - c. b) A change in income level is represented by a movement along the demand curve.
 - d. c) Income is treated as an exogenous variable in the graphical analysis.
 - e. d) Price and income together must change in order to create a shift in the demand curve.

Ans: B

Difficulty: Hard

Heading: Three Key Analytical Tools

LO 2 Describe the concepts of constrained optimization, equilibrium analysis, and comparative statics.

- a. 42. Which of the following statements about positive analysis is correct?
 - b. a) Positive analysis prescribes the best solution to an economic problem.
 - c. b) Positive analysis predicts how an economic system will change over time.
 - d. c) While normative analysis can be wrong, since it is often based on someone's opinion, positive analysis is always accurate.
 - e. d) Since positive analysis is based on a model, and not the real world, it is mostly irrelevant.

Ans: B

Difficulty: Easy

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

- a. 43. Which of the following statements about normative analysis is correct?
- b. a) Normative analysis, because it is based on opinion, rarely employs any positive analysis when prescribing a solution to a given problem.
 - c. b) Normative analysis typically cannot be trusted because it is only someone's opinion.
 - d. c) Normative analysis ignores exogenous variables when making predictions.
 - e. d) Normative analysis typically focuses on issues of social welfare.

Ans: D

Difficulty: Easy

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

- a. 44. Which of the following statements represents normative analysis?
- b. a) Eliminating rent controls in New York City will likely lead to greater supply of housing in the future.
 - c. b) Eliminating the minimum wage will likely lead to lower unemployment.
 - d. c) Subsidies to farmers to produce corn for ethanol will lead to a (desirable) reduced dependence on foreign oil.
 - e. d) Raising taxes on gasoline will reduce automobile traffic on our nation's highways.

Ans: C

Difficulty: Medium

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

- a. 45. Which of the following statements has both positive and normative aspects to it?
- b. a) Reducing taxes on telecommunications will lower the price for consumers and encourage families to communicate with one another more frequently.
 - c. b) Reducing the minimum wage will lead to lower unemployment and a lower average wage.
 - d. c) Increasing taxes on gasoline will lead to lower fuel consumption and fewer automobiles being sold each year.
 - e. d) Taxing alcohol leads to lower alcohol consumption per year.

Ans: A

Difficulty: Medium

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

- a. 46. Which of the following statements has neither positive nor normative aspects to

it?

- b. a) On hot days, people drink more water.
- c. b) Hot weather leads to greater numbers of heat exhaustion cases.
- d. c) Providing free space heaters to poor people can reduce certain types of respiratory illness.
- e. d) Hot weather is desirable.

Ans: D

Difficulty: Medium

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

- a. 47. Which of the following represents an example of positive analysis?
- b. a) How will the equilibrium price of corn be affected by a government subsidy?
- c. b) What is the best way to assist low-income families with affordable housing?
- d. c) Would taxes on emissions be the best way to reduce pollution?
- e. d) How can the government best design a tax cut?

Ans: A

Difficulty: Easy

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

- a. 48. Which of the following represents an example of normative analysis?
- b. a) How will the equilibrium price of coffee be affected by drought?
- c. b) How will a government subsidy affect the quantity demanded of public housing?
- d. c) What is the best method for allocating tax revenues?
- e. d) How will a tax cut affect a typical consumer's disposable income?

Ans: C

Difficulty: Easy

Heading: Positive and Normative Analysis

LO 3 Explain the difference between positive and normative analysis

File: Ch02, Chapter 2: Supply and Demand Analysis

Multiple Choice

1. A relationship that shows the quantity of goods that consumers are willing to buy at different prices is the
- a) elasticity
 - b) market demand curve
 - c) market supply curve
 - d) market equilibrium

Ans: B

Difficulty Level: Easy

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

2. The law of demand states :
- a) that price and quantity demanded are inversely related.
 - b) that price and quantity demanded are inversely related, holding all other factors that influence demand fixed.
 - c) that demand for a good comes from the desire of buyers to directly consume the good itself.
 - d) an increase in demand results in an increase in price.

Ans: B

Difficulty: Easy

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

3. Which of the following statements best illustrates the law of demand?
- a) When the price of pepperoni rises, the demand for pizza falls.
 - b) When the weather gets hotter, the quantity demanded of ice cream rises.
 - c) When the price of lemons falls, the demand for lemonade rises.
 - d) When the price of eggs rises, the quantity demanded of eggs falls.

Ans: D

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

4. Which of the following is *not* typically a factor held constant when deriving a demand curve for clothing?
- a) consumer income.
 - b) the price of clothing.
 - c) the price of other goods.
 - d) consumer tastes.

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

5. What is the difference between a derived demand curve and a direct demand curve?
- a) Derived demand is unknown, whereas direct demand is known.
 - b) Derived demand is unobservable, whereas direct demand is observable.
 - c) Derived demand is demand determined by the demand for another good, whereas direct demand is demand for a good itself.
 - d) Derived and direct demand are both terms referring to the same thing.

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

6. What is the quantity of televisions demanded per year when the average price of a television is \$100 per unit and the demand curve for televisions is represented by $Q^d = 3.5\text{million} - 5000P$?
- a) 2.5 million televisions
 - b) 3.0 million televisions
 - c) 3.2 million televisions
 - d) 4.0 million televisions

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

7. The linear demand curve is represented by the equation

- a) $P=Q - aP$
- b) $Q=a - bP$
- c) $Q=a - bP^2$
- d) $Q = AP^{-b}$

Ans: B

Difficulty Level: Easy

Heading: Demand, Supply and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

8. Which of the following statements best illustrates the law of supply?

- a) When the price of oil rises, the supply of automobiles falls.
- b) When the price of steel falls, the supply of automobiles rises.
- c) When the price of computers rises, the quantity supplied of computers rises.
- d) When the price of televisions rises, the quantity supplied of televisions falls.

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

9. A curve that shows us the total quantity of goods that their suppliers are willing to sell at different prices is

- a) Market supply curve
- b) Law of supply
- c) Demand curve
- d) Market demand curve

Ans: A

Difficulty Level: Easy

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

10. Which of the following is *not* a factor held constant when deriving a supply curve for ski boots?
- a) The price of ski lift tickets.
 - b) The price of ski boots.
 - c) The wages of workers who make ski boots.
 - d) The price of skis.

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

11. Suppose in a market with $Q^d = 100 - 5P$ and $Q^s = 5P$, the government imposes a price floor of \$15. If the government is required to purchase any excess supply at the price floor, how much will the government have to pay to purchase the excess in this market?
- a) Nothing; there is no surplus
 - b) \$1,000
 - c) \$1,500
 - d) \$750

Ans: D

Difficulty Level: Hard

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

12. Suppose that the supply of apples can be represented by the following equation: $Q^s = 2P + 500$. Further suppose that the demand for apples can be represented by the following equation: $Q^d = 900 - 3P$. Which of the following is the equilibrium price in the market for apples?
- a) 10
 - b) 50
 - c) 80
 - d) 100

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 1 Describe the three main building blocks of supply and demand analysis -- demand curves, supply curves, and the concept of market equilibrium

13. Suppose demand is given by $Q^d = 500 - 15P$ and supply is given by $Q^s = 5P$. If the government imposes a \$15 price ceiling, the excess demand will be
- a) 200
 - b) 225
 - c) 250
 - d) 275

Ans: A

Difficulty Level: Hard

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

14. Suppose demand is given by $Q^d = 400 - 15P + I$, where Q^d is quantity demanded, P is price and I is income. Supply is given by $Q^s = 5P$, where Q^s is quantity supplied. When $I = 200$, equilibrium price is
- a) 15
 - b) 20
 - c) 25
 - d) 30

Ans: D

Difficulty Level: Hard

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

15. Suppose demand is given by $Q^d = 500 - 15P$ and supply is given by $Q^s = 5P$. If the government imposes a \$30 price floor, the excess supply will be
- a) 25
 - b) 50
 - c) 100
 - d) 150

Ans: C

Difficulty Level: Hard

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

16. Suppose demand is given by $Q^d = 400 - 15P + I$, where Q^d is quantity demanded, P is price and I is income. Supply is given by $Q^s = 5P$, where Q^s is quantity supplied. When $I = 100$, equilibrium price is
- a) 15
 - b) 20
 - c) 25
 - d) 30

Ans: C

Difficulty Level: Hard

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

17. Which of the following would cause an unambiguous decrease in the equilibrium quantity in a market?
- a) a rightward shift in supply and a rightward shift in demand.
 - b) a rightward shift in supply and a leftward shift in demand.
 - c) a leftward shift in supply and a rightward shift in demand.
 - d) a leftward shift in supply and a leftward shift in demand.

Ans: D

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

18. Factors that could cause a supply curve to shift to the right include all of the following except
- a) a drop in the price of inputs to the supply process.
 - b) an increase in the number of firms in the industry.
 - c) an increase in demand for the product.
 - d) a technological innovation that makes it cheaper to produce the product.

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

19. Factors that could cause a demand curve to shift to the left include all of the following except
- a) a change in preferences away from the product in question.
 - b) an increase in the price of substitute products.
 - c) a growing awareness of a health risk associated with the product.
 - d) a decrease in the general level of income in the country.

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

20. Suppose that the market for computers is initially in equilibrium. Further suppose that there is an increase in the price of computer software. Which of the following accurately describes the new equilibrium in the computer market?
- a) The equilibrium price will rise; the equilibrium quantity will fall.
 - b) The equilibrium price will rise; the equilibrium quantity will rise.
 - c) The equilibrium price will fall; the equilibrium quantity will fall.
 - d) The equilibrium price will fall; the equilibrium quantity will rise.

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

21. Suppose that the market for soybeans is initially in equilibrium. Further suppose that there is a decrease in the price of fertilizer. Which of the following accurately describes the new equilibrium?
- a) The equilibrium price will rise; the equilibrium quantity will fall.
 - b) The equilibrium price will rise; the equilibrium quantity will rise.
 - c) The equilibrium price will fall; the equilibrium quantity will fall.
 - d) The equilibrium price will fall; the equilibrium quantity will rise.

Ans: D

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

22. Suppose that the market for newspaper is initially in equilibrium. Further suppose that there is both an increase in the price of ink and a decrease in the price of magazines, which people may read in place of a newspaper. Which of the following accurately describes the new equilibrium?
- a) The equilibrium price will rise; the equilibrium quantity is ambiguous.
 - b) The equilibrium price is ambiguous; the equilibrium quantity will fall.
 - c) The equilibrium price will fall; the equilibrium quantity is ambiguous.
 - d) The equilibrium price is ambiguous; the equilibrium quantity will rise.

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

23. A higher consumer income increases the demand for a particular good. The effect of this income on market demand usually is illustrated by
- a) a rightward shift in the demand curve
 - b) a leftward shift in the demand curve
 - c) a rightward movement along the demand curve
 - d) a leftward movement along the demand curve.

Ans: A

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

24. Consider the demand curve $Q^d = 1000 - 20P - 6r$. If the value of r falls, the demand curve will
- a) shift to the left
 - b) shift to the right
 - c) remain unchanged
 - d) rotate along the quantity axis

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

25. Consider the demand curve $Q^d = 40 - 2P + 6i$. If the value of i rises, the demand curve will
- a) not shift at all
 - b) shift to the right
 - c) shift to the left
 - d) rotate so it becomes upward sloping

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

26. Consider the supply curve $Q^s = 40 + 2P + 6i$. If the value of i rises, the supply curve will
- a) not shift at all
 - b) shift to the right
 - c) shift to the left
 - d) rotate so it becomes upward sloping

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

27. Which of the following would cause an unambiguous increase in the equilibrium price in a market?
- a) a rightward shift in supply and a rightward shift in demand.
 - b) a rightward shift in supply and a leftward shift in demand.
 - c) a leftward shift in supply and a rightward shift in demand.
 - d) a leftward shift in supply and a leftward shift in demand.

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

28. A simultaneous shift to the right of both supply and demand will

- a) increase the equilibrium price
- b) decrease the equilibrium price
- c) increase the equilibrium quantity
- d) decrease the equilibrium quantity

Ans: C

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

29. Which of the following is False?

- a) Rightward shift in demand + unchanged supply curve = higher equilibrium price and larger equilibrium quantity
- b) Rightward shift in demand + Rightward shift in supply curve = lower equilibrium price and smaller equilibrium quantity
- c) Leftward shift in supply + unchanged demand curve = higher equilibrium price and smaller equilibrium quantity
- d) Leftward shift in demand + unchanged supply curve = lower equilibrium price and smaller equilibrium quantity
- e) Rightward shift in supply + unchanged demand curve = lower equilibrium price and larger equilibrium quantity

Ans: B

Difficulty Level: Medium

Heading: Demand, Supply, and Market Equilibrium

LO: 2 Analyze how changes in exogenous variables shift the demand and supply curves and thus change the equilibrium price and quantity

Multiple Choice

32. A measure of the rate of percentage change of **quantity demanded** with respect to price, holding all other determinants of demand constant is
- a) Price elasticity of market equilibrium
 - b) Price elasticity of demand
 - c) Price elasticity of supply
 - d) Price elasticity equilibrium

Ans: B

Difficulty Level: Easy

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

33. Price elasticity of demand measures
- a) the shift in demand as price changes.
 - b) the sensitivity of quantity demanded to price.
 - c) the slope of the demand curve.
 - d) the relationship of percentages to price.

Ans: B

Difficulty Level: Easy

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

34. Consider the supply curve $Q^s = 2P$ and the demand curve $Q^d = 90 - P$. Which expression best shows how you would calculate the elasticity of demand when P increases by 1 along the demand curve from its equilibrium value?
- a) $[(59 - 60) / (31 - 30)] \times (30/60)$
 - b) $[(56 - 60) / (31 - 30)] \times (30/60)$
 - c) $[(59 - 61) / (31 - 30)] \times (30/60)$
 - d) $[(59 - 62) / (32 - 30)] \times (30/60)$

Ans: A

Difficulty Level: Hard

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

35. Eggs would typically have a
- a) low elasticity of demand, probably between -1 and -2

- b) low elasticity of demand, probably between 0 and -1
- c) high elasticity of demand, probably between -2 and -3
- d) low elasticity of demand, probably between -2 and -3

Ans: B

Difficulty Level: Easy

Heading: Price Elasticity of Demand

LO: 6 Discuss the factors that determine the price elasticity of demand

36. Please match the classification to the meaning

- | | | | |
|---|----------------------------|---|---|
| a | Perfectly inelastic demand | 1 | Price elasticity of demand equal to -1 |
| b | Inelastic demand | 2 | Price elasticity of demand between -1 and $-\infty$ |
| c | Unitary elastic demand | 3 | Price elasticity of demand between 0 and -1 |
| d | Elastic demand | 4 | Price elasticity of demand equal to 0 |
| e | Perfectly elastic demand | 5 | Price elasticity of demand equal to $-\infty$ |

Ans: A – 4; B – 3; C – 1; D – 2; E – 5

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

37. Suppose that when the price of a good is \$15, the quantity demanded is 40 units, and when the price falls to \$6, the quantity increases to 60 units. The price elasticity of demand near a price of \$6 and a quantity of 60 can be calculated as:

- a) $-5/6$
- b) -2
- c) $-2/9$
- d) $-9/2$

Ans: C

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 4 Calculate the price elasticity of demand for specific demand curves

38. Suppose that demand is linear, $Q^d = 100 - 12P$. At $P = 5$ and $Q = 40$, the price elasticity of demand is:

- a) $-2/3$
- b) -2
- c) -12
- d) $-3/2$

Ans: D

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 4 Calculate the price elasticity of demand for specific demand curves

39. The choke price is

- a) the price at which quantity supplied falls to zero.
- b) the price at which quantity demanded falls to zero.
- c) the price at which quantity supplied is maximized.
- d) the price at which quantity demanded is maximized.

Ans: B

Difficulty Level: Easy

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

40. Suppose we postulate a linear demand curve $Q^d = a - bP$ and observe, through supply shifts, two points on the demand curve. At point A, $P_A = 2$ and $Q_A^d = 6$. At point B, $P_B = 4$ and $Q_B^d = 2$. The choke price for this demand curve is

- a) 10
- b) 2
- c) 5
- d) -2

Ans: C

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 4 Calculate the price elasticity of demand for specific demand curves

41. Suppose demand is given by $Q^d = 1000 - 25P$ and supply is given by $Q^s = 75P$. At the equilibrium price and quantity, the price elasticity of demand is

- a) -3
- b) -25
- c) -1/3
- d) -10

Ans: C

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 4 Calculate the price elasticity of demand for specific demand curves

42. Along a linear demand curve, as price falls,
- a) the price elasticity of demand is constant, but the slope of demand falls.
 - b) the price elasticity of demand approaches zero, but the slope is constant.
 - c) the price elasticity of demand moves away from zero.
 - d) the price elasticity is the same as the slope of the demand curve.

Ans: B

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

43. The constant elasticity demand curve is represented by the equation

- a) $P = Q - aP$
- b) $Q = a - bP$
- c) $Q = a - bP^2$
- d) $Q = AP^{-b}$

Ans: D

Difficulty Level: Easy

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

44. Consider the demand curve $Q^d = 5P^{-1}$. The elasticity of demand along this demand curve

- a) is inelastic
- b) is elastic
- c) is unitary elastic
- d) falls as the price falls

Ans: C

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

45. Consider the demand curve $Q^d = 500P^{-2}$. (是负几次方，弹性就是多少) If the price is 1, the elasticity of demand is

- a) -0.50
- b) -2
- c) 500
- d) -500

Ans: B

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

46. If demand is elastic, an increase in price
- a) will increase total revenue
 - b) will decrease total revenue
 - c) will have an indeterminate effect on total revenue
 - d) will decrease total profit

Ans: B

Difficulty Level: Easy

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

47. Of the following choices, which good should have the most inelastic price elasticity of demand?
- a) Gasoline to a car owner.
 - b) Cigarettes to a smoker.
 - c) Insulin to an insulin-dependent diabetic.
 - d) Apples to a vegetarian.

Ans: C

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 3 Explain the concept of price elasticity

48. Identify the truthfulness of the following statements.
- I. Demand tends to be more price inelastic when few substitutes for a product exist.
 - II. Demand tends to be more price elastic when a consumer's expenditure on the product is small.
- a) Both I and II are true.
 - b) Both I and II are false.

- c) I is true; II is false.
- d) I is false; II is true.

Ans: C

Difficulty Level: Medium

Heading: Price Elasticity of Demand

LO: 4 Calculate the price elasticity of demand for specific demand curves

53. An income elasticity of demand for milk of 0.1 could mean that
- e) as income rises by 10 percent, quantity demanded rises by 1 percent.
 - f) as income rises by 100 percent, quantity demanded rises by 1 percent.
 - g) as income rises by 20 percent, quantity demanded rises by 10 percent.
 - h) as income rises by 50 percent, quantity demanded rises by 25 percent.

Ans: A

Difficulty Level: Medium

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

54. Income elasticity of demand measures the responsiveness of quantity demanded to changes in
- a) price.
 - b) income.
 - c) demand substitutes.
 - d) demand complements.

Ans: B

Difficulty Level: Easy

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

55. A cross price elasticity of demand for product *A* with respect to the price of product *B* of 0.3 means that
- a) an increase in the price of *A* by 10 percent gives rise to an increase in quantity demanded of *B* by 3 percent.

- b) an increase in the price of *B* by 10 percent gives rise to an increase in the quantity demanded of *A* by 3 percent.
- c) an increase in the price of *B* by 10 percent gives rise to a decrease in the quantity demanded of *A* by 3 percent.
- d) an increase in the price of *A* by 10 percent gives rise to a decrease in the quantity demanded of *B* by 3 percent.

Ans: B

Difficulty: Medium

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

56. Suppose the cross-price elasticity for two goods is negative. The two goods are
- a) normal goods
 - b) substitutes
 - c) complements
 - d) inferior goods

Ans: C

Difficulty Level: Easy

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

57. Which of the following statements is true?
- a) The price elasticity of demand is positive when there is an inverse relationship between price and quantity demanded.
 - b) A positive income elasticity indicates that demand for a good rises as consumer income falls.
 - c) A positive cross-price elasticity for two goods *A* and *B* would arise if *A* and *B* were demand complements.
 - d) A negative cross-price elasticity for two goods *A* and *B* would arise if *A* and *B* were demand complements.

Ans: D

Difficulty Level: Medium

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

58. Suppose the cross-price elasticity for two goods is positive. The two goods are
- a) normal goods
 - b) substitutes
 - c) complements
 - d) inferior goods

Ans: B

Difficulty Level: Easy

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

59. All else equal, an increase in the price of bicycle helmets, would tend to
- a) reduce the demand for cars
 - b) increase the demand for bicycles
 - c) reduce the demand for bicycles
 - d) cause more riders to walk to work.

Ans: C

Difficulty Level: Easy

Heading: Other Elasticities

LO: 8 Explain and contrast other elasticities: the income elasticity of demand, the cross-price elasticity of demand, and the price elasticity of supply.

60. Why are long-run demand curves likely to be more elastic than short-run demand curves?
- a) Prices tend to rise in the long-run.
 - b) Prices tend to be stable in the long-run.
 - c) Consumers have more time to adjust their purchase decisions in response to a change in price.
 - d) Supply tends to adjust in the long run.

Ans: C

Difficulty Level: Easy

Heading: Elasticity in the Long Run Versus the Short Run

LO: 9 Indicate why the short-run price elasticities of demand and supply may differ from the long-run price elasticities of demand and supply

61. Which of the following statements best describes the relationship between short-run supply elasticity and long-run supply elasticity?

- a) For many products, long-run supply is likely to be more price elastic than short-run supply.
- b) For products that can be recycled, long-run supply is likely to be more price elastic than short-run supply.
- c) For many products, long-run supply is likely to be less price elastic than short-run supply.
- d) Both a) and b) are generally true, but c) is generally false.

Ans: A

Difficulty Level: Medium

Heading: Elasticity in the Long Run Versus the Short Run

LO: 9 Indicate why the short-run price elasticities of demand and supply may differ from the long-run price elasticities of demand and supply

62. Gasoline in the long run will generally exhibit
- a) greater elasticity of demand than in the short run.
 - b) greater elasticity of demand than for jewelry.
 - c) less elasticity of demand than in the short run.
 - d) less elasticity of demand than with regard to insulin for diabetics.

Ans: A

Difficulty Level: Easy

Heading: Elasticity in the Long Run Versus the Short Run

LO: 9 Indicate why the short-run price elasticities of demand and supply may differ from the long-run price elasticities of demand and supply

63. Which of the following statements best describes the relationship between short-run demand elasticity and long-run demand elasticity?
- a) For many products, long-run demand is likely to be more price elastic than short-run demand.
 - b) For durable goods, long-run demand is likely to be more price elastic than short-run demand.
 - c) For many products, long-run demand is likely to be more price inelastic than short-run demand.
 - d) For most products, long-run and short-run demand elasticities are the same.

Ans: A

Difficulty Level: Easy

Heading: Elasticity in the Long Run Versus the Short Run

LO: 9 Indicate why the short-run price elasticities of demand and supply may differ from the long-run price elasticities of demand and supply

64. Which of the following explanations supports the statement that long-run supply curves are likely to be more elastic than short-run supply curves?
- a) Firms are able to adjust fixed inputs in the long-run but not in the short-run.
 - b) Firms are able to adjust variable inputs in the short-run.
 - c) Firms prefer to hire workers rather than capital.
 - d) Firms have more flexibility in the short-run.

Ans: A

Difficulty Level: Medium

Heading: Elasticity in the Long Run Versus the Short Run

LO: 9 Indicate why the short-run price elasticities of demand and supply may differ from the long-run price elasticities of demand and supply

65. Let the price elasticity of demand for a soft drink be -2 . In the year 2005, the per capita consumption of soft drinks was about 500 cans per person, and the average price was \$1.00 per can. If we suppose that demand for the soft drink is linear, $Q^d = a - bP$, where a and b are constants, Q^d is quantity demanded and P is price, an estimate of the demand equation could be:
- a) $Q^d = 100 - 2P$
 - b) $Q^d = 1500 - 2P$
 - c) $Q^d = 1500 - 1000P$
 - d) $Q^d = 1000 - 1500P$

Ans: C

Difficulty Level: Hard

Heading: Back-of-the-Envelope Calculations

LO: 10 Use "back-of-the-envelope" techniques to determine key properties of demand and supply curves with only fragmentary data on prices, quantities, or elasticities

66. To identify a demand curve we must observe
- a) many years of data.
 - b) shifts in the demand curve.
 - c) shifts in the supply curve.
 - d) many different markets simultaneously.

Ans: C

Difficulty Level: Medium

Heading: Back-of-the-Envelope Calculations

LO: 10 Use "back-of-the-envelope" techniques to determine key properties of demand and supply curves with only fragmentary data on prices, quantities, or elasticities

67. Consider the following demand and supply curves: $Q^d = 100 - 2P$, and $Q^s = \frac{1}{2}P$, calculate the equilibrium P and Q for this initial situation and assuming the supply curve changes to $Q^s = \frac{1}{2}P + 10$. Which of the following is correct?
- the initial equilibrium is $P = 40$, $Q = 20$ and the supply curve shifts left.
 - the initial equilibrium is $P = 40$, $Q = 20$ and the new equilibrium is $P = 36$, $Q = 28$.
 - the initial equilibrium is $P = 40$, $Q = 20$ and the new equilibrium remains the same.
 - the initial equilibrium is $P = 40$, $Q = 20$ and the new equilibrium is $P = 38$, $Q = 28$.

Ans: B

Difficulty Level: Hard

Heading: Back-of-the-Envelope Calculations

LO: 10 Use "back-of-the-envelope" techniques to determine key properties of demand and supply curves with only fragmentary data on prices, quantities, or elasticities

68. Consider the following demand and supply curves: $Q^d = 100 - 2P$, and $Q^s = \frac{1}{2}P$, calculate the equilibrium P and Q for this initial situation and assuming the demand curve changes to $Q^d = 100 - P$. Which of the following is correct?
- the initial equilibrium is $P = 40$, $Q = 20$ and the demand curve shifts left.
 - the initial equilibrium is $P = 40$, $Q = 20$ and the new equilibrium is $P = 36$, $Q = 28$.
 - the initial equilibrium is $P = 40$, $Q = 20$ and the new equilibrium is $P = 66 \frac{2}{3}$ and $Q = 33 \frac{1}{3}$.
 - the initial equilibrium is $P = 40$, $Q = 20$ and the demand curve shifts right.

Ans: C

Difficulty Level: Hard

Heading: Back-of-the-Envelope Calculations

LO: 10 Use "back-of-the-envelope" techniques to determine key properties of demand and supply curves with only fragmentary data on prices, quantities, or elasticities

69. Suppose that demand and supply in the market for Brazil nuts is linear, with a historic market price of \$.50 per pound and 10 million pounds sold. In 2004, a news item raised health fears about the nuts. That year, the market price fell to \$.45 per pound and only 8 million pounds traded. An estimate for the equation of the supply of Brazil nuts (where Q^s is in millions of pounds and P is in dollars) would be:

- a) This information only relates to demand, and so cannot be used to generate a supply equation.
- b) $Q^s = 30 + 40P$
- c) $Q^s = 40P$
- d) $Q^s = -10 + 40P$

Ans: D

Difficulty Level: Hard

Heading: Back-of-the-Envelope Calculations

LO: 10 Use "back-of-the-envelope" techniques to determine key properties of demand and supply curves with only fragmentary data on prices, quantities, or elasticities

File: ch03, Chapter 3: Consumer Preferences and The Concept of Utility

Multiple Choice

1. The assumption that preferences are complete requires the consumer
- a) to rank any two baskets.
 - b) to say that basket C is preferred to basket A if basket B is preferred to basket A and basket C is preferred to basket B.
 - c) to rank a basket with more units of all goods higher than a basket with fewer units of all goods.
 - d) to have a diminishing marginal rate of substitution.

Ans: A

Difficulty: Easy

Heading: Representations of Preferences

LO 1 Represent consumer preferences in terms of market baskets of goods and services.

2. Assume that two baskets *A* and *B* lie on the same indifference curve. Assume that basket *A* contains more of good *Y* than basket *B* but less of good *X* than basket *B*. As the consumer moves down and to the right (from basket *A* to basket *B*) along his indifference curve, total utility
- a) increases.
 - b) remains constant.
 - c) decreases.
 - d) is ambiguous.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 1 Represent consumer preferences in terms of market baskets of goods and services.

3. Consumer preferences:
- a) are fixed exogenously and unchanging in reality.
 - b) indicate how a consumer would rank any two possible baskets of goods, taking into account her budget constraint.
 - c) indicate how a consumer would rank any two possible baskets of goods, taking into account the current prices of those goods.

- d) indicate how a consumer would rank any two possible baskets of goods, assuming that the baskets were available to the consumer at no cost.

Ans: D

Difficulty: Medium

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

4. If a consumer is unable to compare two baskets, then this consumer's preferences violate which of the following key assumptions?
- a) Completeness.
 - b) Transitivity.
 - c) More is better.
 - d) Both completeness and transitivity.

Ans: A

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

5. Indifference curves that intersect are said to be:
- a) Irrational.
 - b) Non-transitive.
 - c) Inconsistent with our basic assumptions about preferences.
 - d) Complete, but not consistent.

Ans: C

Difficulty: Medium

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

6. If I prefer steak to burritos, burritos to pasta and pasta to steak:
- a) My preferences are irrational.
 - b) My preferences violate the transitivity assumption.
 - c) My preferences violate the "more is better assumption.
 - d) I must have been exhibiting diminishing marginal utility.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

7. Assume that a consumer prefers watching Yu-Gi-Oh to watching Teen Titans, and that this same consumer prefers watching Teen Titans to watching Sponge Bob. Further assume that this same consumer states, “I would prefer to watch Sponge Bob to watching Yu-Gi-Oh.” This consumer’s preferences violate which of the following key assumptions?
- a) Completeness.
 - b) Transitivity.
 - c) More is better.
 - d) Both completeness and transitivity.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

8. If a consumer would rather eat three bars of chocolate than four bars of chocolate, this consumer’s preferences violate which of the following key assumptions?
- a) Completeness.
 - b) Transitivity.
 - c) More is better.
 - d) Both completeness and transitivity.

Ans: C

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

9. Wendy is very indecisive. She can’t decide whether she should go on a cruise or spend her vacation at her friend’s home. Her preferences violate the assumption of:
- a) Completeness.
 - b) Transitivity.
 - c) More is better.

- d) Both completeness and transitivity.

Ans: A

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

10. The assumption that preferences are transitive requires the consumer
- a) to rank any two baskets.
 - b) to say that basket *C* is preferred to basket *A* if basket *B* is preferred to basket *A* and basket *C* is preferred to basket *B*.
 - c) to rank a basket with more units of all goods higher than a basket with fewer units of all goods.
 - d) to have a diminishing marginal rate of substitution.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

11. Jacob's estimated utility from pizza is given by $3Z$, where Z is the number of pizzas he consumes per month. We can say that:
- a) Jacob likes pizza better than steak.
 - b) Jacob is a vegetarian.
 - c) Jacob's preferences are transitive.
 - d) Jacob's marginal utility from pizza is constant.

Ans: D

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

12. The assumption that more is better requires the consumer
- a) to rank any two baskets.
 - b) to say that basket *C* is preferred to basket *A* if basket *B* is preferred to basket *A* and basket *C* is preferred to basket *B*.

- c) to rank a basket with more units of all goods higher than a basket with fewer units of all goods.
- d) to have a diminishing marginal rate of substitution.

Ans: C

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

13. The assumption that more is preferred to less:
- a) is called transitivity.
 - b) implies that if basket *A* lies to the northeast of basket *B*, then basket *A* is preferred to basket *B*.
 - c) is called completeness.
 - d) implies that indifference curves are “thick”.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

14. John tends to order pizza once or twice a week to his college dorm room. When his parents come to visit, he always asks them to take him to the local steakhouse. Bob is probably suffering from:
- a) Veganism
 - b) Transitivity.
 - c) Diminishing marginal utility from pizza consumption.
 - d) Completeness and transitivity.

Ans: C

Difficulty: Easy

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

15. Consider the following three market baskets.

Basket	Good <i>x</i>	Good <i>y</i>
A	2	8

B	10	2
C	6	5

If Basket A and Basket B are on the same indifference curve, preferences satisfy the usual assumptions, and the indifference curves have a diminishing marginal rate of substitution,

- a) Basket C is preferred to Basket A
- b) Basket A is preferred to Basket C
- c) The consumer is indifferent between Basket A and Basket C
- d) There is not enough information to determine how the consumer would rank Basket A relative to Basket C.

Ans: A

Difficulty: Medium

Heading: Representations of Preferences

LO 2 Apply three basic assumptions about consumer preferences: preferences are complete, preferences are transitive, and more is better.

16. One adhesive having twice the adhesive power of another is an example of

- a) Ordinal ranking.
- b) Johnson's theory of adhesivity.
- c) Cardinal ranking.
- d) Transitivity.

Ans: C

Difficulty: Easy

Heading: Representations of Preferences

LO 3 Distinguish between ordinal and cardinal ranking of preferences.

17. Identify the truthfulness of the following statements.

- I. Ordinal utility gives us information about which basket the consumer prefers and quantitative information about the intensity of the preference.
 - II. Cardinal utility gives us information about which basket the consumer prefers but not about the intensity of those preferences.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 3 Distinguish between ordinal and cardinal ranking of preferences.

18. Sally likes Jim twice as much as she likes Bob. This is an example of
- a) ordinal preferences.
 - b) cardinal preferences.
 - c) transitivity.
 - d) diminishing marginal utility.

Ans: B

Difficulty: Easy

Heading: Representations of Preferences

LO 3 Distinguish between ordinal and cardinal ranking of preferences.

19. Marginal utility
- a) is the ratio of total utility to total consumption.
 - b) is the rate at which total utility changes as the level of consumption rises.
 - c) will always be equal to the product's price.
 - d) tells us nothing; we're only concerned with total utility.

Ans: B

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

20. Marginal utility is
- a) the slope of the total utility function.
 - b) the slope of a ray from the origin to the total utility function.
 - c) always less than average utility.
 - d) always greater than average utility.

Ans: A

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

21. Which of the following statements is *false*?
- a) Marginal utility may be negative.

- b) Marginal utility is the slope of total utility.
- c) If the more is better assumption is satisfied, total utility will increase as consumption increases.
- d) If the more is better assumption is satisfied, the marginal utility from consuming the second unit must be greater than the marginal utility from consuming the first unit.

Ans: D

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

22. A _____ measures the level of satisfaction that a consumer receives from any basket of goods.
- a) production function.
 - b) transformation function.
 - c) utility function.
 - d) transitivity function.

Ans: C

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

23. The principle of diminishing marginal utility implies
- a) indifference curves are concave.
 - b) indifference curves are convex.
 - c) indifference curves are straight lines.
 - d) as your consumption level increases, the marginal utility received from consumption of an additional unit increases.

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Ans: B

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

24. Which of the following statements is *false*?

- a) Total utility and marginal utility cannot be plotted on the same graph
- b) The marginal utility is the slope of the (total) utility function
- c) Marginal utility is not the slope of total utility
- d) The relationship between total and marginal functions holds for other measures in economics

Ans: C

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

25. Which of the following statements best explains the concept of diminishing marginal utility?
- a) As I consume additional ice cream cones, each ice cream cone adds more to my total happiness than the previous one.
 - b) I must consume ice cream cones until I have a stomach ache.
 - c) As I consume additional ice cream cones, each ice cream cone adds less to my total happiness than the previous one.
 - d) I must maximize my consumption of ice cream cones.

Ans: C

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

26. Which of the following statements is *false*?
- a) If marginal utility is diminishing, then total utility is increasing but at a decreasing rate.
 - b) If marginal utility is diminishing, then total utility is concave.
 - c) If marginal utility is negative, then total utility is downward-sloping.
 - d) If marginal utility is decreasing, then total utility is decreasing.

Ans: D

Difficulty: Easy

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

27. When total utility, $U(x)$ is maximized, marginal utility, MU_x is
- a) constant.
 - b) rising.
 - c) maximized.
 - d) zero.

Ans: D

Difficulty: Medium

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

28. Marginal utility is
- a) always increasing.
 - b) maximized when total utility is zero.
 - c) the slope of the total utility function.
 - d) always decreasing.

Ans: C

Difficulty: Medium

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

29. Identify the truthfulness of the following statements.
- I. Diminishing marginal utility and increasing total utility are incompatible with each other.
 - II. When marginal utility is negative, total utility is decreasing.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: D

Difficulty: Medium

Heading: Utility Functions

LO 4 Apply utility functions as a tool for representing preferences, and analyze the concept of marginal utility and the principle of diminishing market utility.

30. If one were to draw indifference curves representing preferences over two varieties of red apples, it is likely that one would draw them as:
- a) almost straight lines.
 - b) almost “L-shaped.”
 - c) positively sloped.
 - d) crossing.

Ans: A

Page Reference: 88-91

Difficulty: Easy

Heading: Utility Functions

LO 5 Apply utility functions in the analysis of preferences with a single good and with multiple goods.

31. A consumer would not generally be represented as deriving utility from:
- a) the brand name of a product
 - b) the characteristics of a product
 - c) the price of a product
 - d) the packaging of a product

Ans: C

Difficulty: Easy

Heading: Utility Functions

LO 5 Apply utility functions in the analysis of preferences with a single good and with multiple goods.

32. Indifference curves have a negative slope when
- a) the consumer likes good X but dislikes good Y .
 - b) the consumer likes good Y but dislikes good X .
 - c) the consumer likes both good X and good Y .
 - d) the consumer dislikes both goods.

Ans: C

Difficulty: Easy

Heading: Utility Functions

LO 6 Construct indifference curves as a way of representing utility functions in simplified form.

33. An illustration of an indifference curve has:
- a) prices of the goods on the axes.
 - b) quantities of the goods on the axes.

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- c) price on the vertical axis, quantity on the horizontal axis.
- d) Price on the horizontal axis, quantity on the vertical axis.

Ans: B

Difficulty: Easy

Heading: Utility Functions

LO 6 Construct indifference curves as a way of representing utility functions in simplified form.

34. If indifference curves are upward sloping, this violates the assumption that preferences
- a) are complete
 - b) are transitive.
 - c) violates the assumption that more is better
 - d) Upward sloping indifference curves do not violate any of the assumptions about preferences.

Ans: C

Difficulty: Medium

Heading: Utility Functions

LO 6 Construct indifference curves as a way of representing utility functions in simplified form.

35. An indifference curve represents
- a) a two-dimensional “slice” of a three-dimensional total utility function.
 - b) varying levels of a total utility function.
 - c) constant marginal utility.
 - d) the slope of marginal utility.

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Ans: A

Difficulty: Easy

Heading: Utility Functions

LO 6 Construct indifference curves as a way of representing utility functions in simplified form.

36. Suppose that $MRS_{x,y} = 10$.
- a) The consumer is willing to substitute 10 units of x for 1 unit of y to leave utility unchanged.
 - b) The consumer is willing to substitute 10 units of y for 1 unit of x to leave utility unchanged.
 - c) Regardless of prices, the consumer will consume only y .
 - d) Regardless of prices, the consumer will consume only x .

Ans: B

Difficulty: Medium

Heading: Utility Functions

LO 7 Analyze the concept of the marginal rate of substitution of one good for another.

37. Suppose the marginal rate of substitution of x for y is given by

$$MRS_{x,y} = 5x/7y$$

- a) The indifference curves will be bowed away from the origin.
- b) The indifference curves will be bowed in towards the origin.
- c) The indifference curves will be straight lines.
- d) It is not possible to tell the shape of the indifference curves with only this information.

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Ans: A

Difficulty: Medium

Heading: Utility Functions

LO 7 Analyze the concept of the marginal rate of substitution of one good for another.

38. Which of the following statements is true?

- a) Because total utility is constant along an indifference curve, the marginal rate of substitution is also constant.
- b) If an indifference curve is convex, the marginal rate of substitution varies along the curve.
- c) The slope of an indifference curve measures the consumer's marginal rate of substitution.
- d) Both b) and c) are true.

Ans: D

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Difficulty: Easy

Heading: Utility Functions

LO 7 Analyze the concept of the marginal rate of substitution of one good for another.

39. Suppose that a consumer has utility function $U(x, y)$ with $MU_x = 5y^2x$ and $MU_y = 2x^2y$. What is the marginal rate of substitution?

- a) $10y^3x^3$
- b) $2x/5y$
- c) $5y/2x$
- d) $5y^2x^2$

Ans: C

Difficulty: Hard

Heading: Utility Functions

LO 7 Analyze the concept of the marginal rate of substitution of one good for another.

40. Suppose that a consumer has utility function $U = Ax^2y^2$ with $MU_x = 2Ay^2x$ and $MU_y = 2Ax^2y$. Which of the following statements is *false*?
- a) The marginal utilities are positive.
 - b) The marginal rate of substitution is diminishing.
 - c) The indifference curves are bowed away from the origin.
 - d) The indifference curves are downwards sloping.

Ans: C

Difficulty: Hard

Heading: Utility Functions

LO 7 Analyze the concept of the marginal rate of substitution of one good for another.

41. Consider the utility function $U = 5x + 3y^2$, which has $MU_x = 5$ and $MU_y = 6y$. The indifference curves for this utility function
- a) will have a diminishing marginal rate of substitution of x for y as x increases.
 - b) will have a constant marginal rate of substitution of x for y as x increases.
 - c) will have an increasing marginal rate of substitution of x for y as x increases.
 - d) will be straight lines.

Ans: B

Difficulty: Hard

Heading: Utility Functions

LO 7 Analyze the concept of the marginal rate of substitution of one good for another.

42. Consider the utility function $U = \min(5x, 7y)$. The indifference curves for this utility function will be
- a) vertical
 - b) horizontal
 - c) upward sloping
 - d) L-shaped

Ans: D

Difficulty: Medium

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

43. Consider the utility function $U = \min(5x, 7y)$. To increase satisfaction the consumer must consume
- a) at least 5 units more of x
 - b) at least 7 units more of y
 - c) more of both x and y
 - d) more of either x or y

Ans: C

Difficulty: Hard

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

44. Suppose for some utility function that $MU_x = 5y$ and $MU_y = 7x$
- a) The assumption that more is better is satisfied for both goods.
 - b) This utility function will violate the assumption that preferences are complete.
 - c) The indifference curves for this utility function will be straight lines with a slope of -1 .
 - d) The indifference curves will have a diminishing marginal rate of substitution.

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Ans: A

Difficulty: Medium

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

45. Suppose that a consumer has the utility function $U = 5X + 7Y$. The $MRS_{x,y}$ is
- a) $7/5$
 - b) $5/7$
 - c) 1.00 since X and Y are perfect substitutes.
 - d) 0 since X and Y are perfect complements.

Ans: B

Difficulty: Medium

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

46. Suppose that a consumer has the utility function $U = 5A + 7B$. If A is measured on the horizontal axis
- a) The indifference curves will be L-shaped.

- b) The indifference curves will be horizontal.
- c) The indifference curves will be straight lines with slope $-5/7$.
- d) The indifference curves will be straight lines with slope $-7/5$.

Ans: C

Difficulty: Hard

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

47. Two goods are perfect substitutes. The marginal rate of substitution for these two goods is:
- a) parabolic.
 - b) exponential.
 - c) a constant.
 - d) shows diminishing marginal utility.

Ans: C

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

48. Consider the utility function $U = 5x + 3y^2$, which has $MU_x = 5$ and $MU_y = 6y$. The indifference curves for this utility function
- a) will be straight lines.
 - b) will have the same $MRS_{x,y}$ as y increases holding x constant.
 - c) will have the same $MRS_{x,y}$ as x increases holding y constant.
 - d) will have a diminishing marginal rate of substitution as the consumer substitutes x for y .

Ans: C

Difficulty: Hard

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

49. Suppose for a utility function that the marginal utility for good x is given by $MU_x = 5y^2/x$
- a) The more is better assumption is not satisfied for x in this utility function.
 - b) The more is better assumption is satisfied for x in this utility function.
 - c) This shows a positive and increasing marginal utility of x .

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- d) The marginal rate of substitution must be diminishing.

Ans: B

Difficulty: Hard

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

50. Economists sometimes represent two goods as having right-angled indifference curves (perfect complements). In reality, this violates:
- a) the assumption of transitivity.
 - b) the assumption of completeness.
 - c) the law of diminishing returns.
 - d) the “more is better” assumption.

Ans: D

Difficulty: Medium

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

51. If $MRS_{x,y}$ is constant at 5, then which of the following is *false*?
- a) The slope of the indifference curve is positive.
 - b) The goods are perfect substitutes.
 - c) The indifference curves are linear.
 - d) The slope of the indifference curve is negative.

Ans: A

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

52. Suppose the marginal rate of substitution of x for y is constant for all levels of x and y . Goods x and y are
- a) perfect substitutes.
 - b) perfect complements.
 - c) normal goods.
 - d) inferior goods.

Ans: A

Difficulty: Medium

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

53. If two goods are perfect substitutes, then
- a) the marginal rate of substitution is constant.
 - b) the indifference curves are straight lines.
 - c) the indifference curves are “L-shaped.”
 - d) both a) and b) are true.

Ans: D

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

54. If two goods are perfect complements, then
- a) the marginal rate of substitution is constant.
 - b) the indifference curves are straight lines.
 - c) the indifference curves are “L-shaped.”
 - d) both a) and b) are true.

Ans: C

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

55. Given a utility function $U = 3A^2B^3$, which of the following is true?
- a) $MU_A = 3A^2$
 - b) $MU_B = 9A^2B^2$
 - c) The marginal rate of substitution cannot be determined.
 - d) The marginal utility for each good is negative.

Ans: B

Difficulty: Hard

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

56. Which of the following utility functions is an example of preferences for perfect substitutes?

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- a) $U(x, y) = y\sqrt{x}$
 b) $U(x, y) = \min\{2x, y\}$
 c) $U(x, y) = 3x + 5y$
 d) $U(x, y) = 2x^2 + 4y$

Ans: C

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

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57. Which of the following utility functions is an example of preferences for perfect complements?

- a) $U(x, y) = y\sqrt{x}$
 b) $U(x, y) = \min\{2x, y\}$
 c) $U(x, y) = 3x + 5y$
 d) $U(x, y) = 2x^2 + 4y$

Ans: B

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

58. Which of the following utility functions is an example of Cobb-Douglas preferences?

- a) $U(x, y) = y\sqrt{x}$
 b) $U(x, y) = \min\{2x, y\}$
 c) $U(x, y) = 3x + 5y$
 d) $U(x, y) = 2x^2 + 4y$

Ans: A

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

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59. Imagine an indifference curve graph with units of clothing on the y-axis and visits to the neighborhood pizza joint for dinner on the x-axis. If the indifference curves for this individual are negatively sloped but close to horizontal, it means

- a) the marginal utility from another pizza dinner is high relative to the marginal utility of clothing.
- b) the marginal utility from another pizza dinner is low relative to the marginal utility of clothing
- c) this person doesn't like pizza at all.
- d) this person can spend a lot of money on clothes at times.

Ans: B

Difficulty: Hard

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

60. Which of the following utility functions is an example of Quasi-linear preferences?

- a) $U(x, y) = y\sqrt{x}$
- b) $U(x, y) = \min\{2x, y\}$
- c) $U(x, y) = 3x + 5y$
- d) $U(x, y) = 2x^2 + 4y$

Ans: D

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

61. If a consumer's preferences are quasi-linear, then the consumer's indifference curves will be:

- a) straight lines.
- b) "L-shaped."
- c) concave to the origin.
- d) parallel.

Ans: D

Difficulty: Easy

Heading: Special Preferences

LO 8 Describe and compare some special utility functions.

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File: ch04, Chapter 4: Consumer Choice

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Multiple Choice

1. Suppose a consumer has an income equal to I which he/she spends on either food or clothing. The price of food is given by P_f and the price of clothing is given by P_c . If the consumer spends all of his/her income on clothing, the expression for the number of units of clothing he/she buys is
- a) I/P_f
 - b) $I \times P_c$
 - c) I/P_c
 - d) I

Ans: C

Difficulty: Easy

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

2. If food is on the x-axis and clothing is on the y-axis, using the information in problem 1 above, the consumer is at the
- a) point of maximum indifference.
 - b) y-intercept.
 - c) interior of the budget constraint.
 - d) origin.

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

3. Suppose a consumer has an income $I = \$50$ which he/she spends on pizza and tacos per month. The price of pizza is \$10 and the price of tacos is \$5. If the units of pizza consumed per month is on the x-axis and the units of tacos consumed per month is on the y-axis, the slope of the budget line is equal to
- a) $1/2$
 - b) 2
 - c) -2

d) 21

Ans: C

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

4. Using the information in problem 3 above and letting Z = the quantity of pizza per months and T = the number of tacos per month, the equation for the budget line is best represented by

- a) $10 = 10Z + 5T$
- b) $1000 = 20Z + 10T$
- c) $50 = 10Z + 5T$
- d) $1000 = A + B$

Ans: C

Difficulty: Easy

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

5. An agent consumes goods x and y , with prices $P_x = \$5$ per unit and $P_y = \$8$ per unit. The consumer's income is $I = \$48$. The government imposes a tax of \$1 per unit on good x . What is the new equation for the budget constraint?

- a) $y = 6 - (5/8)x$
- b) $y = 6 - .75x$
- c) $y = 8 - (6/8)x$
- d) $y = 48 - 8x$

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

6. The budget line

- a) represents the set of all baskets the consumer can afford.
- b) represents the set of all baskets the consumer can afford while spending all available income.
- c) represents the set of all baskets that give the consumer the same level of utility while holding spending constant.

- d) represents the set of all baskets in which the consumer purchases only one of the goods.

Ans: B

Difficulty: Easy

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

7. A set of baskets that a consumer can purchase with a limited amount of income is

- a) Consumer choice
- b) Consumer purchase
- c) Budget Constraint
- d) Budget line

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Ans: C

Difficulty: Easy

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

8. Suppose the price of A is \$20 per unit, the price of B is \$10 per unit, and the consumer's income is \$1000 per month. Which of the following baskets is not on the consumer's budget line?
- a) $A = 40, B = 20$
 - b) $A = 5, B = 90$
 - c) $A = 2.5, B = 95$
 - d) $A = 20, B = 40$

Ans: D

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

9. Suppose the price of A is \$20 per unit, the price of B is \$10 per unit, and the consumer's income is \$1000 per month. The equation of the budget line is
- a) $1000 = 10A + 20B$
 - b) $1000 = 20A + 10B$
 - c) $20A = 10B$
 - d) $1000 = A + B$

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

10. Evaluate the truthfulness of the following statements.
- I. The budget constraint is a function of consumer preferences.
 - II. The budget constraint defines the set of baskets that a consumer can purchase with a specific level of income.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: D

Difficulty: Easy

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

11. Evaluate the truthfulness of the following statements.
- I. All points to the interior of the budget constraint are affordable.
 - II. All points that lie on the budget constraint cost the same amount of money.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

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Ans: A

Difficulty: Easy

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

12. Let I be the income of the consumer, P_x be the price of good x and P_y be the price of good y . If good x is measured along the horizontal axis and good y is measured along the vertical axis, then the “ x -intercept” measures the maximum amount of good x that the consumer can afford, which can be expressed as
- a) $\frac{P_x}{P_y}$

- b) I/P_y
- c) I/P_x
- d) P_x/I

Ans: C

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

13. If good x is measured along the horizontal axis and good y is measured along the vertical axis, then the slope of the budget constraint can be expressed as

- a) $-P_x/P_y$
- b) $-I/P_y$
- c) $-I/P_x$
- d) $-P_y/P_x$

Ans: A

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

14. If a consumer purchases two goods, food (measured along the x axis) and housing (measured along the y axis), and if the price of food is \$3 per unit and the price of housing is \$400 per unit, then what is the slope of the consumer's budget constraint if the consumer has an income of \$600?

- a) $-3/600$.
- b) $-3/400$
- c) $-400/600$
- d) $-400/3$

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 1 Write the equation of the budget constraint and graph the budget line.

15. Identify the statement that is *false*.
- a) An increase in the amount of income changes the intercepts of the budget constraint but not the slope.
 - b) An increase in the price of good x changes both the x -intercept and the slope of the budget constraint.
 - c) An increase in the price of good x and an equal percentage increase in the price of good y changes the x -intercept, the y -intercept, and the slope of the budget constraint.
 - d) An increase in the price of good x and an increase in the price of good y may or may not change the slope of the budget constraint.

Ans: C

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

16. Suppose all prices double and income triples. The budget line
- a) will become steeper.
 - b) will become flatter.
 - c) will shift in toward the origin.
 - d) will shift out from the origin.

Ans: D

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

17. Suppose the price of A is \$20 and the price of B is \$10 and that good A is plotted on the horizontal axis. If the price of A doubles and the price of B triples, leaving the consumer's income unchanged, the budget line
- a) will become steeper.
 - b) will become flatter.
 - c) will shift in toward the origin.
 - d) will shift out from the origin.

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

18. Suppose a consumer purchases two goods, A and B , and that the price of A doubles, the consumer's income doubles, and the price of B remains unchanged. If good A is plotted on the horizontal axis, the budget line
- a) will remain unchanged.
 - b) will become steeper.
 - c) will become flatter.
 - d) will shift out from the origin parallel to the original budget line.

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

19. If a consumer purchases two goods, food (measured along the x -axis) and housing (measured along the y axis), then what happens to the slope of the consumer's budget constraint if the price of food falls?
- a) The new budget constraint shifts inward but is parallel to the original budget constraint.
 - b) The new budget constraint pivots inward (towards the origin) along the x axis. The new slope is steeper than the original slope.
 - c) The new budget constraint pivots inward (towards the origin) along the x axis. The new slope is flatter than the original slope.
 - d) The new budget constraint pivots outward (away from the origin) along the x axis. The new slope is flatter than the original slope.

Ans: D

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

20. Suppose that a consumer's income triples. However, at the same time, both the price of x and the price of y also triple. This consumer has experienced
- a) an increase in purchasing power.
 - b) a decrease in purchasing power.
 - c) no change in purchasing power.
 - d) a pivot in the budget constraint with an undetermined effect on purchasing power.

Ans: C

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

21. Suppose that the quantity of pizzas consumed per month is on the x-axis and the quantity of tacos consumed per month is on the y-axis, an increase in the price of pizza holding the price of tacos constant will
- a) cause the budget line to shift inward toward the origin in a parallel fashion.
 - b) cause the y-intercept to remain the same, but the x-intercept will move closer to the origin.
 - c) cause the budget line to shift outward from the origin in a parallel fashion.
 - d) cause the x-intercept to shift away from the origin.

Ans: B

Difficulty: Medium

Heading: The Budget Constraint

LO 2 Illustrate graphically how a change in income or a change in price affects the budget line.

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22. Given the expression $\min_{(x,y)} \text{expenditure } P_x x + P_y y$ subject to: $U(x, y) = U^*$, the endogenous variables are
- a) x and P_x .
 - b) only U^* .
 - c) x and y .
 - d) P_x and P_y .

Ans: C

Difficulty: Medium

Heading: Optimal Choice

LO 3 Describe the conditions for optimal consumer choice.

23. Consumer choice of the basket of goods that (a) maximizes utility (b) allows his/her to live within the budget constraint and (c) includes a positive amount of all commodities is the consumer's
- a) Optimal choice
 - b) Maximum choice
 - c) Interior optimum
 - d) Consumer choice

Ans: C

Difficulty: Easy

Heading: Optimal Choice

LO 3 Describe the conditions for optimal consumer choice.

24. The theory of consumer choice

- a) describes how a consumer chooses between different budget constraints.
- b) describes how a consumer chooses between different income levels.
- c) describes how a consumer allocates her limited income among available goods and services.
- d) describes how a consumer allocates her limited preferences among available income levels.

Ans: C

Difficulty: Easy

Heading: Optimal Choice

LO 3 Describe the conditions for optimal consumer choice.

25. The tangency condition for the optimal choice for a consumer is given by

- a) $MRS_{x,y} = P_y/P_x$
- b) $MU_x/MU_y = 1$
- c) $MRS_{x,y} = P_x/P_y$
- d) $MU_x/MU_y = P_y/P_x$

Ans: C

Difficulty: Medium

Heading: Optimal Choice

LO 4 Illustrate graphically the tangency condition for optimal consumer choice.

26. At a consumer's interior optimum solution, which of the following will *not* necessarily hold true?

- a) $MU_x = MU_y$
- b) $\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$
- c) $MRS_{x,y} = \frac{MU_x}{MU_y}$
- d) $MRS_{x,y} = \frac{P_x}{P_y}$

Ans: A

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

27. The “equal bang for the buck” idea means that the consumer is equating
- a) the marginal utilities of all of the goods purchased.
 - b) the prices of all the goods purchased.
 - c) the marginal utilities of the last dollar spent on each good purchased.
 - d) the ratios of the last dollar spent on each good purchased.

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Ans: C

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

28. A corner point solution is always the optimum for a consumer when
- a) a unique point of tangency exists between the consumer’s indifference curve and the budget line
 - b) the consumer has straight line (constant slope) indifference curves
 - c) there is no point of tangency between the consumer’s indifference curves and the budget line and the consumer does not have straight line indifference curves.
 - d) the consumer is indifferent to both goods equally.

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Ans: C

Difficulty: Hard

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

29. Suppose the price of A is \$20, the price of B is \$10, and that the consumer is currently spending all available income. At the consumer’s current consumption basket the marginal utility of A is 6 and the marginal utility of B is 4.
- a) The consumer is currently maximizing utility.
 - b) The consumer could increase utility by consuming more of good A and less of good B .
 - c) The consumer could increase utility by consuming more of good B and less of good A .
 - d) Nothing can be said about the consumer’s utility because we do not know the consumer’s income or utility function.

Ans: C

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

30. Suppose the price of A is \$20, the price of B is \$10, and that the consumer is currently spending all available income. At the consumer's current consumption basket the marginal utility of A is 8 and the marginal utility of B is 2.
- a) The consumer is currently maximizing utility.
 - b) The consumer could increase utility by consuming more of good A and less of good B .
 - c) The consumer could increase utility by consuming more of good B and less of good A .
 - d) Nothing can be said about the consumer's utility because we do not know the consumer's income or utility function.

Ans: B

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

31. Suppose the price of A is \$20, the price of B is \$10, and that the consumer is currently spending all available income. At the consumer's current consumption basket the marginal utility of A is 8 and the marginal utility of B is 4.
- a) The consumer is currently maximizing utility.
 - b) The consumer could increase utility by consuming more of good A and less of good B .
 - c) The consumer could increase utility by consuming more of good B and less of good A .
 - d) Nothing can be said about the consumer's utility because we do not know the consumer's income or utility function.

Ans: A

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

32. Suppose the price of good x is \$5 and the price of good y is \$7. Also, suppose $MU_x = y$ and $MU_y = x$. Which of the following baskets could be an interior optimum?
- a) $x = 5, y = 7$
 - b) $x = 4, y = 6$
 - c) $x = 7, y = 5$
 - d) $x = 6, y = 4$

Ans: C

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

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33. Suppose that $U(x,y) = \min(3x,y)$. Further suppose that $P_x = \$5$ per unit and $P_y = \$10$ per unit and income is $I = \$105$. For this consumer, the optimal basket to buy would be
- a) $(x,y) = (9,3)$
 - b) $(x,y) = (3,1)$
 - c) $(x,y) = (1,3)$
 - d) $(x,y) = (3,9)$

Ans: D

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

34. Suppose that the ratio of marginal utility to price for good A is 10, and the ratio of marginal utility to price for good B is 5. Assume that for her current consumption of goods A and B the consumer is experiencing diminishing marginal utility for each good. In order for this consumer to be at her utility maximizing point, she should
- a) consume less A and more B .
 - b) consume more A and less B .
 - c) consume more A and more B .
 - d) do nothing – the consumer is already in equilibrium.

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Ans: B

Difficulty: Medium

Heading: Optimal Choice

LO 5 Solve for an optimal consumption basket, given information about income, prices and marginal utilities.

35. Which of the following statements is true about the consumer's expenditure minimization problem?

- a) The consumer's expenditure minimization problem results in the same optimal basket as the consumer's utility maximization problem if the required level of utility for the expenditure minimizer is the same as the maximized utility for the utility maximizer.
- b) The consumer's expenditure minimization problem has an optimum at an expenditure of zero.
- c) The consumer's utility maximization problem results in a tangency between the budget constraint and an indifference curve, whereas the expenditure minimization problem results in a solution where the indifference curve crosses the budget line.
- d) The consumer always prefers to maximize utility rather than to minimize expenditure.

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Ans: A

Difficulty: Medium

Heading: Optimal Choice

LO 6 Explain why the optimal consumption basket solves both a utility maximization problem and an expenditure minimization problem.

36. Economists describe consumer choice as a constrained optimization problem. What is the consumer trying to do?

- a) Maximize income subject to the budget constraint.
- b) Maximize the budget constraint.
- c) Maximize utility subject to the budget constraint.
- d) Minimize spending.

Ans: C

Difficulty: Easy

Heading: Optimal Choice

LO 6 Explain why the optimal consumption basket solves both a utility maximization problem and an expenditure maximization problem.

37. Suppose that $MU_x = 10$ and $MU_y = 20$. Further suppose that the consumer's budget constraint can be expressed as $20x + 10y = 400$. For this consumer, the optimal amount of good x to buy would be

- a) 5.
- b) 0.
- c) 20.

d) 40.

Ans: B

Difficulty: Hard

Heading: Optimal Choice

LO 7 Explain why the optimal consumption basket could occur at a corner point.

38. Suppose that a consumer considers coffee and tea to be perfect substitutes, but he requires two cups of tea to give up one cup of coffee. This consumer's budget constraint can be written as $3C + T = 10$. What should the consumer buy?

- a) 2 cups of tea and no coffee.
- b) 10 cups of tea and no coffee
- c) 3 cups of coffee and no tea.
- d) 4 cups of coffee and no tea.

Ans: B

Difficulty: Medium

Heading: Optimal Choice

LO 7 Explain why the optimal consumption basket could occur at a corner point.

39. Suppose John is planning to join a sports club. Membership in the club will allow John to swim at the pool for half price. Normally swimming for an hour would cost \$10. If John has an income of \$1000, the club membership fee is \$100, and we plot the number of visits to the pool on the horizontal axis and a composite "other goods" which have a price of \$1 on the vertical axis, the slope of John's budget line after joining the club will be

- a) -10
- b) -5
- c) -2
- d) -1

Ans: B

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

40. Suppose that candies are usually sold at \$0.05 a piece. The local candy store offers 2 extra candies for free upon purchase of any 10 pieces. Suppose that Laurel gets an allowance of \$3.00 per week. Which of the following is a *false* statement about her

budget constraint if Laurel may consume either candy, x , measured on the horizontal axis or a composite good, y , measured on the vertical axis and priced at \$1.00 per unit?

- a) The maximum number of candies Laurel can purchase is 72.
- b) The budget constraint has horizontal segments.
- c) The budget constraint is a straight line with a negative slope.
- d) With normally shaped preferences, Laurel will never refuse the free candies.

Ans: C

Difficulty: Hard

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

41. When given a choice between a cash subsidy and a voucher worth the same dollar amount, but only good for the purchase of a single good,
- a) the consumer will always prefer the voucher to the cash subsidy or be indifferent between the two.
 - b) the consumer will always prefer the cash subsidy to the voucher or would be indifferent between the two.
 - c) the consumer might prefer the cash subsidy to the voucher or might prefer the voucher to the cash subsidy.
 - d) the consumer would prefer to receive neither the cash subsidy nor the voucher.

Ans: B

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

42. When comparing a cash subsidy and a voucher worth the same dollar amount, but only good for the purchase of a single good,
- a) a consumer can never be better off with a cash subsidy than with a voucher.
 - b) a consumer can never be better off with a voucher than with a cash subsidy.
 - c) a cash subsidy will always make the consumer better off than the consumer would be with a voucher.
 - d) a voucher will always make the consumer better off than the consumer would be with a cash subsidy.

Ans: B

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

43. If a consumer states that he is indifferent between receiving a gift certificate for \$10 at the local bookstore and receiving \$10 cash, we can infer that this consumer
- a) would spend less than \$10 at the bookstore.
 - b) would spend at least \$10 at the bookstore.
 - c) would spend more than \$10 at the bookstore.
 - d) would spend exactly \$10 at the bookstore.

Ans: B

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

44. If the government would like to induce a consumer to consume a specific level of some good
- a) a cash subsidy system would likely be cheaper for the government than a voucher system.
 - b) a voucher system would likely be cheaper for the government than a cash subsidy system.
 - c) the government should only use a cash subsidy system since this always make consumers better off.
 - d) the government should only use a voucher system since this always makes consumers better off.

Ans: B

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

45. Suppose John is planning to join a sports club. Membership in the club will allow John to swim at the pool for half price. Normally swimming for an hour would cost \$10. If John has an income of \$1000, the club membership fee is \$100, and we plot the number of visits to the pool on the horizontal axis and a composite “other goods” which have a price of \$1 on the vertical axis, the equation of John’s budget line after joining the club, where the composite good, y , is on the vertical axis and pool visits, x , are measured on the horizontal axis is

- a) $y = 900 - 5x$
- b) $y = 1000 - 5x$
- c) $y = 1000 - 10x$
- d) $y = 900 - 10x$

Ans: A

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

46. Assume that we are modeling inter-temporal consumption for a typical consumer. Further assume that we measure current consumption on the horizontal axis and future consumption on the vertical axis. A market exists where borrowing and lending can occur for a fixed interest rate, r . Now identify the statement that is *false*.
- a) When a consumer can lend or borrow at the same interest rate, the consumer's budget constraint is a straight line.
 - b) When the rate at which a consumer can borrow is higher than the rate at which the consumer can lend, the consumer's budget constraint is composed of two straight lines with different slopes.
 - c) When a consumer cannot borrow money or earn an interest rate for saving money, the consumer's budget constraint is a straight line.
 - d) When a consumer has access to financial markets so that he/she can lend or borrow money, his/her budget constraint is expanded when compared to his/her budget constraint without access to financial markets.

Ans: C

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

47. Suppose the government is considering a program to give housing vouchers to poor people. Assuming the value of the voucher is greater than the amount currently being spent on housing per month by poor people, which of the following must be true?
- a) The housing voucher will necessarily cause more units of housing to be consumed by poor people, whereas an unrestricted cash subsidy with the same dollar value would not.
 - b) The housing voucher will lead to fewer apartments for poor people.
 - c) A subsidy is always preferable, no matter what the policy goal as it allows for freedom of choice.
 - d) Voucher systems have no impact on the housing market.

Ans: A

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

48. Suppose again the government offers poor people a housing voucher and units of housing is graphed on the x-axis and the composite good is graphed on the y-axis. The consumer will always choose to consume the exact amount of the housing voucher's units of housing when
- a) the consumer's indifference curves are everywhere steeper than the budget line.
 - b) the consumer chooses to move into a better school district for educational purposes.
 - c) the housing voucher causes the budget line to shift toward the origin.
 - d) the consumer's indifference curves are flatter (closer to horizontal) than the budget line where it slopes downward.

Ans: D

Difficulty: Hard

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

49. When analyzing how borrowing and lending affect the consumer's budget constraint, we measure spending in the current time period on the horizontal axis and spending in the future time period on the vertical axis. Assume that the interest rate at which the consumer can lend and borrow is 10%, income in period 1 is \$1000 and income in period 2 is \$1200. The point of maximum current consumption can be expressed as
- a) $1000 + 1200/1.1$.
 - b) $1000(1.1) + 1200$.
 - c) $1000 + 1200 + .1$
 - d) $1000/1.1 + 1200/1.1 + 1$.

Ans: A

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

50. When analyzing how borrowing and lending affect the consumer's budget constraint, we measure spending in the current time period on the horizontal axis and spending in the future time period on the vertical axis. Assume that the interest rate at which the consumer can lend and borrow is 10% and income in period 1 is \$1000 while income in period 2 is \$1200. The point of maximum future consumption can be expressed as
- a) $1000 + 1200/1.1$.
 - b) $1000(1.1) + 1200$.
 - c) $1000 + 1200 \cdot 1.1$.
 - d) $1000/1.1 + 1200/1.1 + 1$.

Ans: B

Difficulty: Medium

Heading: Consumer Choice with Composite Goods

LO 8 Illustrate the budget line and optimal consumer choice graphically when one of the goods a consumer can choose is a composite good.

51. When we do not have information regarding a consumer's indifference map, which of the following analyses can provide additional information regarding the consumer's choices?
- a) Revealed preference analysis.
 - b) Indifference curve analysis.
 - c) Market basket analysis.
 - d) Optimization analysis.

Ans: A

Difficulty: Easy

Heading: Revealed Preference

LO 9 Describe the concept of revealed preference.

52. Revealed preferences tells us that if basket *A* and basket *B* lie on the same budget constraint but the consumer chooses *B* instead of *A*, then we know that
- a) *A* is strictly preferred to *B*.
 - b) *A* is preferred to *B*.
 - c) *B* is strictly preferred to *A*.
 - d) *B* is preferred to *A*.

Ans: D

Difficulty: Easy

Heading: Revealed Preference

LO 10 Employ the concept of revealed preference to determine whether observed choices are consistent with utility maximization.

53. Consider the concept of revealed preference. Suppose a consumer chooses basket A over basket B when basket B costs the same amount. The consumer
- a) must find basket A better than basket B .
 - b) must find basket B better than basket A .
 - c) must find basket A at least as good as basket B .
 - d) must find basket B at least as good as basket A .

Ans: C

Difficulty: Medium

Heading: Revealed Preference

LO 10 Employ the concept of revealed preference to determine whether observed choices are consistent with utility maximization.

54. Suppose a consumer buys two goods, x and y , and has income of \$30. Initially $P_x = 3$ and $P_y = 3$ and the consumer chooses basket A with $x = 5$ and $y = 5$. The prices change to $P_x = 4$ and $P_y = 2$ and the consumer chooses basket B with $x = 1$ and $y = 13$.
- a) These choices are consistent with utility maximization.
 - b) These choices are not consistent with utility maximization.
 - c) With this information it is not possible to determine if these choices are consistent with utility maximization.
 - d) Basket B must be strictly preferred to basket A .

Ans: A

Difficulty: Hard

Heading: Revealed Preference

LO 10 Employ the concept of revealed preference to determine whether observed choices are consistent with utility maximization.

55. Suppose a consumer buys two goods, x and y and has income of \$30. Initially $P_x = 3$ and $P_y = 3$ and the consumer chooses basket A with $x = 2$ and $y = 8$. The prices change to $P_x = 4$ and $P_y = 2$ and the consumer chooses basket B with $x = 7$ and $y = 1$.
- a) These choices are consistent with utility maximization.
 - b) These choices are not consistent with utility maximization.
 - c) With this information it is not possible to determine if these choices are consistent with utility maximization.
 - d) Basket B must be strictly preferred to basket A .

Ans: B

Difficulty: Hard

Heading: Revealed Preference

LO 10 Employ the concept of revealed preference to determine whether observed choices are consistent with utility maximization.

56. Suppose a consumer buys two goods, x and y and has income of \$30. Initially $P_x = 3$ and $P_y = 3$ and the consumer chooses basket A with $x = 7$ and $y = 3$. The prices change to $P_x = 4$ and $P_y = 2$ and the consumer chooses basket B with $x = 5$ and $y = 5$.
- a) These choices are consistent with utility maximization.
 - b) These choices are not consistent with utility maximization.
 - c) With this information it is not possible to determine if these choices are consistent with utility maximization.
 - d) Basket B must be preferred to basket A .

Ans: A

Difficulty: Hard

Heading: Revealed Preference

LO 10 Employ the concept of revealed preference to determine whether observed choices are consistent with utility maximization.

57. Revealed preferences tells us that if basket A costs less than basket B but the consumer chooses B instead of A , then we know that
- a) A is strictly preferred to B .
 - b) A is at least as preferred to B .
 - c) B is strictly preferred to A .
 - d) B is as least as preferred to A .

Ans: C

Difficulty: Medium

Heading: Revealed Preference

LO 10 Employ the concept of revealed preference to determine whether observed choices are consistent with utility maximization.

File: ch05, Chapter 5: The Theory of Demand

Multiple Choice

1. As the price of a good whose units are measured along the x-axis increases, holding the consumer's income and the price of the other good constant, the budget line will
- a) shift inward toward the origin.
 - b) shift outward away from the origin.
 - c) rotate such that the y-intercept stays the same and the x-intercept shifts toward the origin.
 - d) rotate outward away from the origin.

Ans: C

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

2. If a consumer's preferences for two goods, say food and clothing, are such that as income increases, consumption of food and clothing both increase, we can say that
- a) food and clothing are inferior goods.
 - b) food is a normal good and clothing is an inferior good.
 - c) food is an inferior good and clothing is a normal good.
 - d) food and clothing are both normal goods.

Ans: D

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

3. If a consumer's preferences for two goods, say food and clothing, are such that as income decreases, consumption of food increases but consumption of clothing decreases, we can say that
- a) food and clothing are inferior goods.
 - b) food is a normal good and clothing is an inferior good.
 - c) food is an inferior good and clothing is a normal good.
 - d) food and clothing are both normal goods.

Ans: C

Difficulty: Medium

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

4. The type of elasticity of demand that is most commonly positively valued but that can be negative at times is called
- a) income elasticity of demand and it is negative when the good is a normal good.
 - b) income elasticity of demand and it is negative when the good is an inferior good.
 - c) price elasticity of demand and it is negative when the slope of the demand curve is negatively sloped.
 - d) None of the above.

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

5. On a typical optimal choice diagram, with budget lines and indifference curves, the line that connects the consumer's optimal baskets as the price of one good changes holding income and the price of the other good constant is called the consumer's
- a) income-consumption curve.
 - b) price-consumption curve.
 - c) demand curve.
 - d) Engel curve.

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

6. On a typical optimal choice diagram, with budget lines and indifference curves, the line that connects the consumer's optimal baskets as the consumer's income changes holding the prices of the goods constant is called the consumer's
- a) income-consumption curve.
 - b) price-consumption curve.
 - c) demand curve.

- d) Engel curve.

Ans: A

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

7. A curve that represents the consumer's "willingness to pay" is the consumer's
- a) Exchange curve
 - b) Demand curve
 - c) Supply curve
 - d) None of the above

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

8. Which of the following is held constant along an income-consumption curve?
- a) Income.
 - b) Consumption of all goods.
 - c) The price of all goods other than the good of interest.
 - d) The prices of all goods.

Ans: D

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

9. An Engel curve for good x describes
- a) how the consumption of good x varies as the price of good x changes.
 - b) how the consumption of good x varies as the consumer's income changes.
 - c) how the consumption of good x varies as the consumption of good y changes.
 - d) how the consumption of good x varies as price-consumption curve changes.

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

10. Evaluate the truthfulness of the following statements.
- I. The Engel curve for a normal good is upward-sloping.
 - II. The Engel curve for an inferior good is downward-sloping.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

11. A graph that plots the consumer's level of consumption of a good against the consumer's income is called a(n)
- a) price-consumption curve.
 - b) Engel curve.
 - c) demand curve.
 - d) good-consumption curve.

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

12. A negatively-sloped Engel curve implies a(n)
- a) inferior good.
 - b) normal good.
 - c) Giffen good.
 - d) marginal good.

Ans: A

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

13. Suppose when the consumer's income rises by 100%, the consumer's consumption of good x only increases 1%. We can infer that good x is a(n)
- a) normal good.
 - b) inferior good.
 - c) Giffen good.
 - d) marginal good.

Ans: A

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

14. Suppose when the consumer's income rises by 100%, the consumer's consumption of good x falls by 1%. We can infer that good x is a(n)
- a) normal good.
 - b) inferior good.
 - c) Giffen good.
 - d) marginal good.

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

15. Suppose when the consumer's income rises by 100%, the consumer's consumption of good x only increases by 1%. We can infer that the consumer's income elasticity for good x is
- a) -0.01
 - b) -1
 - c) 0.01
 - d) 1

Ans: C

Difficulty: Medium

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

16. Suppose when the consumer's income rises by 100%, the consumer's consumption of good x falls by 1%. We can infer that the consumer's income elasticity for good x is
- a) -1
 - b) -0.01
 - c) 1
 - d) 0.01

Ans: B

Difficulty: Medium

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

17. Suppose the consumer's income elasticity for good x is -0.10 when monthly income is \$1,000, and the consumer's income elasticity for good x is 0.10 when monthly income is \$2,000. From this information we can infer that
- a) good x is an inferior good for low levels of income and a superior good for high levels of income.
 - b) good x is a normal good for low levels of income and an inferior good for high levels of income.
 - c) good x is an inferior good for low levels of income and a normal good for high levels of income.
 - d) good x is a Giffen good.

Ans: C

Difficulty: Medium

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

18. In order to identify a consumer's demand curve from an optimal choice diagram we
- a) change the consumer's income, holding the prices of both goods constant, and identify the baskets the consumer chooses with each income level.
 - b) change the price's of both goods, holding income constant, and identify the baskets the consumer chooses with each price level.
 - c) change the price of one good, holding income and the price of the other good constant, and identify the baskets the consumer chooses with each price level.

- d) change the price of one good and then change the income level so that the consumer achieves the same level of utility as before the price change and then identify the optimal consumption baskets at each price level.

Ans: C

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

19. The consumer's demand curve can be obtained analytically by solving which two equations?
- $MU_x/MU_y = P_x/P_y$; $U = \bar{U}$ where \bar{U} is the initial level of utility.
 - $MU_x/MU_y = P_x/P_y$; $P_x X + P_y Y = I$
 - $P_x X + P_y Y = I$; $U = \bar{U}$ where \bar{U} is the initial level of utility.
 - $MU_x/MU_y = P_x/P_y$; $U = \bar{U}$ where \bar{U} is the final level of utility.

Ans: B

Difficulty: Medium

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

20. Suppose the consumer's utility function is given by $U(x, y) = \sqrt{xy}$ where

$$MU_x = \frac{\sqrt{y}}{2\sqrt{x}} \quad MU_y = \frac{\sqrt{x}}{2\sqrt{y}}$$

The equation for this consumer's demand curve for x is

- $x = I$
- $x = \frac{I}{2P_x}$
- $x = 2P_x$
- $x = \frac{I}{4P_x}$

Ans: B

Difficulty: Hard

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

21. Suppose the consumer's utility function is given by $U(x,y) = x^{1/4}y^{3/4}$ where

$$MU_x = \frac{y^{3/4}}{4x^{3/4}} \quad MU_y = \frac{3x^{1/4}}{4y^{1/4}}$$

The equation for this consumer's demand curve for x is

- a) $x = \frac{I}{2P_x}$
- b) $x = \frac{I}{4P_x}$
- c) $x = \frac{I}{P_x}$
- d) $x = \frac{3I}{4P_x}$

Ans: B

Difficulty: Hard

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

22. Suppose the consumer's utility function is given by $U(x,y) = xy + y$ where

$$MU_x = y \quad MU_y = x+1$$

The equation for this consumer's demand curve for x when $I > P_x$ is

- a) $x^d = 0$
- b) $x^d = \frac{I}{2P_x}$
- c) $x^d = \frac{I}{2P_x} - \frac{1}{2}$
- d) $x^d = 1/2$

Ans: C

Difficulty: Hard

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

23. Suppose the consumer's utility function is given by $U(x,y) = xy + y$ where

$$MU_x = y \quad MU_y = x+1$$

The equation for this consumer's demand curve for y when $I < P_x$ is

- a) $y^d = 0$
- b) $y^d = \frac{I}{2P_y}$
- c) $y^d = \frac{I}{P_y}$
- d) $y^d = 1/2$

Ans: C

Difficulty: Hard

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

24. As the price of a good increases, holding the consumer's income and the price of the other good constant, the budget line will

- a) shift inward toward the origin.
- b) shift outward away from the origin.
- c) rotate the budget line inward toward the origin.
- d) rotate the budget line outward away from the origin.

Ans: C

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

25. A positively-sloped Engel curve implies a(n)

- a) inferior good.
- b) normal good.
- c) Giffen good.
- d) marginal good.

Ans: B

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

26. Identify the truthfulness of the following statements.
- I. It is possible for an Engel curve to be positively sloped for a certain region of income and negatively sloped for another region.
 - II. The income elasticity of demand for a normal good is negative.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

27. Suppose the consumer's utility function is given by $U(x,y) = xy + y$ where $MU_x = y$ $MU_y = x+1$

The equation for this consumer's demand curve for x when $I < P_x$ is

- a) $x^d = 0$
- b) $x^d = \frac{I}{2P_x}$
- c) $x^d = \frac{I}{2P_x} - \frac{1}{2}$
- d) $x^d = 1/2$

Ans: A

Difficulty: Hard

Heading: Optimal Choice and Demand

LO 1 Explain how a consumer's demand for a good depends on the prices of all goods and on income.

28. The substitution effect is
- a) the change in the amount of the good consumed holding the level of income constant.
 - b) the change in the amount of the good consumed as the price of the good changes holding income constant.

- c) the change in the amount of the good consumed as the price of the good changes holding utility constant.
- d) the change in the amount of the good consumed holding relative prices constant and changing the level of income.

Ans: C

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

29. The income effect is
- a) the change in the amount of the good consumed holding the level of income constant.
 - b) the change in the amount of the good consumed as the price of the good changes holding income constant.
 - c) the change in the amount of the good consumed as the price of the good changes holding utility constant.
 - d) the change in the amount of the good consumed as the consumer's utility changes holding the price of the good constant.

Ans: D

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

30. Giffen goods probably occur most frequently when the good in question is a
- a) luxury item like jewelry or yachts.
 - b) low-priced item that is insignificant relative to a person's total consumption.
 - c) a staple of a person's consumption pattern or represents a big share of a person's total expenditures.
 - d) technology-related item.

Ans: C

Difficulty: Medium

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

31. The substitution effect graphically is always denoted
- a) by movement along the original indifference curve, whereas the income effect is represented by a rotation of the budget line.
 - b) by moving in the direction of the item that is becoming relatively more expensive.
 - c) by moving in the direction of the item that is becoming relatively cheaper and the income effect is always denoted by a rotating budget line.
 - d) by movement along the original indifference curve, whereas the income effect is represented by a parallel shift of the budget line.

Ans: D

Difficulty: Medium

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

32. Identify the statement that is false. Assume that the price of good x increases.
- a) The substitution effect shows that the consumption of good x falls, regardless of whether x is a normal or inferior good.
 - b) The income effect shows that the consumption of good x rises if good x is an inferior good.
 - c) The overall effect shows that the consumer purchases more of good x if good x is a Giffen good.
 - d) The overall effect shows that the consumer purchases more of good x if good x is an inferior good.

Ans: D

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

33. The substitution effect associated with a change in price describes
- a) the change in the level of consumption as a result of the consumer's change in utility, holding price constant.
 - b) the change in the level of consumption, holding utility constant.
 - c) the change in relative purchasing power.
 - d) both a) and c) are correct.

Ans: B

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

34. The income effect associated with a change in the price of good x
- a) describes the change in the level of consumption as a result of the consumer's change in utility, holding price constant.
 - b) describes the change in the level of consumption, holding utility constant.
 - c) describes the change in relative purchasing power.
 - d) can be either negative or positive.

Ans: D

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

35. Identify the truthfulness of the following statements.
- I. The substitution effect is unambiguous in its direction.
 - II. Direction of the income effect depends on whether the good is a normal or an inferior good.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

36. Under what circumstances is the demand curve downward-sloping?
- a) When the good is not a Giffen good.
 - b) When the good is a Giffen good.
 - c) When the good is an inferior good and the income effect outweighs the substitution effect.
 - d) The demand curve is always downward-sloping.

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

37. Under what circumstances is the demand curve upward-sloping?
- a) When the good is a normal good.
 - b) When the good is an inferior good and the substitution effect outweighs the income effect.
 - c) When the good is an inferior good and the income effect outweighs the substitution effect.
 - d) The demand curve can never be upward-sloping.

Ans: C

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

38. Identify the truthfulness of the following statements.
- I. For normal goods, the income and substitution effects work in the same direction.
 - II. Some normal goods are Giffen goods.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

39. If x is an inferior good and the price of x falls
- a) the substitution effect will induce the consumer to purchase more x and the income effect will induce the consumer to purchase more x .
 - b) the substitution effect will induce the consumer to purchase more x and the income effect will induce the consumer to purchase less x .
 - c) the substitution effect will induce the consumer to purchase less x and the income effect will induce the consumer to purchase more x .

- d) the substitution effect will induce the consumer to purchase less x and the income effect will induce the consumer to purchase less x .

Ans: B

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

40. If x is an inferior good and the price of x rises
- a) the substitution effect will induce the consumer to purchase more x and the income effect will induce the consumer to purchase more x .
 - b) the substitution effect will induce the consumer to purchase more x and the income effect will induce the consumer to purchase less x .
 - c) the substitution effect will induce the consumer to purchase less x and the income effect will induce the consumer to purchase more x .
 - d) the substitution effect will induce the consumer to purchase less x and the income effect will induce the consumer to purchase less x .

Ans: C

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

41. Which of the following statements is false?
- a) If the price of a good falls, the substitution effect will always induce the consumer to consume at least as much of the good as before the price change.
 - b) All Giffen good are inferior goods.
 - c) As the price of an inferior good increases, the income effect will induce the consumer to consume less of the good.
 - d) As the price of a normal good falls, the income effect will result in an increase in consumption of the good.

Ans: C

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

42. Giffen goods

- a) are normal goods with a negative income effect.
- b) are inferior goods with an income effect that is smaller in magnitude than the substitution effect.
- c) are inferior goods with an income effect that is greater in magnitude than the substitution effect.
- d) have downward sloping demand curves.

Ans: C

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

43. The method for finding the substitution effect of a price change on consumption of good x is to:

- a) Find the initial optimal consumption basket before the price change and then find the decomposition basket and measure the change in consumption of the good between the two baskets.
- b) Find the initial optimal consumption basket before the price change, then find the final optimal consumption basket after the price change and measure the change in consumption of the good between the two baskets.
- c) Find the final optimal consumption basket after the price change and then find the decomposition basket and measure the change in consumption of the good between the two baskets.
- d) Find the initial and final optimal consumption baskets, before and after the price change, find the decomposition basket, and add up the total changes between the two optimal baskets and the decomposition basket.

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

44. Let $U(x,y) = \sqrt{xy}$ with $MU_x = \frac{\sqrt{y}}{2\sqrt{x}}$ and $MU_y = \frac{\sqrt{x}}{2\sqrt{y}}$. Let $I = \$100$, $P_x = \$10$ and $P_y =$

$\$10$ be the initial set of prices and income. Now, let P_x rise to $\$25$. What are the (approximate) substitution and income effects of this change in prices?

- a) Income effect = -3.3; Substitution Effect = -2.1
- b) Income effect = -2.3; Substitution Effect = -1.7
- c) Income effect = -1.3; Substitution Effect = -1.7

- d) Income effect = -1.7; Substitution Effect = -1.3

Ans: C

Difficulty: Hard

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

45. Identify the statement that is true. Assume that the price of good x increases.
- a) If x is a normal good, both the income and substitution effects lead to a fall in consumption of x .
 - b) The substitution effect leads to a decrease in consumption of x only if x is an inferior good.
 - c) If x is a normal good, the substitution effect alone leads to a decrease in consumption of x . (这个是说只有 sub effect 自己导致减少 consumption, 但还有 income effect)
 - d) If x is an inferior good, the income effect alone leads to a decrease in consumption of good x .

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

46. If x is a normal good and the price of x falls
- a) the substitution effect will induce the consumer to purchase more x and the income effect will induce the consumer to purchase more x .
 - b) the substitution effect will induce the consumer to purchase more x and the income effect will induce the consumer to purchase less x .
 - c) the substitution effect will induce the consumer to purchase less x and the income effect will induce the consumer to purchase more x .
 - d) the substitution effect will induce the consumer to purchase less x and the income effect will induce the consumer to purchase less x .

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: Substitution Effect and Income Effect

LO 2 Explain how a change in the price of a good affects a consumer through a substitution effect and an income effect.

47. Consumer surplus is defined as
- a) The difference between the discounted amount and the original amount purchased of a good.
 - b) The difference between the maximum amount a consumer is willing to pay for a good and the amount he or she must actually pay when purchasing
 - c) The difference between the cost of producing a good and its purchase price.
 - d) The amount of the good purchased by a consumer over and above the minimum amount that the customer wanted of the good.

Ans: B

Difficulty: Easy

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

48. Consider a market with $Q^d = 240 - 6P$ and $Q^s = 2P$. What is the consumer surplus in this market?
- a) 1,000
 - b) 300
 - c) 750
 - d) 500

Ans: B

Difficulty: Medium

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

49. Consider a market with $Q^d = 240 - 4P + 2I$ and $Q^s = 6P$. Suppose that initially income is $I = 60$, and that income then increases to $I = 80$. What is the increase in consumer surplus from this increase in income?
- a) 1,300
 - b) 1,368
 - c) 1,421
 - d) 1,472

Ans: B

Difficulty: Hard

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

50. Suppose that a consumer's demand curve for a good can be expressed as $P = 50 - 4Q^d$. Suppose that the market is initially in equilibrium at a price of \$10. What is the consumer surplus at the original equilibrium price?
- a) 100
 - b) 150
 - c) 200
 - d) 250.

Ans: C

Difficulty: Hard

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

51. Suppose that a consumer's demand curve for a good can be expressed as $P = 50 - 4Q^d$. Suppose that the market is initially in equilibrium at a price of \$10. Now suppose that the price rises to \$14. What is the change in consumer surplus?
- a) An increase of 38.
 - b) A decrease of 38.
 - c) A decrease of 42.
 - d) A decrease of 36.

Ans: B

Difficulty: Hard

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

52. Compensating variation is
- a) the change in income necessary to hold the consumer at the final level of utility as price changes.
 - b) always the area under the demand curve and above the price paid.
 - c) the change in income necessary to restore the consumer to the initial level of utility.
 - d) the difference in the consumer's income between the purchase of the original basket and the new basket at the old prices.

Ans: C

Difficulty: Hard

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

53. The concept of compensating variation means
- a) the change in income necessary to hold the consumer at the final level of utility as price changes.
 - b) the change in income necessary to restore the consumer to the initial level of utility as price changes.
 - c) the income effect.
 - d) the substitution effect.

Ans: B

Difficulty: Easy

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

54. The concept of equivalent variation means
- a) the change in income necessary to hold the consumer at the final level of utility as price changes.
 - b) the change in income necessary to restore the consumer to the initial level of utility as price changes.
 - c) the income effect.
 - d) the substitution effect.

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

55. One way of thinking of consumer surplus might be described as
- a) the total value of the sum of the difference of all consumers' willingness to pay for an item relative to the actual cost of the item in the market.
 - b) the excess amount that consumers earn relative to the poverty line.
 - c) the level of satisfaction that consumers reach from consuming an item.
 - d) the excess of consumer demand relative to supply.

Ans: A

Difficulty: Easy

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

56. Let $U(x,y) = \sqrt{xy}$ with $MU_x = \frac{\sqrt{y}}{2\sqrt{x}}$ and $MU_y = \frac{\sqrt{x}}{2\sqrt{y}}$. Let $I = \$100$, $P_x = \$25$ and $P_y =$

$\$10$ be the initial set of prices and income. Now, let P_x fall to $\$10$. What is the approximate compensating variation for this change in prices?

- a) 24
- b) 30
- c) 34
- d) 40

Ans: C

Difficulty: Hard

Heading: Change in the Price of a Good: The Concept of Consumer Surplus

LO 3 Explain how a change in the price of a good affects three measures of a consumer's well-being: consumer surplus, compensating variation, and equivalent variation.

57. We can derive a market demand curve for an item by
- a) multiplying each individual's demand curve by the number of consumers in the marketplace.
 - b) summing all of the quantities that would be demanded by individual consumers at different prices for that good and plotting the total quantities against price.
 - c) looking at how the equilibrium changes when we shift each individual's supply curve.
 - d) subtracting the price of an item from the supply curve.

Ans: B

Difficulty: Medium

Heading: Market Demand

LO 4 Derive market demand curves from individual demand curves

58. Identify which of the following statements is false.
- a) The market demand curve is the horizontal sum of the individual demands, once we sum the price vertically.
 - b) The market demand curve is the horizontal sum of the individual demands for each price.

- c) The market demand curve maintains the properties of the individual demand curves.
- d) All of the above statements are true.

Ans: A

Difficulty: Easy

Heading: Market Demand

LO 4 Derive market demand curves from individual demand curves

59. We could use the term “bandwagon effect” to describe which of the following situations?
- a) I get great satisfaction from collecting Soviet-era posters because few people have them.
 - b) I purchase the same e-mail software package as all of my friends and family so that we can exchange both mail and advice on technical information.
 - c) I purchase more chocolate bars when the price of chocolate bars falls.
 - d) I decide to purchase a good because a politician suggests it.

Ans: B

Difficulty: Easy

Heading: Market Demand

LO 5 Discuss the effect of network externalities on demand curves

60. We could use the term “snob effect” to describe which of the following situations?
- a) I get great satisfaction from collecting Soviet-era posters because few people have them.
 - b) I purchase the same e-mail software package as all of my friends and family so that we can exchange both mail and advice on technical information.
 - c) I purchase more chocolate bars when the price of chocolate bars falls.
 - d) I decide to purchase a good because a politician suggests it.

Ans: A

Difficulty: Easy

Heading: Market Demand

LO 5 Discuss the effect of network externalities on demand curves

61. In this chapter, the term positive network externality describes
- a) the positive effect of consuming chocolate as income rises.
 - b) the snob effect.
 - c) the bandwagon effect.
 - d) the impact of a polluting firm on its local environment.

Ans: C

Difficulty: Easy

Heading: Market Demand

LO 5 Discuss the effect of network externalities on demand curves

62. In this chapter, the term negative network externality describes
- a) the positive effect of consuming chocolate as income rises.
 - b) the snob effect.
 - c) the bandwagon effect.
 - d) the impact of a polluting firm on its local environment.

Ans: B

Difficulty: Easy

Heading: Market Demand

LO 5 Discuss the effect of network externalities on demand curves

63. A network externality can be said to exist when
- a) a recording artist appears on a popular TV show leading to an increase in popularity and record sales; this is called the “snob effect”.
 - b) a recording artist appears on a popular TV show leading to an increase in popularity and record sales; this is called the “bandwagon effect”.
 - c) many people try to access the internet at the same time leading to a system crash.
 - d) two television networks decide to merge.

Ans: B

Difficulty: Easy

Heading: Market Demand

LO 5 Discuss the effect of network externalities on demand curves

64. Leisure can be
- a) either a normal good or an inferior good.
 - b) only a normal good.
 - c) considered to be an inferior good when a parallel outward shift of the budget line leads to an increase in leisure .
 - d) considered to be a normal good when a parallel outward shift of the budget line leads to a decrease in leisure.

Ans: A

Difficulty: Easy

Heading: The Choice of Labor and Leisure

LO 6 Explain how consumers choose to allocate their time between labor and leisure and how this relates to the supply of labor in the market.

65. One way to measure the opportunity cost of an hour of leisure is
- a) the wage rate that an individual could earn for that hour.
 - b) the cost of going to a restaurant every evening to eat.
 - c) the cost of visiting a museum just for fun.
 - d) the cost of the cleaning service that I hire to clean my house because I work 50 hours per week.

Ans: A

Difficulty: Easy

Heading: The Choice of Labor and Leisure

LO 6 Explain how consumers choose to allocate their time between labor and leisure and how this relates to the supply of labor in the market.

66. Which of the following statements describes a backward-bending labor supply curve?
- a) Every hour that I work represents a loss of an hour of leisure.
 - b) I asked for extra hours this month to pay for a new bicycle.
 - c) When I received my last raise, I cut back on my overtime hours so that I could work fewer hours but earn the same amount of money per week.
 - d) I worked more hours when I was younger.

Ans: C

Difficulty: Easy

Heading: The Choice of Labor and Leisure

LO 6 Explain how consumers choose to allocate their time between labor and leisure and how this relates to the supply of labor in the market.

67. Identify which of the following statements is false. The “substitution bias” of the CPI
- a) means that the CPI can either understate or overstate the actual change in cost of living faced by consumers.
 - b) refers to the fact that the CPI measures the change in expenditures necessary to consume a fixed basket of goods, whereas in reality the optimal consumption basket changes as prices change.
 - c) can be corrected partially by periodically updating the fixed basket of goods used in calculations.
 - d) refers to the fact that those who construct the CPI are biased away from including certain types of goods in the fixed basket of goods used in their calculations.

Ans: D

Difficulty: Easy

Heading: Consumer Price Indices

LO 7 Explain the biases in the Consumer Price Index.

File: ch06, Chapter 6: Inputs and Production Functions

Multiple Choice

1. Factors of production are
- a) inputs and outputs.
 - b) outputs only
 - c) inputs only
 - d) the minimum set of inputs that can produce a certain fixed quantity of output.

Ans: C

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 1 Explain how a production function represents the various technological recipes the firm can choose.

2. Given the simple production function $Q = 3K + 4L$, where L is the quantity of labor employed and K is the quantity of capital employed, assuming $K = 2$ and $L = 3$, what would it mean if output was less than 18?
- a) The firm is out of business.
 - b) The firm is not employing labor and capital efficiently.
 - c) The production function was not specified correctly.
 - d) Labor is less productive than capital.

Ans: B

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 1 Explain how a production function represents the various technological recipes the firm can choose.

3. The production function represents
- a) the quantity of inputs necessary to produce a given level of output.
 - b) the various recipes for producing a given level of output.
 - c) the minimum amounts of labor and capital needed to produce a given level of output.
 - d) the set of all feasible combinations of inputs and outputs.

Ans: B

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 1 Explain how a production function represents the various technological recipes the firm can choose.

4. A labor requirements function represents
- a) the set of feasible levels of labor that will produce a given level of output.
 - b) the various recipes for producing a given level of output.
 - c) the minimum amount of labor necessary to produce a given level of output.
 - d) the set of all feasible combinations of labor and outputs.

Ans: C

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 2 Illustrate the difference between technologically efficient combinations of inputs and outputs and technologically inefficient combinations of inputs and outputs.

5. Technically inefficient points are
- a) points in the production set but not on the production function.
 - b) points on the production function.
 - c) points contained in neither the production set nor the production function.
 - d) points that are never observed in practice.

Ans: A

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 2 Illustrate the difference between technologically efficient combinations of inputs and outputs and technologically inefficient combinations of inputs and outputs.

6. Identify the truthfulness of the following statements.
- I. Because the production function identifies the maximum amount of output that can be produced from a given combination of inputs, only technically efficient input combinations are found on the production function.
 - II. The production function identifies the technically feasible combinations of inputs.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 2 Illustrate the difference between technologically efficient combinations of inputs and outputs and technologically inefficient combinations of inputs and outputs.

7. The labor requirements function is derived from
- a) the demand curve.
 - b) the supply curve.
 - c) the production function.
 - d) the capital requirement function.

Ans: C

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 2 Illustrate the difference between technologically efficient combinations of inputs and outputs and technologically inefficient combinations of inputs and outputs.

8. The production set represents
- a) the set of all technically feasible combinations of inputs and outputs.
 - b) the technically efficient combinations of inputs and outputs.
 - c) the maximum output the firm can produce from a given level of inputs.
 - d) the minimum amounts of inputs necessary to produce a given level of output.

Ans: A

Difficulty: Easy

Heading: Introduction to Inputs and Production Functions

LO 2 Illustrate the difference between technologically efficient combinations of inputs and outputs and technologically inefficient combinations of inputs and outputs.

9. When labor is the only input to the production function, why must it be true that when the marginal product of labor is greater than the average product of labor, the average product of labor is increasing and vice versa?
- a) When the marginal product of labor is above the average product of labor, an additional unit of labor will produce a greater marginal product than average, thus raising the average.
 - b) When the marginal product of labor is below the average product of labor, an additional unit of labor will produce a greater marginal product than average, thus raising the average.
 - c) When the marginal product of labor is above the average product of labor, an additional unit of labor will produce a smaller marginal product than average, thus reducing the average.

- d) When the marginal product of labor is above the average product of labor, an additional unit of labor will produce a zero marginal product.

Ans: A

Difficulty: Hard

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

10. For a simple graph of a production function with Q on the y-axis and L on the x-axis, which of the following statements is true?
- a) The slope of the production function at a specific point equals the marginal product of labor whereas the average slope of the production function equals the average product of labor.
 - b) The average product of labor is equal to the slope of the ray from the origin to the apex of the production function for all values of L.
 - c) The slope of the production function at a specific point equals the marginal product of labor whereas the slope between the origin and a specific point on the production function equals the average product of labor.
 - d) The average product of labor is never equal to the slope of the ray from the origin to the apex of the production function.

Ans: C

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

**Reference: Use the following table to answer questions 11 - 14.

L	Q
0	0
1	20
2	50
3	90
4	125
5	140
6	150

11. *The marginal productivity of the third worker is
- a) 30.

- b) 40.
- c) 50.
- d) 90.

Ans: B

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

12. *The average productivity of the fifth worker is
- a) 20.
 - b) 28.
 - c) 30.
 - d) 140.

Ans: B

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

13. *Marginal productivity is maximized with the _____ worker.
- a) second
 - b) third
 - c) fourth
 - d) sixth

Ans: B

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

14. *Average productivity is maximized with the _____ worker.
- a) second
 - b) third
 - c) fourth
 - d) sixth

Ans: C

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

15. Suppose a production function has only one input, labor. What can you tell about the slope of the production function, assuming output is on the y-axis and labor is on the x-axis, if production exhibits constant marginal returns to labor?
- a) The slope of the production function is positive and increasing exponentially.
 - b) The slope of the production function is a positive constant.
 - c) The slope of the production function is negative.
 - d) The slope cannot be determined.

Ans: D

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

16. Identify the truthfulness of the following statements.
- I. When the marginal product of labor is falling, the average product of labor is falling.
 - II. When the marginal product curve lies above the average product curve, then average product is rising.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: D

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

17. If marginal product is greater than average product
- a) total product must be increasing.
 - b) marginal product must be decreasing.
 - c) marginal product must be increasing.

- d) average product may be increasing or decreasing.

Ans: A

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

18. Which one of these is false when compared to the relationship between marginal and average product?
- When average product is increasing in labor, marginal product is greater than average product. That is, if AP_L increases in L , then $MP_L > AP_L$.
 - When average product is decreasing in labor, marginal product is less than average product. That is, if AP_L decreases in L , then $MP_L < AP_L$.
 - The relationship between MP_L and AP_L is not the same as the relationship between the marginal of anything and the average of anything.
 - When average product neither increases nor decreases in labor because we are at a point at which AP_L is at a maximum, then marginal product is equal to average product.

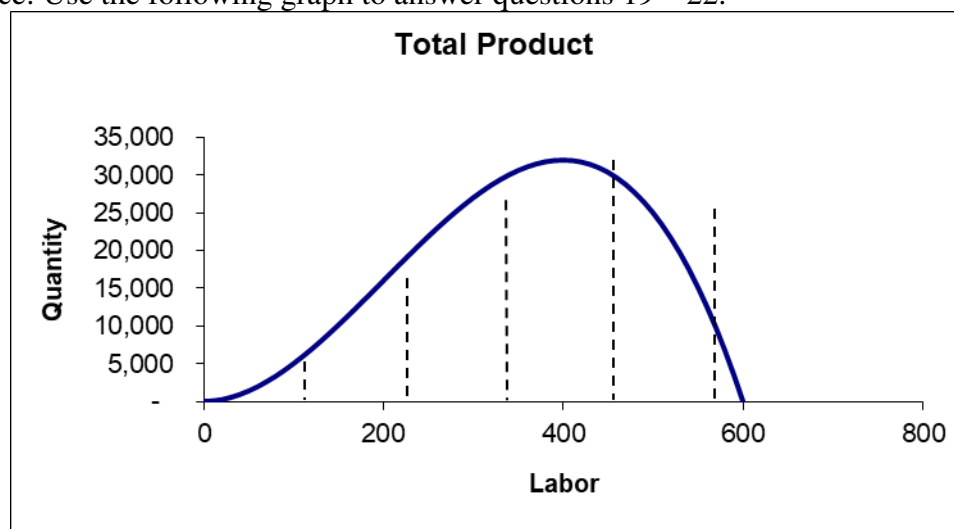
Ans: C

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

**Reference: Use the following graph to answer questions 19 – 22.



19. *Average product reaches a maximum when labor equals
- a) 100
 - b) 200
 - c) 300
 - d) 400

Ans: C

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

20. *Marginal product reaches a maximum when labor equals
- a) 100
 - b) 200
 - c) 300
 - d) 400

Ans: B

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

21. *When labor equals 100
- a) average product is less than marginal product
 - b) average product is greater than marginal product.
 - c) average product is equal to marginal product.
 - d) the relationship between average product and marginal product cannot be determined from a total product graph.

Ans: A

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 3 Distinguish between the concepts of total product, marginal product, and average product for a production function with a single input.

22. *Diminishing marginal returns set in at labor equals

- a) 100
- b) 200
- c) 300
- d) 400

Ans: B

Difficulty: Medium

Heading: Production Functions with a Single Input

LO 4 Describe the concept of diminishing marginal returns.

23. Diminishing marginal returns occur when the total product function is
- a) decreasing.
 - b) increasing at a decreasing rate.
 - c) increasing at a constant rate.
 - d) increasing at an increasing rate.

Ans: B

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 4 Describe the concept of diminishing marginal returns.

24. Increasing marginal returns occur when the total product function is
- a) decreasing.
 - b) increasing at a decreasing rate.
 - c) increasing at a constant rate.
 - d) Increasing at an increasing rate.

Ans: D

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 4 Describe the concept of diminishing marginal returns.

25. The law of diminishing marginal returns states that
- a) when the marginal product is above the average product, average product must be increasing.
 - b) when the marginal product is below the average product, average product must be decreasing.
 - c) as the use of one input increases holding the quantities of the other inputs fixed, the marginal product of the input eventually declines.

- d) as the use of all inputs increases, the marginal product of the inputs eventually declines.

Ans: C

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 4 Describe the concept of diminishing marginal returns.

26. Given the production function $Q = L^2$, calculate the average product of labor for $L = 2$, and also calculate the marginal product of labor between $L = 1$ and $L = 2$.
- a) The average product of labor is 2 and the marginal product of labor is 2.
 - b) The average product of labor is 1 and the marginal product of labor is 3.
 - c) The average product of labor is 3 and the marginal product of labor is 2.
 - d) The average product of labor is 2 and the marginal product of labor is 3.

Ans: D

Difficulty: Easy

Heading: Production Functions with a Single Input

LO 5 Illustrate graphically how the graphs of the marginal product and average product functions relate to the graph of the total product function.

27. An isoquant represents
- a) all combinations of inputs that produce a given level of output at the same cost.
 - b) all combinations of inputs that produce a given level of output.
 - c) all combinations of output that require the same levels of inputs.
 - d) all combinations of inputs that cost the same amount.

Ans: B

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 6 Demonstrate how a production function with two variable inputs can be represented by isoquants.

28. Suppose the production function can be expressed as $Q = 2\sqrt{KL}$. Which of the following combinations of capital and labor (K, L) lie on the same isoquant?
- a) (5, 6) and (4, 5)
 - b) (3, 2) and (7, 1)
 - c) (4, 3) and (2, 6)
 - d) (10, 3) and (15, 4)

Ans: C

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 6 Demonstrate how a production function with two variable inputs can be represented by isoquants.

29. The expression given below explains:

$$\text{MPL} = \frac{\text{change in quantity of output } Q}{\text{change in quantity of labor } L} \mid K \text{ is held constant}$$

$$= \frac{\Delta Q}{\Delta L} \mid K \text{ is held constant}$$

- a) Product hill
- b) Marginal product of labor
- c) Non-marginal product
- d) Total product

Ans: B

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 6 Demonstrate how a production function with two variable inputs can be represented by isoquants.

30. The $MRTS_{L,K} =$

- a) MP_K / MP_L
- b) $-\Delta L / \Delta K$
- c) MP_L / MP_K
- d) $-MP_K / MP_L$

Ans: C

Difficulty: Easy

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

31. The rate at which one input can be exchanged for another input without altering the level of output is called the
- a) marginal product curve.
 - b) average product curve.
 - c) marginal rate of technical substitution.
 - d) law of diminishing marginal productivity.

Ans: C

Difficulty: Easy

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

32. The marginal rate of technical substitution of labor for capital is defined as
- a) The rate at which the quantity of capital can be decreased for every one unit increase in the quantity of labor, holding the quantity of output constant
 - b) The rate at which the quantity of capital must be increased for every one unit decrease in the quantity of labor, holding the cost of output constant.
 - c) The rate at which the cost of labor and capital increases as output rises.
 - d) The rate at which output rises as capital increases, holding labor constant.

Ans: A

Difficulty: Easy

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

33. Consider a production function of the form $Q = K^2L^2$ with marginal products $MP_K = 2KL^2$ and $MP_L = 2K^2L$. What is the marginal rate of technical substitution of labor for capital at the point where $K = 5$ and $L = 5$?
- a) 5
 - b) 25
 - c) 50
 - d) 1

Ans: D

Difficulty: Hard

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

34. When isoquants are convex to the origin,
- the marginal rate of technical substitution is inverted.
 - the marginal rate of technical substitution is decreasing.
 - the marginal rate of technical substitution is constant.
 - the marginal rate of technical substitution is increasing.

Ans: B

Difficulty: Easy

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

35. The slope of the isoquant can be expressed as
- the ratio of the input prices.
 - the ratio of the inputs.
 - the ratio of the marginal productivities of the inputs.
 - the sum of the marginal productivities of the inputs.

Ans: C

Difficulty: Easy

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

**Reference: Use the following table for questions 36-38

	K=0	K=1	K=2	K=3	K=4
L=0	0	0	0	0	0
L=1	0	1	2	3	4
L=2	0	8	16	24	32
L=3	0	27	54	81	108
L=4	0	64	128	192	256

36. *Holding labor constant, what do you notice about the marginal productivity of capital?
- The marginal productivity of capital is always increasing.
 - The marginal productivity of capital is always constant.
 - The marginal productivity of capital is always decreasing.
 - The marginal productivity of capital increases, then decreases.

Ans: B

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 8 Explain how the concept of marginal rate of the technical substitution is related to the concept of marginal product.

37. *Holding capital constant at 3 units, the marginal productivity of the second laborer is

- a) 8.
- b) 12.
- c) 21.
- d) 24.

Ans: C

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 9 Show graphically how a firm's input substitution opportunities determines the shape of the firm's isoquants.

38. *Holding labor constant at 2 units, the average productivity of three units of capital is

- a) 8.
- b) 12.
- c) 21.
- d) 24.

Ans: A

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 9 Show graphically how a firm's input substitution opportunities determines the shape of the firm's isoquants.

39. Total product hill is

- a) A single line graph that shows the relationship between the quantity of output and the quantity of one of two inputs employed by the firm
- b) A two-dimensional graph that shows the relationship between the quantity of output and the quantity of one of two inputs employed by the firm
- c) A three-dimensional graph that shows the relationship between the quantity of output and the quantity of the two inputs employed by the firm
- d) A four-dimensional graph that shows the relationship between the quantity of output and the quantity of the two inputs employed by the firm

Ans: C

Difficulty: Easy

Heading: Production Functions with More than One Input

LO 9 Show graphically how a firm's input substitution opportunities determines the shape of the firm's isoquants.

40. When a production function can be expressed as $Q = (aK)(bL)$, the relationship between capital and labor in the production function is that
- a) capital and labor are perfect substitutes, and the isoquants are linear.
 - b) capital and labor must be combined in fixed proportions, and the isoquants are L-shaped.
 - c) capital and labor are substitutable, and the isoquants are convex to the origin.
 - d) capital and labor are perfect substitutes, and the isoquants are L-shaped.

Ans: C

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 9 Show graphically how a firm's input substitution opportunities determines the shape of the firm's isoquants.

41. When a production function can be expressed as $Q = \min\{aK, bL\}$, the relationship between capital and labor in the production function is that
- a) capital and labor are perfect substitutes, and the isoquants are linear.
 - b) capital and labor must be combined in fixed proportions, and the isoquants are L-shaped.
 - c) capital and labor are easily substituted, and the isoquants are convex to the origin.
 - d) capital and labor are perfect substitutes, and the isoquants are L-shaped.

Ans: B

Difficulty: Medium

Heading: Production Functions with More than One Input

LO 9 Show graphically how a firm's input substitution opportunities determines the shape of the firm's isoquants.

42. A measure of how quickly the marginal rate of technical substitution of labor for capital changes as we move along an isoquant is the
- a) capital-labor ratio
 - b) elasticity of substitution
 - c) input substitution possibility frontier

- d) rate of technological progress

Ans: B

Difficulty: Easy

Heading: Substitutability Among Inputs

LO 10 Describe how the concept of elasticity of substitution measures the firm's input substitution opportunities.

43. The marginal rate of technical substitution in production is analogous to the marginal rate of substitution for the consumer's optimization problem in that
- a) the slope of the consumer's indifference curve is the opposite of the ratios of the marginal utilities of the two goods, whereas the slope of the production isoquant is the opposite of the ratio of the marginal product of labor relative to the marginal product of capital.
 - b) the slope of the consumer's indifference curve is equal to the ratio of the marginal utilities of the two goods, whereas the slope of the production isoquant is the opposite of the ratio of the marginal product of labor relative to the marginal product of capital.
 - c) the slope is equal in both instances.
 - d) they are calculated by subtracting the price ratio from the output level.

Ans: A

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 10 Describe how the concept of elasticity of substitution measures the firm's input substitution opportunities.

44. If capital cannot easily be substituted for labor, then the elasticity of substitution is
- a) negative.
 - b) close to zero.
 - c) close to one.
 - d) approaching infinity.

Ans: B

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 10 Describe how the concept of elasticity of substitution measures the firm's input substitution opportunities.

45. Consider a production function $Q = 3K + 4L$, when L is graphed on the x-axis and K is graphed on the y-axis, the marginal rate of technical substitution is equal to
- a) $4/3$ and the isoquant is convex to the origin.
 - b) $4/3$ and the isoquant is a straight line.
 - c) $3/4$ and the isoquant is a straight line.
 - d) 12 and the isoquant is convex to the origin.

Ans: B

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

46. When a production function has the form $Q = aL + bK$, we can say that
- a) the production function is linear and the inputs are perfect substitutes.
 - b) the production function is linear and the inputs are perfect complements.
 - c) the production function is linear and the inputs are used in fixed factor proportions only.
 - d) the production function is non-linear and the inputs are perfect substitutes.

Ans: A

Difficulty: Easy

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

47. Which of the following is true?
- a) The Cobb-Douglas production function is given by the general formula $Q = AL^aK^b$ and the constant elasticity of substitution is equal to 0.
 - b) The Cobb-Douglas production function is given by the general formula $Q = AL^aK^b$ and the constant elasticity of substitution is equal to 1.
 - c) The Cobb-Douglas production function does not exhibit a constant elasticity of substitution.
 - d) The Cobb-Douglas production function always takes the form $Q = K^2L^2$.

Ans: B

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

48. For the production function $Q = aK + bL$, where the variables are graphed as usual, the equation for a typical isoquant is

- a) $K = \frac{Q - bL}{a}$
- b) $L = \frac{Q - aK}{b}$
- c) $K = \frac{Q^2}{L}$
- d) $K = aQ - bL$

Ans: A

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

49. For the production function $Q = 20\sqrt{KL}$, the equation for a typical isoquant is

- a) $K = \frac{20L}{Q^2}$
- b) $K = \frac{Q^2}{20L}$
- c) $L = \frac{K}{20Q}$
- d) $K = 20(QL)^2$

Ans: B

Difficulty: Hard

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

50. The region of upward sloping backward bending isoquants is

- a) Economic region of production
- b) Uneconomic region of production
- c) Marginal rate of production
- d) Marginal rate of technical substitution

Ans: B

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

51. For the production function $Q = aL + bK$, where a and b are constants, the $MRTS_{L,K}$

- a) declines as the firm substitutes labor for capital.
- b) remains constant as the firm substitutes labor for capital.
- c) implies upward-sloping, straight-line isoquants.
- d) is undefined.

Ans: B

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

52. A fixed proportions production function
- a) is not observed in practice.
 - b) has straight line isoquants.
 - c) has L-shaped isoquants.
 - d) has a constant marginal rate of technical substitution as the firm substitutes labor for capital.

Ans: C

Difficulty: Easy

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

53. A production function of the form $Q = AL^\alpha K^\beta$ is a(n)
- a) isoquant function
 - b) Cobb–Douglas production function
 - c) fixed-proportions function
 - d) perfect complements function

Ans: B

Difficulty: Easy

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

54. Suppose every molecule of salt requires exactly one sodium atom, Na, and one chlorine atom, Cl. The production function that describes this is
- a) $Q = Na + Cl$
 - b) $Q = Na \times Cl$
 - c) $Q = \min(Na, Cl)$
 - d) $Q = \max(Na, Cl)$

Ans: C

Difficulty: Hard

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

55. Compare and match the following

Production function		Elasticity of substitution (σ)	
1	Linear production function	a	$\sigma = 1$
2	Fixed-proportions production function	b	$\sigma = 0$
3	Cobb–Douglas production function	c	$\sigma = \infty$

Ans: 1=c; 2=b; 3=a

Difficulty: Easy

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

56. Consider the production function $Q = 5K + 10L$. The $MRTS_{L,K}$ is

- a) 2.00
- b) 1.50
- c) 1.00
- d) 0.50

Ans: A

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

57. Consider the CES production function $Q = [3L^{.67} + 3K^{.67}]^{1.5}$. The elasticity of substitution is

- a) 0.3
- b) 1.5
- c) 0.67
- d) 3.00

Ans: D

Difficulty: Medium

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions.

58. A type of production function that includes linear production functions, fixed-proportions production functions, and Cobb-Douglas production functions as special cases is
- a) Cobb-Douglas production function
 - b) Constant elasticity of substitution (CES) production function
 - c) Fixed proportions production functions
 - d) Linear production functions

Ans: B

Difficulty: Easy

Heading: Substitutability Among Inputs

LO 11 Compare and contrast a number of special production functions

59. Returns to scale refers to
- a) the increase in output that accompanies an increase in one input, all other inputs held constant.
 - b) a change in a production process that enables a firm to achieve more output from a given combination of inputs.
 - c) the number of units of increase in output that can be obtained from an increase in one unit of input.
 - d) the percentage by which output will increase when all inputs are increased by a given percentage.

Ans: D

Difficulty: Medium

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

60. The production function $Q = KL$ exhibits
- a) increasing returns to scale.
 - b) constant returns to scale.
 - c) decreasing returns to scale.
 - d) undefined returns to scale.

Ans: A

Difficulty: Medium

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

61. The production function $Q(L, K, M) = 25K^{0.5}L^{0.5}M^{0.5}$ exhibits
- a) decreasing returns to scale.
 - b) constant returns to scale.
 - c) increasing returns to scale.
 - d) either decreasing or constant returns to scale, but more information is needed to determine which one.

Ans: C

Difficulty: Hard

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

62. Assuming a firm uses capital and labor to produce output, which of the following is not always a true statement?
- a) Assuming the marginal products of labor and capital are greater than zero, doubling the inputs of capital and labor will lead to greater output.
 - b) Assuming the marginal products of labor and capital are less than zero, doubling the inputs of capital and labor will lead to less output.
 - c) Assuming the marginal products of labor and capital are greater than zero, doubling the inputs of capital and labor will lead to double the output.
 - d) Assuming the marginal products of labor and capital are greater than zero, doubling the input of capital and keeping the input of labor constant will lead to greater output.

Ans: C

Difficulty: Medium

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

63. Consider the CES production function $Q = [aL^{\frac{\sigma-1}{\sigma}} + bK^{\frac{\sigma-1}{\sigma}}]^{\frac{\sigma}{\sigma-1}}$. This production function exhibits
- a) decreasing returns to scale.
 - b) constant returns to scale.
 - c) increasing returns to scale.

- d) either decreasing or constant returns to scale, but more information is needed to determine which one.

Ans: B

Difficulty: Hard

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

64. A production manager notices that when she triples all of her inputs simultaneously, her output doubles. The production manager determines that for this range of output, the production function exhibits
- a) increasing returns to scale.
 - b) constant returns to scale.
 - c) decreasing returns to scale.
 - d) undefined returns to scale.

Ans: C

Difficulty: Medium

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

65. Given a production function $Q = 3LK$, we can say that
- a) this production function is not Cobb-Douglas.
 - b) this production function is Cobb-Douglas and exhibits decreasing returns to scale.
 - c) this Cobb-Douglas production function does not exhibit a constant elasticity of substitution.
 - d) this production function is Cobb-Douglas and exhibits increasing returns to scale.

Ans: D

Difficulty: Medium

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

66. Identify the true statement.
- a) Decreasing returns to scale and diminishing marginal returns are just two different ways of saying the same thing.

- b) Returns to scale pertains to the impact on output of increasing all inputs simultaneously; diminishing marginal returns pertains to the impact of changing a single input while holding all other inputs constant.
- c) Returns to scale pertains to the impact on output of changing a single input while holding all other inputs constant; diminishing marginal returns pertains to the impact on output of increasing all inputs simultaneously.
- d) Returns to scale can be identified by calculating the slope of an isoquant.

Ans: B

Difficulty: Easy

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

67. Assume that labor is measured along the horizontal axis and capital is measured along the vertical axis. If the $MRTS_{L,K}$ decreases as we move inward toward the origin along the ray (slope of the isoquant becomes flatter), we are observing
- a) neutral technological progress.
 - b) labor-saving technological progress.
 - c) capital-saving technological progress.
 - d) both labor-saving and capital-saving technological progress.

Ans: B

Difficulty: Easy

Heading: Technological Progress

LO 13 Verify whether a change in production function represents technological progress, and if it does, determine whether the technological progress is labor-saving, neutral, or capital-saving.

68. Suppose over time that a firm's production process undergoes capital-saving technological progress. This implies
- a) the isoquants corresponding to any particular level of output will shift outward from the origin and the $MRTS_{L,K}$ along any ray from the origin will increase.
 - b) the isoquants corresponding to any particular level of output will shift outward from the origin and the $MRTS_{L,K}$ along any ray from the origin will decrease.
 - c) the isoquants corresponding to any particular level of output will shift inward toward the origin and the $MRTS_{L,K}$ along any ray from the origin will increase.
 - d) the isoquants corresponding to any particular level of output will shift inward toward the origin and the $MRTS_{L,K}$ along any ray from the origin will decrease.

Ans: C

Difficulty: Easy

Heading: Technological Progress

LO 13 Verify whether a change in production function represents technological progress, and if it does, determine whether the technological progress is labor-saving, neutral, or capital-saving.

69. Let a firm's production function be $Q = 100(aL + bK)$. The production function then becomes $Q = 500(aL + bK)$. Which of the following statements is true?
- a) Neutral technological progress has occurred.
 - b) Labor-saving technological progress has occurred
 - c) Capital-saving technological progress has occurred.
 - d) Economies of scale have increased.

Ans: A

Difficulty: Medium

Heading: Technological Progress

LO 13 Verify whether a change in production function represents technological progress, and if it does, determine whether the technological progress is labor-saving, neutral, or capital-saving.

70. Consider the production function $Q = [c + aL^{\frac{\sigma-1}{\sigma}} + bK^{\frac{\sigma-1}{\sigma}}]^{\frac{\sigma}{\sigma-1}}$ where c is some constant different than zero. This production function exhibits
- a) decreasing returns to scale.
 - b) constant returns to scale.
 - c) increasing returns to scale.
 - d) either decreasing or constant returns to scale, but more information is needed to determine which one.

Ans: A

Difficulty: Hard

Heading: Returns to Scale

LO 12 Determine whether a production function exhibits increasing, constant, or decreasing returns to scale.

File: ch07, Chapter 7: Costs and Cost Minimization

Multiple Choice

1. Suppose you are a star basketball player at a major university in your sophomore year. You are sought after by several NBA teams. Which of the following choices best characterizes your opportunity cost if you choose to drop out of college and enter the NBA?
- a) The value of your college scholarship that you have given up.
 - b) The skills that two more years of playing at your college would have given you along with their additional value over the rest of your life, in addition to the educational value of the college degree.
 - c) The total of explicit costs that have been incurred in the past.
 - d) The total of implicit costs that have been incurred in the past.

Ans: B

Difficulty: Easy

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

2. You have invested about \$100,000 in a new (hopefully) trendy restaurant in an urban location. These costs have gone to purchase the restaurant, prepay insurance for the following year, and purchase supplies for the restaurant. It will cost you an additional \$10,000 per year to hire each waiter and waitress. (They earn tips which they get to keep.) Which of the following statements is most accurate?
- a) The \$100,000 sum represents sunk costs, whereas the costs for waiters and waitresses is not sunk, but all of these costs would be considered accounting costs, but do not include all of the possible economic costs of operating the business.
 - b) The \$100,000 sum represents sunk costs, whereas the costs for waiters and waitresses is not sunk, but all of these costs would be considered accounting costs, and also include all of the possible economic costs of operating the business.
 - c) The \$100,000 sum represents sunk costs and the costs for waiters and waitresses are sunk as well.
 - d) The \$100,000 sum represents sunk costs and all of the possible accounting costs as well.

Ans: A

Difficulty: Medium

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

3. Sunk costs do not
- a) matter.
 - b) affect business shutdown decisions.
 - c) affect business start-up decisions.
 - d) cost as much as marginal costs.

Ans: B

Difficulty: Medium

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

4. You decide to purchase a car for \$12,000. Upon driving the car off of the lot, the resale value of the car falls to \$9,000. After purchasing the car, the \$12,000 purchase price represents a(n)
- a) average cost.
 - b) implicit cost.
 - c) sunk cost.
 - d) non-sunk cost.

Ans: C

Difficulty: Easy

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

5. Opportunity cost for a firm is
- a) Costs that involve a direct monetary outlay
 - b) The sum of the firm's implicit costs
 - c) The total of explicit costs that have been incurred in the past
 - d) The value of the next best alternative that is forgone when another alternative is chosen

Ans: D

Difficulty: Easy

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

6. A small business owner is planning to purchase a new office computer for \$1,000. The opportunity cost of purchasing this computer is
- a) \$900
 - b) \$1,000
 - c) \$1,100
 - d) Unknown, since we don't know the owner's next best alternative.

Ans: B

Difficulty: Easy

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

7. You decide to purchase a new car for \$12,000. Upon driving the car off of the lot, the resale value of the car falls to \$9,000. The opportunity cost of purchasing the car is _____ and the opportunity cost of using the car is _____
- a) \$12,000 and \$9,000.
 - b) \$12,000 and \$3,000.
 - c) Unknown and \$9,000.
 - d) Unknown and \$3,000.

Ans: A

Difficulty: Medium

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

8. **Economic costs**
- a) **are the same as accounting costs.**
 - b) **are the same as implicit costs.**

- c) are the same as opportunity costs.
- d) are the same as the sum of all past explicit costs

Ans: C

Difficulty: Easy

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

9. Economic costs are synonymous with
- a) Accounting costs
 - b) Sunk costs
 - c) Opportunity costs
 - d) Implicit costs

Ans: C

Difficulty: Easy

Heading: Cost Concepts for Decision Making

LO 1 Identify and apply different concepts of costs that figure in a firm's decision making, including explicit versus implicit costs, opportunity cost, economic versus accounting costs, and sunk versus nonsunk costs.

10. The short-run is
- a) a time period in which all input levels are fixed.
 - b) a time period in which at least one input level is fixed.
 - c) three months.
 - d) a time period in which no input levels are fixed.

Ans: B

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

11. The cost-minimization problem of the firm is to
- a) minimize total costs.
 - b) minimize average costs.
 - c) minimize total cost of producing a particular amount of output.
 - d) maximize output subject to a cost constraint.

Ans: C

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

12. Isocost lines represent

- a) the same value for every firm in the industry.
- b) are the same as implicit costs.
- c) the same total expenditure on the inputs to the production process.
- d) the sum of all past explicit costs

Ans: C

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

13. When isocost lines shift outward from the origin, it represents

- a) increasing levels of expenditure on the inputs to the production process.
- b) increasing sunk costs
- c) increasing opportunity costs
- d) decreasing levels of expenditure on the inputs to the production process.

Ans: A

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

14. An isocost line represents

- a) all combinations of inputs in which the firm produces the same level of output.
- b) all combinations of inputs in which the firm has the same level of total cost.
- c) for a given level of output, the various points that will produce that same level of output at the same cost.
- d) all combinations of output that yield the same total cost level.

Ans: B

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

15. The cost-minimization problem of the firm is to
- a) maximize output subject to a given cost constraint.
 - b) minimize total cost.
 - c) minimize average cost.
 - d) minimize total cost of producing a particular level of output.

Ans: D

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

16. The long-run is
- a) a time period in which all input levels are fixed.
 - b) a time period in which at least one input level is fixed.
 - c) one year.
 - d) a time period in which no input levels are fixed.

Ans: D

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

17. The cost-minimization problem of the firm is to
- a) minimize total costs.
 - b) minimize average costs.
 - c) minimize total cost of producing a particular amount of output.
 - d) maximize output subject to a cost constraint.

Ans: C

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

18. A difference between the short run and the long run is that a firm in the short run
- faces an unconstrained cost minimization problem, whereas the firm is constrained in the long run.
 - faces a constrained cost minimization problem, whereas the firm is unconstrained in the long run.
 - faces a constrained cost minimization problem in both the short run and the long run.
 - faces an unconstrained cost minimization problem in both the short run and the long run.

Ans: B

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

19. When the level of capital is plotted on the vertical axis and the level of labor is plotted on the horizontal axis, the slope of the isocost line is (assuming w is the price of labor and r is the price of capital and production uses only these two inputs)
- $-w/r$
 - $-r/w$
 - MP_K/MP_L
 - MP_L/MP_K

Ans: A

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

20. To derive the equation for an isocost line when the level of capital is plotted on the vertical axis and the level of labor is plotted on the horizontal axis, you should
- solve the production function for K .
 - solve the production function for L .
 - solve the total cost equation for K .
 - solve the total cost equation for L .

Ans: C

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

21. Let a firm use labor (L) and capital (K) as its only inputs to produce an output, Q . The cost of labor is $w = \$5$ per labor hour and the cost of capital is $r = \$15$ per machine hour. When capital is measured on the vertical axis and labor on the horizontal axis, what is the slope of an isocost line for this firm?
- a) -3.
 - b) -5.
 - c) -15.
 - d) -1/3.

Ans: D

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

22. A firm uses labor and capital, (L, K) , to produce an output. The hourly cost of labor is \$10, and the hourly cost of capital is \$50. Which of the following combinations of labor and capital hours of use represent points on the firm's \$100,000 isocost line?
($10L + 50K = 100,000$)
- a) (10000, 2000)
 - b) (2000, 10000)
 - c) (1000, 1800)
 - d) (1000, 1000)

Ans: C

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

23. In order to solve graphically for an interior cost minimum of the firm, subject to the constraint of producing a particular target level of output, we
- a) shift in the isocost line as much as possible.
 - b) shift out the isoquant as much as possible.

- c) shift the isocost line left as much as possible subject to the constraint that it touches the target isoquant at least once.
- d) shift the isoquant left as much as possible subject to the constraint that it touches the target isocost at least once.

Ans: C

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

24. Which of the following statements correctly characterizes the solution to a cost minimization problem with an interior solution?
- a) The isoquant is tangent to the isocost line.
 - b) The isoquant lies to the interior of the isocost line.
 - c) The isocost line lies to the interior of the isoquant.
 - d) The distance between the isoquant and the isocost line is maximized.

Ans: A

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

25. When a firm uses inputs in a fixed proportion, the cost minimizing combination of capital and labor
- a) occurs when the firm uses either all workers or all machines.
 - b) occurs when the firm uses equal amounts of workers and machines.
 - c) occurs where the ratio of the marginal productivities equals the ratio of the input prices.
 - d) occurs at the corner point on the isoquant.

Ans: D

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

26. Suppose that a firm uses only two inputs in its production process. The ratio of the marginal products of these inputs always exceeds the ratio of the prices of the inputs. What can you say about the cost-minimizing point of the firm?
- a) It is an interior solution.
 - b) A cost-minimizing point must not exist.
 - c) If a cost-minimizing point exists, it must be at a corner.
 - d) Costs must be negative at the cost-minimizing point.

Ans: C

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

27. Suppose for a particular production function that

$$MP_L = 36 \left(\frac{K}{L} \right) \quad MP_K = 36 \left(\frac{L}{K} \right)$$

If the price of capital is \$5 per unit and the price of labor is \$125 per unit, at the cost-minimizing combination of capital and labor the firm should employ

- a) five times as much labor as capital.
- b) five times as much capital as labor.
- c) 125/36 units of capital and 5/36 units of labor.
- d) 36/125 units of capital and 36/5 units of labor.

Ans: B

Difficulty: Hard

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

28. Suppose in a particular production process that capital and labor are perfect substitutes so that three units of labor are equivalent to one unit of capital. If the price of capital is \$4 per unit and the price of labor is \$1 per unit, the firm should
- a) employ capital only.
 - b) employ labor only.
 - c) use three times as much capital as labor.
 - d) use three times as much labor as capital.

Ans: B

Difficulty: Hard

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

29. A firm's production function is given by $Q = KL$. The marginal products of labor and capital are, respectively, $MP_L = K$ and $MP_K = L$. The wage rate of labor is $w = \$10$ and the rental rate of capital is $r = \$20$. The firm wants to produce 1,800 units of output. What is the most efficient combination of labor and capital (L, K) ?
- a) (10, 20)
 - b) (20, 90)
 - c) (60, 30)
 - d) (90, 20)

Ans: C

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

30. A firm's production function is given by $Q = KL$. The marginal products of labor and capital are, respectively, $MP_L = K$ and $MP_K = L$. The wage rate of labor is $w = \$10$ and the rental rate of capital is $r = \$20$. The firm wants to produce 1,800 units of output in the most efficient way possible. How much does the firm spend?
- a) \$2,000
 - b) \$1,300
 - c) \$1,200
 - d) \$1,100

Ans: C

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

31. A firm's production function is given by $Q = KL$. The marginal products of labor and capital are, respectively, $MP_L = K$ and $MP_K = L$. The wage rate of labor is $w = \$10$ and the rental rate of capital is $r = \$20$. What is the most efficient combination of labor and capital (L, K) that also yields a cost of exactly \$1000?
- a) (10, 45)
 - b) (25, 50)
 - c) (50, 25)

d) (20, 40)

Ans: C

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

32. A firm's production function is given by $Q = KL$. The marginal products of labor and capital are, respectively, $MP_L = K$ and $MP_K = L$. The wage rate of labor is $w = \$10$ and the rental rate of capital is $r = \$20$. The firm spends exactly \$1000 in the most efficient way possible. How much output can the firm produce?

- a) 450
- b) 800
- c) 1000
- d) 1250

Ans: D

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

33. A firm's production function is given by $Q = K^2L$. The marginal products of labor and capital are, respectively, $MP_L = K^2$ and $MP_K = 2KL$. Further, the wage rate is $w = \$10$ and the rental rate of capital is $r = \$20$. What is the most efficient combination of labor and capital (L, K) that also results in a total cost level of exactly \$1,200?

- a) (20, 50)
- b) (25, 47.5)
- c) (30, 45)
- d) (40, 40)

Ans: D

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

34. A firm's production function is given by $Q = K^2L$. The marginal products of labor and capital are, respectively, $MP_L = K^2$ and $MP_K = 2KL$. Further, the wage rate is $w = \$10$ and the rental rate of capital is $r = \$20$. Suppose that the firm spends exactly \$1200 in the most efficient way possible. How much output can the firm produce?
- a) 50,000
 - b) 56,406.25
 - c) 60,750
 - d) 64,000

Ans: D

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

35. A firm has a Cobb-Douglas production function for its inputs of capital and labor. The firm is currently paying \$10 per labor hour and \$5 per machine hour. The firm is currently at an efficient production level, employing an equal number of machines and workers. What can we infer about the marginal productivities of capital and labor at this point?
- a) $MP_K = MP_L$
 - b) $MP_K = 2MP_L$
 - c) $MP_L = 2MP_K$
 - d) $MP_L = .5MP_K$

Ans: C

Difficulty: Hard

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

36. The long-run is
- a) a time period in which all input levels are fixed.
 - b) a time period in which at least one input level is fixed.
 - c) one year.
 - d) a time period in which no input levels are fixed.

Ans: D

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

37. Let a firm use labor (L) and capital (K) as its only inputs to produce an output, Q . The cost of labor is $w = \$5$ per labor hour and the cost of capital is $r = \$15$ per machine hour. What is the equation of the \$1.5-million isocost line?
- a) $1.5m = L + K$.
 - b) $1.5m = 5L + 15K$.
 - c) $1.5m = (5L)(15K)$.
 - d) $1.5m = (5L + 15K)Q$.

Ans: B

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

38. The “equal bang per buck” condition refers to the firm equating
- a) marginal revenue with marginal cost.
 - b) the marginal productivity of the last dollar spent on labor with the marginal productivity of the last dollar spent on capital.
 - c) the marginal productivity of capital with the marginal productivity of labor.
 - d) the cost of capital with the cost of labor.

Ans: B

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

39. A firm uses capital and labor to produce an output. The absolute value of the slope of the isocost line equals:
- a) the ratio of the marginal productivities of the inputs.
 - b) the ratio of the output prices.
 - c) the ratio of the input prices.
 - d) the ratio of capital to labor.

Ans: C

Difficulty: Easy

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

40. A firm's production function is given by $Q = K^2L$. The marginal products of labor and capital are, respectively, $MP_L = K^2$ and $MP_K = 2KL$. Further, the wage rate is $w = \$10$ and the rental rate of capital is $r = \$20$. Suppose the firm wants to produce 27,000 units of output. What is the most efficient combination of labor and capital (L, K) ?
- a) (20, 20)
 - b) (30, 30)
 - c) (30, 90)
 - d) (90, 30)

Ans: B

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

41. A firm's production function is given by $Q = K^2L$. The marginal products of labor and capital are, respectively, $MP_L = K^2$ and $MP_K = 2KL$. Further, the wage rate is $w = \$10$ and the rental rate of capital is $r = \$20$. Suppose that the firm wants to produce 27,000 units of output in the most efficient way possible. How much does the firm spend?
- a) \$600
 - b) \$900
 - c) \$1,500
 - d) \$2,100

Ans: B

Difficulty: Medium

Heading: The Cost-Minimization Problem

LO 2 Describe a firm's cost-minimization problem in the long run, using the concept of isocost lines (the combinations of inputs such as labor and capital that have the same total cost).

42. Suppose capital and labor are perfect complements for a particular production process. If the price of labor increases, holding the price of capital and the level of output constant, the firm should
- a) use more capital and less labor.
 - b) use more labor and less capital.
 - c) use the same amounts of capital and labor.
 - d) eliminate all use of labor.

Ans: C

Difficulty: Hard

43. Suppose capital and labor are perfect substitutes for a particular production process. If the price of labor increases, holding the price of capital and the level of output constant, the firm may
- a) use more capital and less labor.
 - b) use more labor and less capital.
 - c) use the same amounts of capital and labor.
 - d) Either use more capital and less labor or use the same amounts of both inputs.

Ans: D

Difficulty: Medium

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

44. Suppose that capital and labor are perfect complements in a one-to-one ratio in a firm's production function. The firm is currently at an efficient production level, employing an equal number of machines and workers. Suppose the cost of labor were to double and the cost of capital were to fall by half. If the firm wanted to produce the previous level of output, the firm would hire
- a) more labor and less capital.
 - b) less labor and more capital.
 - c) the same amounts of labor and capital.
 - d) twice as much labor as capital.

Ans: C

Difficulty: Medium

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

45. Suppose that a firm uses only capital, K , and labor, L , in its production process. At the firm's current long-run combination of capital and labor, it uses positive amounts of both inputs and measures the marginal products as $MP_K = 15$ and $MP_L = 10$. The rental rate of capital is $r = 6$ and the current wage rate for labor is $w = 3$. The firm
- a) is currently minimizing total cost in the long run.
 - b) could lower cost by increasing the usage of capital and decreasing the usage of labor.
 - c) could lower cost by increasing the usage of labor and decreasing the usage of capital.
 - d) cannot lower cost without also lowering the level of output.

Ans: C

Difficulty: Medium

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

46. The expansion path graphs

- a) the combinations of capital and labor that minimize total cost for various levels of output.
- b) the combinations of capital and labor that have the same total cost for various levels of output.
- c) the combinations of capital and labor that have the same level of output.
- d) how the firm can expand output while holding total cost constant.

Ans: A

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

47. An increase in the quantity of output will cause the cost minimizing quantity of an input to go _____ if the input is a normal input and will cause the cost minimizing quantity of the input to go _____ if the input is an inferior input.

- a) up; up
- b) up; down
- c) down; up
- d) down; down

Ans: B

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

48. For a production process with ten inputs, how many inputs could be inferior inputs?

- a) 5
- b) 0
- c) 9
- d) 10

Ans: C

Difficulty: Medium

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

49. An input demand curve represents

- a) how the cost-minimizing amount of input varies with the level of output.
- b) how the cost-minimizing output varies with an input's price.
- c) how the cost minimizing amount of input changes with the input's price.
- d) how the cost minimizing output varies with the output price.

Ans: C

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

50. A curve that shows how the firm's cost-minimizing quantity of capital varies with the price of capital is the firm's

- a) Price-expansion curve
- b) Labor demand curve
- c) Capital demand curve
- d) Elasticity of demand curve

Ans: C

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

51. Suppose that a firm's production function of output Q is a function of only two inputs, labor (L) and capital (K) and can be written $Q = 25LK$ with marginal products $MP_L = 25K$ and $MP_K = 25L$. Letting the wage rate for labor be w and the rental rate of capital be r , the equation for the firm's demand for labor would be:

- a) $L = \sqrt{\frac{wQ}{25r}}$
- b) $L = \sqrt{\frac{25r}{wQ}}$

$$\text{c) } L = \sqrt{\frac{rQ}{25w}}$$

$$\text{d) } L = \sqrt{\frac{25w}{rQ}}$$

Ans: C

Difficulty: Hard

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

52. Suppose that a firm's production function of output Q is a function of only two inputs, labor (L) and capital (K) and can be written $Q = 25LK$ with marginal products $MP_L = 25K$ and $MP_K = 25L$. Let the wage rate for labor be $w = 1$ and the rental rate of capital be $r = 1$. If the firm produces 100 units of output, how many units of labor will it use?
- a) 1
 - b) 2
 - c) 3
 - d) 4

Ans: B

Difficulty: Hard

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

53. When the elasticity of substitution between capital and labor is low,
- a) labor demand will be price elastic.
 - b) labor demand will be price inelastic.
 - c) the capital-labor ratio will be low.
 - d) the labor demand curve will be a flat line.

Ans: B

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

54. A high elasticity of substitution between capital and labor implies that labor demand will be
- a) price elastic.
 - b) unitary price elastic.
 - c) price inelastic.
 - d) more inelastic than capital demand.

Ans: A

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

55. Suppose that a firm has a Cobb-Douglas production function for its inputs of capital and labor. The firm is currently paying \$10 per labor hour and \$5 per machine hour. The firm is currently at an efficient production level, employing an equal number of machines and workers. Suppose the cost of labor were to double and the cost of capital were to fall by half. If the firm wanted to produce the previous level of output for the previous cost, the firm would hire
- a) more labor and less capital.
 - b) less labor and more capital.
 - c) equal amounts of labor and capital.
 - d) twice as much labor as capital.

Ans: B

Difficulty: Easy

Heading: Comparative Statics Analysis of the Cost-Minimization Problem

LO 3 Employ comparative statics analysis to explain how changes in the prices of inputs and the level of output affect a firm's choices of inputs and its costs of production.

56. Identify the truthfulness of the following statements.
- I. All fixed costs are sunk costs.
 - II. All sunk costs are fixed costs.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: D

Difficulty: Easy

Heading: Short-Run Cost Minimization

LO 4 Describe the firm's cost-minimization problem in the short run to analyze the firm's choice of inputs when the firm has at least one fixed factor of production and one or more variable factors.

57. Identify the truthfulness of the following statements.
- I. A firm decides to purchase a computer for \$1,500 at the end of the month. The computer will be used for administrative purposes that do not vary with the volume of product that the firm makes. The computer has no re-sale value. This is a fixed cost. At the beginning of the month, this cost is non-sunk.
 - II. A firm decides to purchase a computer for \$1,500 at the beginning of the month. The computer will be used for administrative purposes that do not vary with the volume of product that the firm makes. The computer has no re-sale value. This is a fixed cost. At the end of the month, this cost is sunk.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Short-Run Cost Minimization

LO 4 Describe the firm's cost-minimization problem in the short run to analyze the firm's choice of inputs when the firm has at least one fixed factor of production and one or more variable factors.

58. Consider a production process with two inputs and assume the level of one of the inputs is fixed in the short run. To determine the optimal level of the variable input you should
- a) solve the total cost equation for the level of the variable input.
 - b) solve the total cost equation for the level of the fixed input and substitute that into the production function.
 - c) solve the production function for the level of the fixed input.
 - d) solve the production function for the level of the variable input.

Ans: D

Difficulty: Easy

Heading: Short-Run Cost Minimization

LO 4 Describe the firm's cost-minimization problem in the short run to analyze the firm's choice of inputs when the firm has at least one fixed factor of production and one or more variable factors.

59. A firm's production process uses labor, L , and capital, K , to produce an output, Q according to the function $Q = 25KL$. Let labor be fixed at level $L = \bar{L}$. What is the cost minimizing level of capital that the firm must use to produce a target level of output,

$$Q = \bar{Q}?$$

- a) $K = \frac{\bar{L}}{25\bar{Q}}$
- b) $K = 25\bar{L}\bar{Q}$
- c) $K = \frac{\bar{Q}}{25\bar{L}}$
- d) $K = \frac{\bar{Q}^2}{2500\bar{L}}$

Ans: C

Difficulty: Hard

Heading: Short-Run Cost Minimization

LO 4 Describe the firm's cost-minimization problem in the short run to analyze the firm's choice of inputs when the firm has at least one fixed factor of production and one or more variable factors.

60. A firm's production process uses labor, L , and capital, K , and materials, M , to produce an output, Q according to the function $Q = KLM$, where the marginal products of the three inputs are $MP_L = KM$, $MP_K = LM$, and $MP_M = KL$. The wage rate for labor is $w = 2$, the rental rate of capital is $r = 1$, and the cost of materials is $m = 4$ per unit. What is the long run cost-minimizing level of capital that the firm must use to produce a target level of output, $Q = 1000$?

- a) $K = 5$
- b) $K = 10$
- c) $K = 20$
- d) $K = 40$

Ans: C

Difficulty: Hard

Heading: Short-Run Cost Minimization

LO 4 Describe the firm's cost-minimization problem in the short run to analyze the firm's choice of inputs when the firm has at least one fixed factor of production and one or more variable factors.

61. A firm's production process uses labor, L , and capital, K , and materials, M , to produce an output, Q according to the function $Q = KLM$, where the marginal products of the three inputs are $MP_L = KM$, $MP_K = LM$, and $MP_M = KL$. The wage rate for labor is $w = 2$, the rental rate of capital is $r = 1$, and the cost of materials is $m = 4$ per unit. Let materials input be fixed now at $M = 2$. What is the cost minimizing level of capital that the firm must use to produce a target level of output, $Q = 1600$?
- a) $K = 5$
 - b) $K = 10$
 - c) $K = 20$
 - d) $K = 40$

Ans: D

Difficulty: Hard

Heading: Short-Run Cost Minimization

LO 4 Describe the firm's cost-minimization problem in the short run to analyze the firm's choice of inputs when the firm has at least one fixed factor of production and one or more variable factors.

File: ch08, Chapter 8: Cost Curves

Multiple Choice

1. A long-run total cost curve
- a) always has a constant slope.
 - b) is always upward sloping.
 - c) never has a constant slope.
 - d) is always downward sloping.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 1 Describe and graph a long-run total cost curve.

2. The cost of producing a good in a single-product firm is
- a) additional cost
 - b) stand-alone cost
 - c) variable cost
 - d) average cost

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 1 Describe and graph a long-run total cost curve.

3. An indivisible input is
- a) an input that cannot be seen by the naked eye.
 - b) an important input that the firm cannot identify.
 - c) an input that can only be obtained in a certain minimum size.
 - d) an input the firm cannot stop using.

Ans: C

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 1 Describe and graph a long-run total cost curve.

4. A firm's long-run average cost curve is comprised of
- a) the minimum points of each of the firm's short-run average cost curves.
 - b) the lower envelope of the firm's short-run average cost curves.
 - c) the minimum points of each of the firm's short-run marginal cost curves.
 - d) the series of points where the short-run marginal cost curves intersect the short-run average cost curves.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 1 Describe and graph a long-run total cost curve.

5. When average cost is "u-shaped" (neither always rising or always falling), the marginal cost curve will
- a) cross through (intersect) the average cost curve at its maximum.
 - b) not intersect with the average cost curve at all.
 - c) be a fixed distance above the average cost curve.
 - d) cross through (intersect) the average cost curve at its minimum.

Ans: D

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 1 Describe and graph a long-run total cost curve.

6. The long-run total cost curve shows
- a) the various combinations of capital and labor that will produce different levels of output at the same cost.
 - b) the various combinations of capital and labor that will produce the same level of output.
 - c) the minimum total cost to produce any level of output, holding input prices fixed, and choosing all inputs to minimize cost.
 - d) for a fixed level of capital, the minimum cost to produce a given level of output.

Ans: C

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 1 Describe and graph a long-run total cost curve.

7. A long-run total cost curve

- a) must be equal to zero when the level of output is zero.
- b) may be greater than or equal to zero when the level of output is zero.
- c) must be decreasing when the level of output is zero.
- d) will be equal to fixed cost, which is greater than zero, when the level of output is zero.

Ans: A

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 2 Determine the long-run total cost curve from a production function.

8. Suppose for a particular production function, the cost-minimizing level of labor is $L = 2Q$ and the cost-minimizing level of capital is $K = 5Q$. If $w = 5$ and $r = 2$, the long-run total cost curve is
- a) $TC = 7Q$
 - b) $TC = 7$
 - c) $TC = 20Q$
 - d) $TC = 20$

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 2 Determine the long-run total cost curve from a production function.

9. Suppose for a particular production function, the cost-minimizing levels of labor and capital are

$$L = \frac{Q}{10} \sqrt{\frac{r}{w}} \quad K = \frac{Q}{10} \sqrt{\frac{w}{r}}$$

If $r = 5$ and $w = 20$, what is the equation for long-run total cost?

- a) $\frac{2Q}{5}$
- b) $\frac{2Q}{10}$
- c) $2Q$
- d) $4Q$

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 2 Determine the long-run total cost curve from a production function.

10. Which of the following is *not* an accurate specification of a firm's long-run total cost curve? FC stands for fixed cost, VC stands for variable cost, and AC stands for average cost, below. (Long run does not have fixed cost)
- a) $TC = FC + VC$, where $FC = 0$
 - b) $TC = FC + VC$, where $FC > 0$
 - c) $TC = wL + rK$, where L and K are chosen to minimize cost, and w and r are input prices.
 - d) $TC = AC \times Q$

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 2 Determine the long-run total cost curve from a production function.

11. Suppose that a firm's production function can be specified as $Q = 10KL$. Which of the following accurately describes this firm's long run total cost function?
- a) $Q/10K$
 - b) $Q/10L$
 - c) $2\sqrt{rwQ}/10$
 - d) $2\sqrt{10Q}/rw$

Ans: C

Difficulty: Hard

Heading: Long-Run Cost Curves

LO 2 Determine the long-run total cost curve from a production function.

12. Assume that capital is measured along the vertical axis, and labor is measured along the horizontal axis. The firm has an initial isocost line called TC_1 . Now suppose that the price of labor doubles, and the price of capital falls by one-half. Which statement accurately describes the movement of the isocost line from TC_1 to TC_2 ?
- a) The slope of the isocost line becomes flatter.
 - b) The slope of the isocost line becomes steeper.
 - c) The slope of the isocost line is unchanged.
 - d) We cannot determine whether the slope becomes flatter or steeper.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

13. The long-run total cost curve tends to
- a) rotate upward when input prices fall.
 - b) rotate upward when input prices rise.
 - c) shift vertically upward by a fixed amount.
 - d) shift vertically downward by a fixed amount.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

14. Assume that capital is measured along the vertical axis, and labor is measured along the horizontal axis. The firm has an initial isocost line called TC_1 . Now suppose that the price of labor trebles and the price of capital also trebles. Which statement accurately describes the movement of the isocost line from TC_1 to TC_2 ?
- a) The slope of the isocost line becomes flatter.
 - b) The slope of the isocost line becomes steeper.
 - c) The slope of the isocost line is unchanged.
 - d) We cannot determine whether the slope becomes flatter or steeper.

Ans: C

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

15. When the price of all inputs increase by the same percentage,
- a) the firm's total cost curve will rotate upward by a higher percentage if the firm's production technology exhibits decreasing returns to scale.
 - b) the firm's total cost curve will rotate upward by the same percentage.
 - c) the firm's total cost curve will rotate upward by a higher percentage if the firm's production technology exhibits increasing returns to scale.
 - d) the firm's total cost curve will remain unchanged since the cost-minimizing combination of inputs is unchanged.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

16. The output elasticity of total cost is defined as
- a) the percentage change in output per one percent change in total cost.
 - b) the percentage change in total cost per one percent change in output.
 - c) output divided by total cost.
 - d) total cost divided by output.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

17. An increase in the price of one input
- a) will always rotate the long-run total cost curve upward.
 - b) may rotate the long-run total cost curve upward or may leave the long-run total cost unchanged.
 - c) could actually rotate the long-run total cost downward.
 - d) will have no effect on the long-run total cost curve as long as the firm is using positive amounts of both inputs.

Ans: B

Difficulty: Hard

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

18. Cost driver is
- a) a mathematical relationship that shows how total costs vary with the factors that influence total costs
 - b) a factor that influences or “drives” total or average costs
 - c) a factor that influences quality of output and prices of inputs
 - d) a cost level.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

19. When the prices of **all** inputs increase by a proportionate amount,
- a) the firm's total cost curve will remain unchanged since the cost-minimizing combination of inputs is unchanged.
 - b) the firm's total cost curve may rotate upward or may leave the long-run total cost curve unchanged.
 - c) will always rotate the long-run total cost curve upward.
 - d) could actually rotate the long-run total cost downward if the firm chooses to produce a lower level of output.

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 3 Demonstrate how the graph of a long-run total cost curve changes when an input price changes.

20. Identify the truthfulness of the following statements.
- I. Marginal cost can be measured as the slope of the total cost curve.
 - II. Average total cost can be measured as the slope of the ray from the origin to the total cost curve.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

21. The relationship between the long-run total cost curve and the marginal and average cost curves is best described by which of the following statements?

- a) The slope of the total cost curve from the origin to a point on the total cost curve is how you derive the marginal cost curve while the average cost is given by TC/Q .
- b) Marginal cost is MC/Q while average cost is TC/Q .
- c) Marginal cost is derived by dividing total cost by a constant as is average cost.
- d) The slope of the total cost curve at each point is how you derive the marginal cost curve while the slope from the origin to a point on the total cost curve is how you derive the average cost curve.

Ans: D

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

22. Suppose that a firm's long-run total cost curve can be expressed as $TC = 10Q^2 + 20Q$. This firm's long-run average total cost curve can be expressed as
- a) $AC = 20Q + 20$.
 - b) $AC = 10Q + 20$.
 - c) $AC = 10 + 20Q$.
 - d) $AC = 10Q^2$.

Ans: B

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

23. For a firm, let total cost be $TC(Q) = 160 + 10Q^2$ and marginal cost be $MC(Q) = 20Q$. What is the minimum efficient scale for this firm?
- a) 0
 - b) 2
 - c) 4
 - d) indeterminate

Ans: C

Difficulty: Hard

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

24. Suppose that a firm's total costs of production are 0 at an output of zero, 10 at an output of 1, 20 at an output of 2 units, 30 at an output of three units, 35 at an output of four units and 37 at an output of five units. At which number of units are marginal and average costs equal?
- a) The first unit.
 - b) The fifth unit.
 - c) The third unit.
 - d) At the first, second and third units.

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

25. For a firm, let total cost be $TC(Q) = 10Q^2$ and marginal cost be $MC(Q) = 20Q$. Which of the following is an expression for the output elasticity of total cost?
- a) $\epsilon_{TC,Q} = 10Q$.
 - b) $\epsilon_{TC,Q} = 2Q$.
 - c) $\epsilon_{TC,Q} = 2$.
 - d) $\epsilon_{TC,Q} = 20Q$.

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

26. Suppose that a firm's total costs of production are 0 at an output of zero, 10 at an output of 1, 20 at an output of 2 units, 30 at an output of three units, 35 at an output of four units and 37 at an output of five units. At which number of units is average cost minimized?
- a) The first unit.
 - b) The fifth unit.
 - c) The third unit.
 - d) At the first, second and third units.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

27. Suppose that a firm's long-run total cost curve can be expressed as $TC(Q) = 100Q$. This firm's long-run marginal cost curve can be expressed as
- a) $MC = 100$.
 - b) $MC = 100Q$.
 - c) $MC = 100Q^2$.
 - d) $MC = 10$.

Ans: A

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 4 Derive a long-run average cost curve and a long-run marginal cost curve from the long-run total cost curve.

28. Identify the truthfulness of the following statements.
- I. When marginal cost is rising, average total cost is rising.
 - II. When marginal cost is below average total cost, average total cost is falling.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

29. If average cost is constant for all levels of output,
- a) the marginal cost curve will intersect the average cost at a single point, the minimum of average cost.
 - b) marginal cost will be equal to average cost for all levels of output.
 - c) marginal cost will be above average cost when average cost is increasing and marginal cost will be below average cost when average cost is decreasing.
 - d) marginal cost will have a region of diminishing marginal cost.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

30. Marginal cost

- a) is equal to average cost at the minimum point of the marginal cost curve.
- b) is equal to average cost at the maximum point of the average cost curve.
- c) is decreasing whenever average cost is decreasing.
- d) is equal to average cost at the minimum point of the average cost curve.

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

31. When the production function is given by $Q = L$, which of the following statements is true?

- a) $TC = wQ^2$, $L = Q^2$ and $AC = w$
- b) $TC = w - Q$, $L = Q$ and $AC = w$
- c) $TC = wQ$, $L = Q$ and $AC = w$
- d) $TC = wQ$, $L = Q$ and $AC = L$

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

32. Suppose a firm's total cost curve is given by the equation $TC = Q^2 + 2Q + 100$. The firm's marginal cost is $MC = 2Q + 2$. At what level of Q does the firm's average cost curve reach a minimum?

- a) 100
- b) 2
- c) 10
- d) 20

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

33. Suppose a firm produces 50,000 units of output, and determines that its marginal cost is \$0.72 and its average total cost is \$0.72. *At this quantity of output*, what is the slope of this firm's long run average total cost curve?
- a) Upward-sloping.
 - b) Downward-sloping.
 - c) Horizontal.
 - d) Vertical.

Ans: C

Difficulty: Hard

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

34. Marginal cost is
- a) the cost per unit of output.
 - b) the increase in total cost from producing an additional unit of output.
 - c) the same thing as total variable cost.
 - d) is only relevant in the long-run.

Ans: B

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 5 Explain the difference between average cost and marginal cost.

35. A firm notices that when it increases output beyond an initial level Q_1 , average total cost decreases. For this firm, the region of output beyond Q_1 is characterized by
- a) economies of scale.
 - b) diseconomies of scale.
 - c) constant economies of scale.
 - d) the minimum efficient scale.

Ans: A

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

36. Which of the following factors *may* explain diseconomies of scale?
- a) Increasing returns to scale of inputs.
 - b) Specialization of labor.

- c) Indivisible inputs.
- d) Managerial diseconomies.

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

37. The output elasticity of total cost is equal to
- a) the slope of the isocost line.
 - b) the ratio of marginal cost to average cost.
 - c) the ratio of average cost to marginal cost.
 - d) the ratio of average cost to total cost.

Ans: B

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

38. When the output elasticity of total cost is less than one,
- a) Marginal cost is less than average cost and average cost decreases as Q increases.
 - b) Marginal cost is less than average cost and average cost increases as Q increases.
 - c) Marginal cost is greater than average cost and average cost decreases as Q increases.
 - d) Marginal cost is greater than average cost and average cost increases as Q increases.

Ans: A

Difficulty: Hard

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

39. Minimum efficient scale is
- a) the lowest level of efficiency the firm can achieve.
 - b) the highest level of output the firm can achieve.
 - c) the lowest level of long-run average cost.
 - d) the smallest quantity at which the long-run average cost achieves a minimum.

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

40. Economies of scale exist when firms have
- a) increasing returns to scale.
 - b) constant returns to scale.
 - c) decreasing returns to scale.
 - d) constant marginal cost.

Ans: A

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

41. Suppose a firm's production function can be specified as $Q = 10KL$. This firm's cost function exhibits
- a) economies of scale
 - b) diseconomies of scale
 - c) neither diseconomies nor economies of scale.
 - d) economies of scale for output levels less than some level, $Q_I = 1/4$, and diseconomies of scale thereafter.

Ans: A

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

42. Suppose a firm's total cost curve can be written $TC(Q) = Q - .5Q^2 + Q^3$, with marginal cost $MC(Q) = 1 - Q + 3Q^2$. This cost function exhibits:
- a) economies of scale
 - b) diseconomies of scale
 - c) neither diseconomies nor economies of scale.
 - d) economies of scale for output levels less than some level, $Q_I = 1/4$, and diseconomies of scale thereafter.

Ans: D

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

43. Suppose the output elasticity of total cost is 1.5. This implies the average cost curve exhibits
- a) increasing returns to scale.
 - b) economies of scale.
 - c) neither economies nor diseconomies of scale.
 - d) diseconomies of scale.

Ans: D

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

44. If the output elasticity of total cost is less than one, then the long-run average cost curve experiences
- a) economies of scale.
 - b) diseconomies of scale.
 - c) decreasing returns to scale.
 - d) the minimum efficient scale.

Ans: A

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

45. Diseconomies of scale exist when
- a) the firm's total cost falls as the level of output increases.
 - b) the firm's total cost increases as the level of output increases.
 - c) the firm's average cost decreases as the level of output decreases.
 - d) the firm's average cost decreases as the level of output increases.

Ans: C

Difficulty: Medium

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

46. Which of the following factors *would not* explain economies of scale?
- a) Increasing returns to scale of inputs.
 - b) Specialization of labor.

- c) Indivisible inputs.
- d) Managerial diseconomies

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

47. Suppose a firm's production technology exhibits constant returns to scale. The firm's long-run *average* cost curve will
- a) be U-shaped
 - b) exhibit economies of scale.
 - c) exhibit diseconomies of scale.
 - d) be a horizontal straight line.

Ans: D

Difficulty: Easy

Heading: Long-Run Cost Curves

LO 6 Distinguish between economies of scale and diseconomies of scale.

48. The short-run total cost curve is the sum of two components
- a) Short-run and long-run
 - b) Total variable cost curve and total fixed cost curve
 - c) Average cost curve and marginal cost curve
 - d) Economies of scale and economies of scope

Ans: B

Difficulty: Easy

Heading: Short-Run Cost Curves

LO 7 Describe and graph a short-run total cost curve.

49. The short-run total cost curve
- a) shows the minimized total cost of producing a given quantity of output.
 - b) shows the outputs that correspond to minimized total cost when at least one input is fixed.
 - c) shows the minimized total cost of producing a given quantity of output when at least one input is fixed.
 - d) shows the minimized total cost of producing a given quantity of output when all inputs are fixed.

Ans: C

Difficulty: Easy

Heading: Short-Run Cost Curves

LO 7 Describe and graph a short-run total cost curve.

50. Suppose $Q = \sqrt{\bar{K}L}$ in the short-run. The firm's short-run fixed cost curve is

- a) $SFC = \frac{Q^2}{\bar{K}}$
- b) $SFC = \frac{wQ^2}{\bar{K}} + r\bar{K}$
- c) $SFC = wQ^2 / \bar{K}$
- d) $SFC = r\bar{K}$

Ans: D

Difficulty: Medium

Heading: Short-Run Cost Curves

LO 8 Determine the short-run total cost curve from a production function.

51. Suppose $Q = \sqrt{\bar{K}L}$ in the short-run. The firm's short-run total cost curve is

- a) $STC = \frac{Q^2}{\bar{K}}$
- b) $STC = \frac{w\bar{K}}{Q} + r\bar{K}$
- c) $STC = Q^2 + \bar{K}$
- d) $STC = \frac{wQ^2}{\bar{K}} + r\bar{K}$

Ans: D

Difficulty: Hard

Heading: Short-Run Cost Curves

LO 8 Determine the short-run total cost curve from a production function.

52. Suppose a firm's short run total cost curve can be expressed as $STC(Q) = 50Q + 10$. This firm's short-run average total cost curve can be expressed as

- a) $50 + 10/Q$.
- b) $50Q$.
- c) 50.
- d) 10.

Ans: A

Difficulty: Medium

Heading: Short-Run Cost Curves

LO 11 Explain and distinguish between the concepts of short-run average cost, short-run marginal cost, average variable cost, and average fixed cost.

53. Suppose $Q = \sqrt{\bar{K}L}$ in the short-run. The firm's short-run variable cost curve is

- a) $SFC = \frac{Q^2}{\bar{K}}$
- b) $SFC = \frac{wQ^2}{\bar{K}} + r\bar{K}$
- c) $SFC = \frac{wQ^2}{\bar{K}}$
- d) $SFC = r\bar{K}$

Ans: C

Difficulty: Medium

Heading: Short-Run Cost Curves

LO 11 Explain and distinguish between the concepts of short-run average cost, short-run marginal cost, average variable cost, and average fixed cost.

54. Suppose a firm's short run total cost curve can be expressed as $STC(Q) = 50Q + 10$. This firm's short-run marginal cost can be expressed as

- a) $50 + 10/Q$.
- b) $50Q$.
- c) 50.
- d) 10.

Ans: C

Difficulty: Medium

Heading: Short-Run Cost Curves

LO 11 Explain and distinguish between the concepts of short-run average cost, short-run marginal cost, average variable cost, and average fixed cost.

55. Suppose $STC(Q) = 2Q + 20$. Short run marginal cost is
- a) indeterminate, since we don't know the level of Q .
 - b) 22
 - c) 20
 - d) 2

Ans: D

Difficulty: Medium

Heading: Short-Run Cost Curves

LO 11 Explain and distinguish between the concepts of short-run average cost, short-run marginal cost, average variable cost, and average fixed cost.

56. Economies of _____ occur when a single firm can produce two products together for a lower total cost than two firms could produce those same products separately, one at each firm.
- a) scale.
 - b) scope.
 - c) efficiency.
 - d) output.

Ans: B

Difficulty: Easy

Heading: Special Topics in Cost

LO 12 Explain the meaning of economies of scope.

57. Economies of scope
- a) are related to the average cost of producing a good when you double the scale of output.
 - b) are higher the more specialized a firm is in production.
 - c) means the rotation of the long-run total cost curve in a downward direction.
 - d) are a production characteristic in which the total cost of producing given quantities of two goods in the same firm is less than the total cost of producing those quantities in two single-product firms.

Ans: D

Difficulty: Medium

Heading: Special Topics in Cost

LO 12 Explain the meaning of economies of scope.

58. The experience curve (also called the learning curve) shows the relationship between
- a) average total cost and output.
 - b) average variable cost and returns to scale.
 - c) output and marginal cost.
 - d) average variable cost and cumulative production volume.

Ans: D

Difficulty: Easy

Heading: Special Topics in Cost

LO 13 Discuss how a learning curve illustrates economies of experience.

59. The percentage change in average variable cost for every 1 percent increase in cumulative volume is referred to as
- a) experience elasticity
 - b) experience curve
 - c) experience output
 - d) experience slope

Ans: A

Difficulty: Easy

Heading: Special Topics in Cost

LO 13 Discuss how a learning curve illustrates economies of experience.

60. Economies of experience are exhibited when
- a) it takes a professor a smaller quantity of time to prepare a lesson for a new class than for the first class he taught.
 - b) an older professor is more intelligent than a younger professor.
 - c) a professor goes into business as a consultant.
 - d) a professor reaches age 65 and begins to get a senior citizen discount.

Ans: A

Difficulty: Easy

Heading: Special Topics in Cost

LO 13 Discuss how a learning curve illustrates economies of experience.

61. Let the average variable cost of production be \$20 when 10 units are produced in the first year. In the second year, after the second 10 units have been produced, the average variable cost of production is \$12. The slope of the experience curve for this firm is:
- a) 85%
 - b) 60%
 - c) 175%
 - d) 12%

Ans: B

Page Reference: 291

Difficulty: Medium

Heading: Special Topics in Cost

LO 13 Discuss how a learning curve illustrates economies of experience.

62. Identify the truthfulness of the following statements.
- I. Economies of Experience imply that Economies of Scale must exist.
 - II. Economies of Scale imply that Economies of Experience must exist.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: B

Difficulty: Medium

Heading: Special Topics in Cost

LO 13 Discuss how a learning curve illustrates economies of experience.

63. For a production process that involves two inputs, capital and labor, the constant elasticity long-run total cost function defined in linear relationship using logarithms is
- a) $\log TC = \log a + b \log Q + c \log w + d \log r$
 - b) $\log T = \log t + c \log Q + a \log w + b \log r$
 - c) $T = \log t + c \log Q + a \log w + b \log r$
 - d) $T = t + cQ + aw + br$

Ans: A

Difficulty: Easy

Heading: Estimating Cost Functions

LO 14 Identify several common functional forms used to estimate total cost functions.

64. Let a firm's long run total cost be described by the constant elasticity total cost function. The coefficient of the log of output in this function is interpreted as the
- a) average cost.
 - b) marginal cost.
 - c) output elasticity of total cost.
 - d) cost driver.

Ans: C

Difficulty: Medium

Heading: Estimating Cost Functions

LO 14 Identify several common functional forms used to estimate total cost functions.

65. Let a firm's long run total cost be described by the constant elasticity total cost function. The coefficients of the log of the wage and the log of capital in this function should
- a) add up to one.
 - b) be negative.
 - c) be of opposite sign.
 - d) of indeterminate sign.

Ans: A

Difficulty: Medium

Heading: Estimating Cost Functions

LO 14 Identify several common functional forms used to estimate total cost functions.

66. The following is *not* a property of the translog cost function:
- a) The constant elasticity cost function is a special case of it.
 - b) The average cost may be U-shaped.
 - c) It is a good approximation for almost any production function.
 - d) It only applies to long run total costs.

Ans: D

Difficulty: Medium

Heading: Estimating Cost Functions

LO 14 Identify several common functional forms used to estimate total cost functions.

67. The equation of translog cost function is
- a) .

$$\begin{aligned}\log TC = & b_0 + b_1 \log Q + b_2 \log w + b_3 \log r + b_4 (\log Q)^2 \\ & + b_5 (\log w)^2 + b_6 (\log r)^2 + b_7 (\log w)(\log r) \\ & + b_8 (\log w)(\log Q) + b_9 (\log r)(\log Q)\end{aligned}$$

b)

$$MP_L = [L^{\frac{1}{2}} + K^{\frac{1}{2}}]L^{-\frac{1}{2}}$$

$$MP_K = [L^{\frac{1}{2}} + K^{\frac{1}{2}}]K^{-\frac{1}{2}}$$

c)

$$TC(Q_1, Q_2) = \begin{cases} 0, & \text{if } Q_1 = 0 \text{ and } Q_2 \\ 1000 + 2Q_1 + 3Q_2, & \end{cases}$$

d)

$$T = t + cQ + aw + br$$

Ans: A

Difficulty: Easy

Heading: Estimating Cost Functions

LO 14 Identify several common functional forms used to estimate total cost functions.

68. A constant elasticity cost function

- a) takes a form such as $TC = a Q^b w^c r^d$ and is useful in empirical work because it can be converted into a linear form using logarithms.
- b) takes a form such as $TC = wL + rK$, where L and K are chosen to minimize cost, and w and r are input prices.
- c) takes a form such as $TC = a Q^2 + KL$.
- d) is given by $TC = AC \times Q$.

Ans: A

Difficulty: Medium

Heading: Estimating Cost Functions

LO 14 Identify several common functional forms used to estimate total cost functions.

File: ch09, Chapter 9: Perfectly Competitive Markets

Multiple Choice

1. One characteristic of perfect competition is
- a) a differentiated product.
 - b) many firms.
 - c) restricted entry.
 - d) preferred access to resources.

Ans: B

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

2. In a perfectly competitive industry, individual firms act as
- a) price makers.
 - b) a single, cooperative entity.
 - c) profit minimizers.
 - d) price takers.

Ans: D

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

3. A perfectly competitive firm will always maximize its profit or minimize its loss by
- a) setting marginal cost equal to marginal revenue in order to determine the optimal quantity of output.
 - b) setting marginal cost above average cost.
 - c) setting total cost minus total revenue at its maximum level.
 - d) creating a unique product.

Ans: A

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

4. Sunk costs
- a) will not affect any aspect of decision making by a competitive firm in the short run.
 - b) are costs that can only be controlled by reducing labor input.
 - c) affect the shutdown price in that higher sunk costs raise the shutdown price.
 - d) do not affect the profit or losses of a firm.

Ans: A

Difficulty: Medium

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

5. When the average variable cost curve is “u-shaped” and not everywhere upward or downward sloping, marginal cost will
- a) never intersect the average variable cost curve.
 - b) never equal marginal revenue.
 - c) intersect or “bisect” the average variable cost curve at its minimum.
 - d) always be increasing.

Ans: C

Difficulty: Medium

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

6. Which of the following is *not* a characteristic of perfect competition?
- a) The industry is fragmented.
 - b) Firms produce undifferentiated products.
 - c) Consumers have imperfect information.
 - d) Firms have equal access to resources.

Ans: C

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

7. An industry in which any potential entrant has access to the same technology and inputs as existing firms is said to be characterized by

- a) Open entry
- b) restricted entry
- c) free entry
- d) profitable entry

Ans: C

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

8. Which of the following is *not* an assumption of a perfectly competitive market?
- a) Fragmented industry
 - b) Differentiated product
 - c) Perfect information
 - d) Equal access to resources

Ans: B

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

9. Explain the truthfulness of the following statements
- I. A characteristic of a perfectly competitive market is that products are undifferentiated. That is, consumers perceive products to be identical.
 - II. Equal access to resources is a condition in which all firms, including prospective entrants, have access to the same technology and inputs.
- a) Both I and II are true
 - b) Both I and II are false
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

10. Which of the following will *not* be true of a perfectly competitive market?
- a) Each individual buyer or seller has an imperceptible effect on the market price.
 - b) A new firm may incur a cost upon entering a market, but has access to the same technology and inputs as established firms.

- c) Different consumers may pay different prices for the same product.
- d) Buyers and sellers take the market price as given when making purchasing or production decisions.

Ans: C

Difficulty: Easy

Heading: What is Perfect Competition?

LO 1 Describe the conditions that characterize a perfectly competitive market.

11. Identify the truthfulness of the following statements.
- I. A firm can earn a positive accounting profit but a negative economic profit.
 - II. Opportunity cost is included in the definition of economic profit but not in the definition of accounting profit.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Profit Maximization by a Price-Taking Firm

LO 2 Explain the difference between economic profit and accounting profit.

12. Economic Value Added is defined as
- a) the same as accounting profit.
 - b) total revenue less total explicit costs.
 - c) accounting profit net of the minimum return on invested capital demanded by the firm's investors.
 - d) the same as economic profit.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Price-Taking Firm

LO 2 Explain the difference between economic profit and accounting profit.

13. Suppose Joe starts his own business. In the first year the business earns \$100,000 in revenue and incurs \$85,000 in explicit costs. In addition, Joe has a standing offer to come work for his brother for \$40,000 per year. Joe's accounting profit is _____ and Joe's economic profit is _____.
- a) -\$25,000 and \$15,000

- b) \$15,000 and \$65,000
- c) \$15,000 and \$60,000
- d) \$15,000 and -\$25,000

Ans: D

Difficulty: Medium

Heading: Profit Maximization by a Price-Taking Firm

LO 2 Explain the difference between economic profit and accounting profit.

14. Suppose that for last year, Sarah's small business earned an accounting profit of \$70,000 and an economic profit of \$20,000. What can we correctly infer about Sarah's business?
- a) The difference between Sarah's total opportunity costs and her accounting costs is \$50,000.
 - b) Sarah's explicit costs were \$50,000
 - c) Sarah's total opportunity cost of her resources was \$50,000.
 - d) Sarah's firm cannot be maximizing profit.

Ans: A

Difficulty: Easy

Heading: Profit Maximization by a Price-Taking Firm

LO 2 Explain the difference between economic profit and accounting profit.

15. For the data in the following table, which level of q will maximize profit?

q	MR	MC
0	0	0
10	40	10
20	30	20
30	20	30
40	10	40
50	5	50

- a) 10
- b) 20
- c) 30
- d) 40

Ans: B

Difficulty: Medium

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

16. A short-run market supply curve in a competitive industry is derived by
- a) multiplying the quantity supplied by each identical firm in the industry times the number of firms at each relevant price.
 - b) multiplying the quantity supplied by each differentiated firm in the industry times the number of firms at each relevant price.
 - c) adding market supply and market demand at each relevant price.
 - d) not usually upward sloping.

Ans: A

Difficulty: Medium

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

17. Characteristics of a short-run perfectly competitive equilibrium always include
- a) zero profits.
 - b) the condition that marginal cost is greater than average cost.
 - c) the condition that homogeneous firms are producing the same level of output.
 - d) the condition that sunk costs are zero.

Ans: C

Difficulty: Medium

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

18. Suppose a \$1 tax is levied on each unit of output in a perfectly competitive industry, we know that
- a) the number of firms in the industry will increase in the long run as long as the demand curve is downward sloping.
 - b) the number of firms in the industry will decrease in the long run as long as the demand curve is downward sloping.
 - c) firms will no longer produce at the bottom of the average cost curve in long run equilibrium.
 - d) firms will no longer produce at the top of the average cost curve in long run equilibrium.

Ans: B

Difficulty: Hard

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

19. A decreasing-cost industry is characterized by
- a) more firms than an increasing-cost industry.
 - b) some type of economies of scale.
 - c) accounting profit net of the minimum return on invested capital demanded by the firm's investors.
 - d) some type of diseconomies of scale.

Ans: B

Difficulty: Medium

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

20. Suppose that, at the current level of output, a firm in a perfectly competitive market is producing at a level such that price exceeds marginal cost, $P > MC$. Marginal cost is normally shaped (U-shaped). The firm
- a) is currently maximizing profit since it is charging a price higher than marginal cost.
 - b) could increase profit by lowering the level of output.
 - c) could increase profit by increasing the level of output.
 - d) cannot increase profit without raising price.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

21. Which of the following statements about marginal revenue for a perfectly competitive firm is **incorrect**, where TR stands for total revenue, P stands for price, and q stands for output?
- a) $MR = \frac{\Delta TR}{q}$
 - b) $MR = P$
 - c) $MR = \frac{\Delta TR}{\Delta q}$
 - d) Marginal revenue is the rate at which total revenue changes with respect to changes in output.

Ans: A

Difficulty: Easy

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

22. Which of the following does not represent a profit-maximizing condition for a firm operating in a perfectly competitive industry?
- a) $P = MC$.
 - b) $MC = MR$.
 - c) MC must be increasing.
 - d) MC must be falling.

Ans: D

Difficulty: Easy

Heading: Profit Maximization by a Price-Taking Firm

LO 3 Illustrate graphically the profit-maximization condition for a perfectly competitive firm.

23. A fixed cost that the firm cannot avoid if it shuts down and produces zero output must be:
- a) An accounting cost
 - b) A marginal cost
 - c) An equilibrium cost
 - d) A sunk cost

Ans: D

Difficulty: Easy

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

24. Which of the following is an example of a fixed cost that is also a sunk cost for a bakery as of January 15?
- a) The electric bill for the coming calendar year.
 - b) An accountant's fees for tax preparation in April.
 - c) The cost of a one-year lease on a building, signed January 1.
 - d) The salary of the baker for the month of February.

Ans: C

Question Type: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

25. The short-run supply curve for a firm operating in perfect competition is

- a) the firm's marginal cost curve.
- b) the firm's average variable cost curve.
- c) the firm's average variable cost curve above marginal cost.
- d) the firm's marginal cost curve above the shut down price.

Ans: D

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

26. The market for sweet potatoes consists of 1,000 identical firms. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$ where q is output. Suppose that sunk costs are 75 and nonsunk costs are 25. What is the equation of an individual firm's short-run supply curve?

- a) $q = \frac{P}{200} - .5$ for $P \geq 100$, and $q = 0$ otherwise.
- b) $q = \frac{P}{100} - .5$ for $P \geq 200$, and $q = 0$ otherwise.
- c) $P = 100 + 200q$
- d) $q = \frac{P}{200} - .5$ for $P \geq 200$, and $q = 0$ otherwise.

Ans: D

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

27. A perfectly competitive firm's short-run supply curve is determined by the equation:

- a) $P = AC$ where $P \geq SMC$. Otherwise, supply is zero.
- b) $P = AVC$ where $P \geq SMC$. Otherwise, supply is zero.
- c) $P = SMC$ where $P \geq AC$. Otherwise, supply is zero.
- d) $P = SMC$ where $P \geq AVC$ or $P \geq ANSC$ or $P \geq SAC$, depending on the level of sunk costs. Otherwise, supply is zero.

Ans: D

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

28. Short-run perfectly competitive equilibrium is defined as
- a) The market price and quantity at which quantity demanded equals quantity supplied in the short term.
 - b) The output level and price where all firms in the market are profit maximizing.
 - c) The point at which all firms earn zero profits.
 - d) The point where there is no incentive to enter the market.

Ans: A

Difficulty: Easy

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

29. Identify the truthfulness of the following statements.
- I. A profit-maximizing firm never produces where $P < AVC$.
 - II. A profit-maximizing firm never produces where $P < AC$.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 4 Derive a perfectly competitive firm's short-run supply curve from the firm's profit-maximization problem.

30. The market for sweet potatoes consists of 1,000 identical firms. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$, where q is output. What is the equation of the firm's average variable cost curve?
- a) $AVC = 100/q + 100 + 100q$.
 - b) $AVC = 100 + 100q$.
 - c) $AVC = 100 + 200q$.
 - d) $AVC = 100/q$.

Ans: B

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

31. The market for sweet potatoes consists of 1,000 identical firms. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$ where q is output. What is the minimum level of average variable costs?
- a) $AVC = 200$.
 - b) $AVC = 0$.
 - c) $AVC = 100$.
 - d) $AVC = P$.

Ans: C

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

32. If $STC = 200 + 2q + 4q^2$ and $SMC = 2 + 8q$ where q is output, what is the minimum level of average variable cost?
- a) 0
 - b) 2
 - c) 6
 - d) 8

Ans: B

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

33. The market for sweet potatoes consists of 1,000 identical firms. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$ where q is output. What is the equation of an individual firm's short-run supply curve in this market?
- a) $q = \frac{P}{200} - .5$
 - b) $q = \frac{P}{100} - .5$
 - c) $P = 100 + 200q$
 - d) $q = \frac{P}{200} - .5$ for $P \geq 100$, and $q = 0$ otherwise.

Ans: D

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

34. If $STC = 200 + 2q + 4q^2$, $SMC = 2 + 8q$, where q is output and all fixed costs are sunk, the firm's short-run supply curve is

a) $s(P) = 2 + 8q$ for $P \geq 2$ and zero otherwise.

b) $s(P) = \begin{cases} 0 & P < 2 \\ 0.125P - 0.25 & P \geq 2 \end{cases}$

c) $s(P) = 2 + 8q$ for $P \geq 0$ and zero otherwise.

d) $s(P) = \begin{cases} 0 & P < 0 \\ 0.125P - 0.25 & P \geq 0 \end{cases}$

Ans: B

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

35. For a particular perfectly competitive firm $STC = 100 + 20q + q^2$ and $SMC = 20 + 2q$, where q is output. If the market price is equal to 40, at what level of output should the firm operate to maximize profit in the short run?

a) 10

b) 20

c) 30

d) 40

Ans: A

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

36. For a particular perfectly competitive firm $STC = 100 + 20q + q^2$ and $SMC = 20 + 2q$. If the market price is equal to 40, what is the maximum profit the firm can earn?(profit 要比较 AC!)

a) 400

b) 200

- c) 100
- d) 0

Ans: D

Difficulty: Hard

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

37. The market for sweet potatoes consists of 1,000 identical firms. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$, where q is output. Suppose that sunk costs are 75 and nonsunk costs are 25. What is the equation of an individual firm's average nonsunk cost curve?
- a) $ANSC = 100 + 100q$
 - b) $ANSC = 100 + 100q + 25/q$
 - c) $ANSC = 25/q$
 - d) $ANSC = 100 + 200q + 25/q$

Ans: B

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

38. $STC = 200 + 2q + 4q^2$ and $SMC = 2 + 8q$, where q is output. Sunk fixed costs are 56 and nonsunk fixed costs are 144. What is the minimum level of average nonsunk cost?
- a) 6
 - b) 50
 - c) 56
 - d) 144

Ans: B

Difficulty: Medium

Heading: Profit Maximization by a Price-Taking Firm

Difficulty: Medium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

39. Sometimes a firm will continue to operate even if that firm incurs short-run negative profits (losses). Which of the following characterizes this situation?
- $P = MC = AC$.
 - $P = MC = AVC$.
 - $P = MC$ where $P > AVC$ but $P < AC$.
 - $P = MC$ where $P > AC$ but $P < AVC$.

Ans: C

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 5 Illustrate graphically an average nonsunk curve and explain how the presence of nonsunk fixed costs affects a perfectly competitive firm's short-run supply curve.

40. The short-run market supply curve is derived by _____ supplied of the individual firm supply curves.
- vertically summing the prices and quantities
 - horizontally summing the prices and quantities
 - vertically summing the quantities
 - horizontally summing the quantities

Ans: D

Difficulty: Easy

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 6 Build up the short-run market supply curve from the short-run supply curves of individual firms.

41. The market for sweet potatoes consists of 1,000 identical firms. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$ where q is output. All fixed costs are sunk. What is the equation of the short-run market supply curve? (individual firm 的乘以 firm 数量)
- $Q^s = 5P - 500$ for $P \geq 100$, and $Q^s = 0$ otherwise.
 - $P = 100000 + 200000q$, $P \geq 200$, and $Q^s = 0$ otherwise.
 - $Q^s = P/200 - .5$ for $P \geq 100$, and $Q^s = 0$ otherwise.
 - $Q^s = 5P - 500$ for $P \geq 200$, and $Q^s = 0$ otherwise.

Ans: A

Difficulty: Medium

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 6 Build up the short-run market supply curve from the short-run supply curves of individual firms.

42. The market for sweet potatoes consists of 1,000 identical firms. The market demand curve is given by $Q^d = 1000 - 5P$. Each firm has a short-run total cost curve of $STC = 100 + 100q + 100q^2$, and a short-run marginal cost curve of $SMC = 100 + 200q$, where q is output. All fixed costs are sunk. In short-run market equilibrium, each individual firm will
- earn a short-run profit.
 - earn a short-run loss.
 - earn zero economic profit.
 - produce an output of $q = 4$.

Ans: A

Difficulty: Hard

Heading: How the Market Price is Determined: Short-Run Equilibrium

LO 7 Perform comparative statics analysis of the short-run equilibrium in a perfectly competitive market.

43. Suppose that the tricorder industry is perfectly competitive. The firm of JL Picard is making a short-term economic profit. The firm of WT Riker decides to enter the tricorder industry. However, when the WT Riker firm enters the industry, it bids up some input prices. For this industry, we will likely observe a(n)
- upward-sloping long-run market supply curve.
 - downward-sloping long-run market supply curve.
 - horizontal long-run market supply curve.
 - vertical long-run market supply curve.

Ans: A

Difficulty: Moderate

Heading: How the Market Price is Determined: Long-Run Equilibrium

LO 8 Indicate the difference between the short run and the long run.

44. Which of the following is *not* true in a long-run perfectly competitive equilibrium?
- $P = MC$, where P is market price and MC is the marginal cost of a firm.
 - $P = AC$, where P is market price and AC is the average cost of a firm.
 - $Q^d = nq$, where q is the supply of an individual firm, n is the number of firms in the industry, and Q^d is the market demand for a product.
 - Firms may earn negative profits.

Ans: D

Difficulty: Easy

Heading: How the Market Price is Determined: Long-Run Equilibrium

LO 9 State the conditions for the long-run perfectly competitive equilibrium.

45. In the long run, free entry drives the market price to the minimum level of _____, and each firm supplies a quantity equal to its _____.
- a) long-run average cost; price.
 - b) marginal cost; minimum efficient scale.
 - c) long-run average cost; minimum efficient scale.
 - d) marginal cost; price.

Ans: C

Difficulty: Easy

Heading: How the Market Price is Determined: Long-Run Equilibrium

LO 9 State the conditions for the long-run perfectly competitive equilibrium.

46. In a constant cost industry, which of the following statements is true?
- a) The long run market supply curve and the long run firm supply curve are both horizontal.
 - b) While the long run market supply curve is horizontal, the long run firm supply curve generally is upwards-sloping.
 - c) The long run market supply curve and the long run firm supply curve are both upwards-sloping.
 - d) While the long run market supply curve is upwards-sloping, the long run firm supply curve is horizontal.

Ans: B

Difficulty: Easy

Heading: How the Market Price is Determined: Long-Run Equilibrium

LO 9 State the conditions for the long-run perfectly competitive equilibrium.

47. In an increasing cost industry, the long-run market supply curve is
- a) downward sloping
 - b) horizontal
 - c) upward sloping
 - d) vertical

Ans: C

Difficulty: Easy

Heading: How the Market Price is Determined: Long-Run Equilibrium

LO 9 State the conditions for the long-run perfectly competitive equilibrium.

48. Each firm in a perfectly competitive market has long run average cost represented as $AC(q) = 100q - 10 + 100/q$. Long run marginal cost is $MC = 200q - 10$. The market demand is $Q^d = 2150 - 5P$. Find the long run equilibrium output per firm, q^* , the long run equilibrium price, P^* , and the number of firms in the industry, n^* .
- a) $q^* = 1; P^* = 190; n^* = 1200$
 - b) $q^* = 2; P^* = 240; n^* = 1200$
 - c) $q^* = 50; P^* = 15; n^* = 200$
 - d) $q^* = 100; P^* = 9991; n^* = 500$

Ans: A

Difficulty: Medium

Heading: How the Market Price is Determined: Long-Run Equilibrium

LO 10 Solve for the long-run equilibrium price, the equilibrium quantity demanded and supplied at the market level.

49. Economic rent can be defined as
- a) always the same as economic profit.
 - b) the maximum amount that firms would be willing to pay for a fixed input.
 - c) the minimum amount that firms actually have to pay for a fixed input.
 - d) the difference between the maximum amount that firms would be willing to pay for a fixed input and the minimum amount that firms actually have to pay for that input.

Ans: D

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 12 Explain what economic rent is and show graphically how it could arise in a perfectly competitive equilibrium.

50. Economic rent is associated with _____; economic profit is associated with _____.
- a) a firm; a scarce input.
 - b) a scarce input; a firm.
 - c) a fixed input; a variable input.
 - d) a scarce input; a fixed input.

Ans: B

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 12 Explain what economic rent is and show graphically how it could arise in a perfectly competitive equilibrium.

51. Identify the truthfulness of the following statements.
- I. Economic rent may equal economic profit.
 - II. Economic rent may exceed economic profit.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 12 Explain what economic rent is and show graphically how it could arise in a perfectly competitive equilibrium.

52. For an individual firm operating in the long run, producer surplus equals
- a) the difference between total revenues and total opportunity costs.
 - b) the difference between total revenues and total sunk costs.
 - c) economic rent.
 - d) The difference between market demand and market supply.

Ans: A

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 12 Explain what economic rent is and show graphically how it could arise in a perfectly competitive equilibrium.

53. For an entire perfectly competitive industry, which of the following statements is *incorrect* in the long run?
- a) Economic profit for the industry equals zero.
 - b) Producer surplus equals economic rent.
 - c) Economic profit equals total revenues less total costs.
 - d) Producer surplus for the industry equals economic profit for the industry.

Ans: B

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 12 Explain what economic rent is and show graphically how it could arise in a perfectly competitive equilibrium.

54. Producer surplus for an individual firm is
- a) total revenue less total variable cost.
 - b) total revenue less total fixed cost.
 - c) total revenue less total nonsunk cost.
 - d) total revenue less total implicit cost.

Ans: C

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 13 Define and compute producer surplus for a price-taking firm.

55. Producer surplus for an entire market is
- a) the difference between quantity supplied and quantity demanded.
 - b) the area below the market demand curve and above the market supply curve.
 - c) the area below price and above the market supply curve.
 - d) the area above price and below the market demand curve.

Ans: C

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 13 Define and compute producer surplus for a price-taking firm.

56. Producer surplus is
- a) always equal to zero for a competitive firm in long run equilibrium.
 - b) always greater than zero for a competitive firm in long run equilibrium.
 - c) defined as the area below the supply curve and above the price.
 - d) defined as the area above the supply curve and above the price.

Ans: A

Difficulty: Hard

Heading: Economic Rent and Producer Surplus

LO 13 Define and compute producer surplus for a price-taking firm.

57. For an individual firm operating in the short run, producer surplus equals the difference between total revenues and total nonsunk costs. Thus,
- a) producer surplus equals economic profit.
 - b) producer surplus is less than economic profit.
 - c) producer surplus is greater than economic profit.
 - d) producer surplus equals economic rent.

Ans: C

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 15 Explain the difference between economic profit, producer surplus, and economic rent.

58. In a perfectly competitive, increasing-cost industry in the long run, economic profit for the industry _____ and economic rent _____.
- a) can be positive; can be positive.
 - b) can be positive; equals zero.
 - c) equals zero; can be positive.
 - d) equals zero; equals zero.

Ans: C

Difficulty: Easy

Heading: Economic Rent and Producer Surplus

LO 15 Explain the difference between economic profit, producer surplus, and economic rent.

File: ch10, Chapter 10: Competitive Markets: Applications

Multiple Choice

1. An analysis that determines the equilibrium prices and quantities in one market holding constant prices in all other markets is called
- a) partial equilibrium analysis
 - b) general equilibrium analysis
 - c) externality analysis
 - d) market equilibrium analysis

Ans: A

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1 Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

2. Identify the truthfulness of the following statements.
- I. The profit in a perfectly competitive market is the one that maximizes the economic benefits (the sum of consumer and producer surplus).
 - II. In a way, statement I represents the “invisible hand” of the marketplace that Adam Smith was discussing in his 1776 classic treatise sometimes referred to as “The Wealth of Nations.”
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1 Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

3. The incidence of a tax depends on
- a) whom the tax is levied upon.

- b) the relative elasticities of supply and demand.
- c) the elasticity of government revenues.
- d) the income elasticity of demand for the product.

Ans: B

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1 Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

4. If the government decides to subsidize a good, it will typically do all of the following except:
- a) add to consumer surplus.
 - b) add to producer surplus.
 - c) have a positive impact on the government's budget.
 - d) create a deadweight loss.

Ans: C

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1 Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

5. Suppose the government decides to create a price support (floor) on the price of corn, which of the following is a true statement?
- a) A binding price support/floor will tend to lower the price of corn for poorer people.
 - b) If the government does not buy any wheat, there will tend to be an excess supply of wheat in the marketplace, if the price floor is binding.
 - c) A non-binding price support/floor below the equilibrium price in the market will also lead to a rise in the price of corn.
 - d) It is likely that the total surplus (consumer surplus plus producer surplus) will rise with a price support program.

Ans: B

Difficulty: Medium

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

6. With an acreage limitation program (compared with the initial situation of no program), which of the following statements is true?
- a) The impact on the government's budget is zero, consumer surplus increases and producer surplus decreases.
 - b) The impact on the government's budget is positive, consumer surplus decreases and producer surplus increases.
 - c) The impact on the government's budget is negative, consumer surplus increases and producer surplus decreases.
 - d) The impact on the government's budget is negative, consumer surplus decreases, producer surplus increases, and there is a deadweight loss.

Ans: D

Difficulty: Hard

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

7. It is always the case that
- a) the deadweight loss will be lower with a quota system than a tariff system.
 - b) there will be a deadweight loss from imposing tariffs on imports, even though the government may have a need for the revenue from the tariffs.
 - c) free trade will lead to a deadweight loss.
 - d) the deadweight loss will be lower with a tariff system than a quota system.

Ans: B

Difficulty: Medium

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

8. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. Suppose the government imposes an excise tax of \$4 per unit on this market. What is total surplus (consumer surplus plus producer surplus) *after* the government imposes the tax?
- a) 72
 - b) 98
 - c) 144

d) 196

Ans: C

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

9. An analysis that determines the equilibrium prices and quantities in more than one market simultaneously is called
- a) partial equilibrium analysis
 - b) general equilibrium analysis
 - c) externality analysis
 - d) market equilibrium analysis

Ans: B

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

10. When a perfectly competitive market is in equilibrium,
- a) consumer and producer surplus are maximized.
 - b) price is maximized.
 - c) quantity is maximized.
 - d) deadweight loss is positive.

Ans: A

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

11. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. What is the equilibrium quantity in this market?
- a) 12
 - b) 14

- c) 16
- d) 18

Ans: B

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

12. In a perfectly competitive market, which of the following will *not* occur as a result of an excise tax?
- a) The market will under-produce relative to the efficient level.
 - b) Consumer surplus will be higher than with no tax since the tax is imposed on suppliers.
 - c) Producer surplus will be lower than with no tax.
 - d) The tax causes a deadweight loss.

Ans: B

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

13. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. How much of this \$3 is paid for by producers?
- a) \$0.
 - b) \$1.
 - c) \$1.50.
 - d) \$2.

Ans: D

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

14. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. What is the change in consumer surplus due to the tax?
- a) \$450.
 - b) \$420.50.
 - c) \$29.50.
 - d) \$0.50.

Ans: C

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

15. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. What are the government receipts from the tax?
- a) \$90.
 - b) \$87.
 - c) \$45.
 - d) \$43.50.

Ans: B

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

16. If supply is relatively inelastic when compared with demand in a perfectly competitive market,
- a) consumers will share a larger burden of an excise tax than producers.
 - b) consumers and producers will share the burden of an excise tax equally.
 - c) producers will share a larger burden of an excise tax than consumers.
 - d) the incidence of the tax cannot be determined without more information.

Ans: C

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

17. When a tax is imposed on the producers of a product, which of the following is *incorrect*?
- a) The consumers and producers each bear some part of the burden.
 - b) If the demand curve is relatively inelastic, the burden borne by consumers increases.
 - c) If the supply curve is relatively elastic, the burden borne by consumers increases.
 - d) If the tax is levied on producers, the producers bear the burden of the tax; if the tax is levied on consumers, the consumers bear the burden of the tax.

Ans: D

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

18. In a perfectly competitive market, which of the following will *not* occur as a result of a subsidy?
- a) The market will overproduce relative to the efficient level.
 - b) Consumer surplus will be higher than with no subsidy.
 - c) Producer surplus will be higher than with no subsidy.
 - d) There will be no deadweight loss from the subsidy.

Ans: D

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

19. Consider a perfectly competitive market with inverse market supply $P = 5 + 3Q^s$ and inverse market demand $P = 50 - 2Q^d$. Suppose the government subsidizes this market with a subsidy of \$5 per unit. What are the equilibrium price and quantity traded *before* the subsidy?
- a) $P = 30; Q = 10$
 - b) $P = 25; Q = 12.5$

- c) $P = 32; Q = 9$
- d) $P = 35; Q = 7.5$

Ans: C

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

20. Consider a perfectly competitive market with inverse market supply $P = 5 + 3Q^s$ and inverse market demand $P = 50 - 2Q^d$. Suppose the government subsidizes this market with a subsidy of \$5 per unit. What is the equilibrium quantity traded *after* imposition of the subsidy?
- a) $Q = 10$
 - b) $Q = 12.5$
 - c) $Q = 9$
 - d) $Q = 7.5$

Ans: A

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

21. Consider a perfectly competitive market with inverse market supply $P = 5 + 3Q^s$ and inverse market demand $P = 50 - 2Q^d$. Suppose the government subsidizes this market with a subsidy of \$5 per unit. What is the increase in consumer surplus resulting from the subsidy?
- a) 17
 - b) 19
 - c) 21
 - d) 23

Ans: B

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

22. Consider a perfectly competitive market with inverse market supply $P = 5 + 3Q^s$ and inverse market demand $P = 50 - 2Q^d$. Suppose the government subsidizes this market with a subsidy of \$5 per unit. What is the deadweight loss resulting from the subsidy?
- a) 0, subsidies do not have a deadweight loss
 - b) 2.5
 - c) 5
 - d) 7.5

Ans: B

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

23. Consider a perfectly competitive market with inverse market supply $P = 5 + 3Q^s$ and inverse market demand $P = 50 - 2Q^d$. Suppose the government subsidizes this market with a subsidy of \$5 per unit. What is the impact on the government's budget resulting from the subsidy?
- a) -45
 - b) -50
 - c) -270
 - d) -300

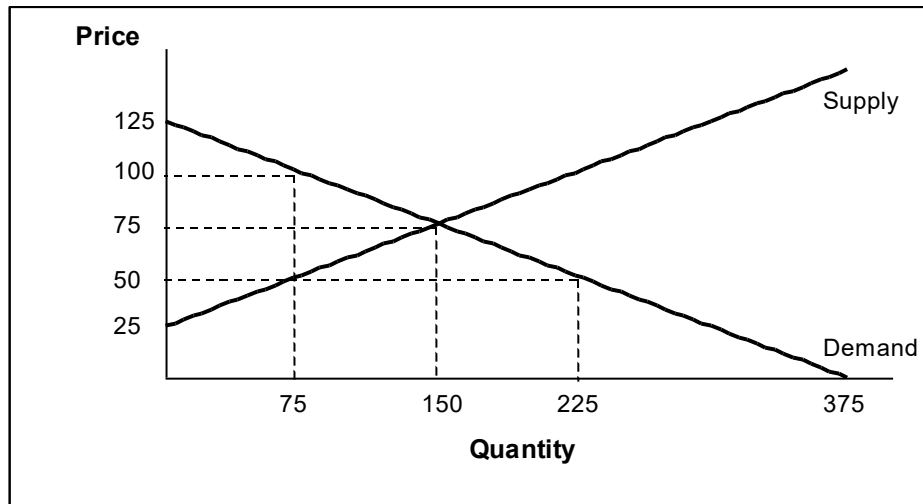
Ans: B

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

**Reference: Use the following figure to answer the next four questions (24-27).



24. **Determine the level of consumer surplus at the market equilibrium.

- a) 16,875
- b) 11,250
- c) 7,500
- d) 3,750

Ans: D

Difficulty: Easy

Heading: Price Ceilings and Floors

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

25. **Determine the level of producer surplus at the market equilibrium.

- a) 16,875
- b) 11,250
- c) 7,500
- d) 3,750

Ans: D

Difficulty: Easy

Heading: Price Ceilings and Floors

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

26. **Suppose the government sets a price ceiling of \$50 in this market. What is the maximum level of consumer surplus with the price ceiling?
- a) 16,875
 - b) 11,250
 - c) 8,437.50
 - d) 4,687.50

Ans: D

Difficulty: Hard

Heading: Price Ceilings and Floors

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

27. **Suppose the government sets a price ceiling of \$50 in this market. What is the minimum level of deadweight loss with the price ceiling?
- a) 7,500
 - b) 3,750
 - c) 1,875
 - d) 937.50

Ans: C

Difficulty: Hard

Heading: Price Ceilings and Floors

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

28. Which of the following statements is *false*?
- a) With a price floor, the market will not clear.
 - b) With a price floor, consumers will buy less of the good than they would in a free market.
 - c) With a price floor, producer surplus will always increase.
 - d) With a price floor there will be excess supply.

Ans: C

Difficulty: Easy

Heading: Price Ceilings and Floors

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

29. Suppose that the market for corn is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 10 - Q^d$; the supply curve can be expressed as $P = 0.25Q^s$. Quantity is expressed in millions of bushels. What is the equilibrium quantity traded and price in this market?
- a) $Q = 8; P = 2$
 - b) $Q = 2; P = 8$
 - c) $Q = 7; P = 3$
 - d) $Q = 3; P = 7$

Ans: A

Difficulty: Easy

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

30. Suppose that the market for corn is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 10 - Q^d$; the supply curve can be expressed as $P = 0.25Q^s$. Quantity is expressed in millions of bushels. Now suppose that the federal government imposes a price floor of \$3 per bushel of corn. Which of the following best describes the market after the price floor is imposed?
- a) There will be a shortage of 5 million bushels.
 - b) There will be a surplus of 5 million bushels.
 - c) There will be a surplus of 7 million bushels.
 - d) There will be a surplus of 12 million bushels.

Ans: B

Difficulty: Medium

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

31. Suppose that the market for corn is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 10 - Q^d$; the supply curve can be expressed as $P = 0.25Q^s$. Quantity is expressed in millions of bushels. Now suppose that the federal government imposes a price floor of \$3 per bushel of corn. What is the dead-weight loss

(per million bushels) associated with the price floor when the *most* efficient producers are active?

- a) \$9.375
- b) \$2.25.
- c) \$1.
- d) \$0.63.

Ans: D

Difficulty: Hard

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

32. Suppose that the market for corn is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 10 - Q^d$; the supply curve can be expressed as $P = 0.25Q^s$. Quantity is expressed in millions of bushels. Now suppose that the federal government imposes a price floor of \$3 per bushel of corn. What is the dead-weight loss (per million bushels) associated with the price floor when the *least* efficient producers are active?
- a) \$9.375
 - b) \$2.25.
 - c) \$1.
 - d) \$0.63.

Ans: A

Difficulty: Hard

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

33. In a perfectly competitive market, a production quota
- a) sets a limit on the level of imports of a good.
 - b) has the effect of keeping the market price below the equilibrium level.
 - c) will create excess supply in the market.
 - d) creates no deadweight loss.

Ans: C

Difficulty: Easy

Heading: Production Quotas

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

34. Which of the following statements is *not* generally true of a production quota?
- a) The market will not clear due to the excess supply of that good.
 - b) Consumer surplus increases when compared to the market before the quota.
 - c) Producer surplus may increase or decrease.
 - d) Some of the consumer surplus will be transferred to producers.

Ans: B

Difficulty: Easy

Heading: Production Quotas

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

35. Suppose that the market for cigarettes is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 60 - Q^d$; the supply curve can be expressed as $P = 0.5Q^s$. Quantity is expressed in millions of boxes per month. What are the amount traded and the price for this market?
- a) $Q = 40$; $P = 20$
 - b) $Q = 20$; $P = 40$
 - c) $Q = 30$; $P = 30$
 - d) $Q = 30$; $P = 15$

Ans: A

Difficulty: Medium

Heading: Production Quotas

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

36. Suppose that the market for cigarettes is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 60 - Q^d$; the supply curve can be expressed as $P = 0.5Q^s$. Quantity is expressed in millions of boxes per month. Now suppose that the federal government imposes a production quota on cigarettes of 30 million boxes per month. What are the new amount traded and the price in this market?
- a) $Q = 40$; $P = 20$

- b) $Q = 20; P = 40$
- c) $Q = 30; P = 30$
- d) $Q = 30; P = 15$

Ans: C

Difficulty: Medium

Heading: Production Quotas

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

37. Suppose that the market for cigarettes is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 60 - Q^d$; the supply curve can be expressed as $P = 0.5Q^s$. Quantity is expressed in millions of boxes per month. Now suppose that the federal government imposes a production quota on cigarettes of 30 million boxes per month. What is the level of excess supply in this market?
- a) There is no excess supply. There is an excess demand of $Q = 30$.
 - b) There is no excess supply or demand.
 - c) There is an excess supply of $Q = 30$.
 - d) There is an excess supply of $Q = 20$.

Ans: C

Difficulty: Medium

Heading: Production Quotas

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

38. In a perfectly competitive market, an import quota
- a) sets a minimum level of production that domestic firms must produce.
 - b) sets a minimum level of imports for a country.
 - c) sets a maximum level of production that domestic firms may produce.
 - d) sets a maximum level of imports into a country.

Ans: D

Difficulty: Easy

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

39. In a perfectly competitive market, a tariff
- a) is another term for an excise tax imposed on any good.
 - b) sets the price of an imported good.
 - c) is a tax on an imported good.
 - d) is the same as an import quota.

Ans: C

Difficulty: Easy

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

40. Identify the truthfulness of the following statements.
- I. In a perfectly competitive market, import quotas and tariffs tend to lead to higher domestic prices and deadweight loss.
 - II. In a perfectly competitive market, import quotas and tariffs tend to lead to higher domestic prices without the usual deadweight loss that would accompany them.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

41. The domestic market for calculators is perfectly competitive and is in equilibrium. Domestic demand is given by $Q^d = 100 - P$ and domestic supply is given by $Q^s = 4P$. The world price for calculators is \$10. How many units of calculators will be imported?
- a) 0
 - b) 10
 - c) 30
 - d) 50

Ans: D

Difficulty: Medium

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

42. The domestic market for calculators is perfectly competitive and is in equilibrium. Domestic demand is given by $Q^d = 100 - P$ and domestic supply is given by $Q^s = 4P$. The world price for calculators is \$10. Now, a tariff of \$10 is imposed on all imports. How many units of calculators will be imported now?
- a) 0
 - b) 10
 - c) 30
 - d) 50

Ans: A

Difficulty: Medium

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

43. The domestic market for calculators is perfectly competitive and is in equilibrium. Domestic demand is given by $Q^d = 100 - P$ and domestic supply is given by $Q^s = 4P$. The world price for calculators is \$10. Now, a tariff of \$10 is imposed on all imports. How much revenue does this policy generate for the government?
- a) 0
 - b) 10
 - c) 30
 - d) 50

Ans: A

Difficulty: Medium

Heading: Import Quotas and Tariffs

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

44. Identify the truthfulness of the following statements.
- I. In perfectly competitive markets there are no externalities. That is, actions of decision-makers on each others' well being do not extend beyond those effects transmitted by prices.

- II. Partial equilibrium analysis determines equilibrium in a single market, taking the prices and outputs of other markets as fixed.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

45. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. How much of this \$3 tax is paid by consumers?
- a) \$1.
 - b) \$1.50.
 - c) \$2.
 - d) \$3

Ans: A

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

46. In a perfectly competitive market, which of the following will *not* occur as a result of a subsidy?
- a) The market will under-produce relative to the efficient level.
 - b) Consumer surplus will be higher than with no subsidy.
 - c) Producer surplus will be higher with no subsidy.
 - d) The subsidy causes a deadweight loss.

Ans: A

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

47. Suppose that the market for corn is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 10 - Q^d$; the supply curve can be expressed as $P = 0.25Q^s$. Quantity is expressed in millions of bushels. Now suppose that the federal government imposes a price floor of \$3 per bushel of corn. What is the new equilibrium quantity traded in this market?
- a) $Q = 8$;
 - b) $Q = 2$;
 - c) $Q = 7$
 - d) $Q = 3$

Ans: C

Difficulty: Medium

Heading: Price Supports in the Agricultural Sector

LO 1: Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

48. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. What is consumer surplus in this market?
- a) 98
 - b) 128
 - c) 196
 - d) 256

Ans: A

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2: Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

49. In a market with an upward-sloping supply curve and a downward-sloping demand curve, the effects of an excise tax are as follows except:
- a) Consumer surplus will be lower than with no tax.
 - b) Producer surplus will be lower than with no tax.
 - c) The impact on the government budget will be positive.
 - d) The tax will generally lead to a deadweight gain.

Ans: D

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2 Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

50. If there is an excise tax collected by suppliers of a particular product, when we draw the graph of supply and demand we would normally represent the excise tax by
- a) a horizontal shift of the supply curve to the left by the amount of the excise tax.
 - b) a horizontal shift of the supply curve to the right by the amount of the excise tax.
 - c) a vertical shift up of the demand curve by the amount of the excise tax.
 - d) a vertical shift up of the supply curve by the amount of the excise tax.

Ans: D

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2 Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

51. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. What is total surplus in this market?
- a) 98
 - b) 128
 - c) 196
 - d) 256

Ans: C

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2: Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

52. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. Suppose the government imposes an excise tax of \$4 per unit on this market. What is total surplus (consumer surplus plus producer surplus) *before* the government imposes the tax?
- a) 72
 - b) 98
 - c) 144
 - d) 196

Ans: D

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2: Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

53. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. Suppose the government imposes an excise tax of \$4 per unit on this market. What is total surplus (consumer surplus plus producer surplus) *after* the government imposes the tax?
- a) 72
 - b) 98
 - c) 144
 - d) 196

Ans: C

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2: Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

54. Deadweight loss can be explained as
- a) An increase in economic benefits due to efficient allocation of resources
 - b) A reduction in net economic benefits resulting from an inefficient allocation of resources
 - c) An increase in economic benefits due to inefficient allocation of resources
 - d) A decline in the quantity of output produced due to the inefficient allocation of resources

Ans: B

Difficulty: Easy

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2: Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

55. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. Suppose the government imposes an excise tax of \$4 per unit on this market. What is the deadweight loss from this tax?

- a) 2
- b) 4
- c) 6
- d) 8

Ans: B

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 2: Explain how government intervention creates deadweight losses in perfectly competitive markets as economic resources are reallocated.

56. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. What is the dead-weight loss due to the tax?
- a) \$3.
 - b) \$2.
 - c) \$1.50.
 - d) \$1.00.

Ans: C

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 3: Show how intervention affects the distribution of income and the net benefits to consumers and producers, typically making some people better off while leaving others worse off.

57. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. What is the change in producer surplus due to the tax?
- a) \$900.
 - b) \$841.
 - c) \$59.
 - d) \$29.50.

Ans: C

Difficulty: Medium

Heading: The Invisible Hand, Excise Taxes and Subsidies

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

58. Suppose that the market for cigarettes is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 60 - Q^d$; the supply curve can be expressed as $P = 0.5Q^s$. Quantity is expressed in millions of boxes per month. Now suppose that the federal government imposes a production quota on cigarettes of 30 million boxes per month. What is the deadweight loss (per million boxes) associated with the quota?
- a) \$275.
 - b) \$75.
 - c) \$50.
 - d) \$25.

Ans: B

Difficulty: Medium

Heading: Production Quotas

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

59. Suppose that the market for cigarettes is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 60 - Q^d$; the supply curve can be expressed as $P = 0.5Q^s$. Quantity is expressed in millions of boxes per month. Now suppose that the federal government imposes a production quota on cigarettes of 30 million boxes per month. What is the *change* in consumer surplus (per million boxes) associated with the quota?
- a) \$450.
 - b) \$350.
 - c) \$300.
 - d) \$50.

Ans: B

Difficulty: Medium

Heading: Production Quotas

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

60. Suppose that the market for cigarettes is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as $P = 60 - Q^d$; the supply curve can be expressed as $P = 0.5Q^s$. Quantity is expressed in millions of boxes per month. Now suppose that the federal government imposes a production quota on cigarettes of 30 million boxes per month. What is the *change* in producer surplus (per million boxes) associated with the quota?
- a) \$175.

- b) \$75.
- c) \$50.
- d) \$25.

Ans: A

Difficulty: Medium

Heading: Production Quotas

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

61. Acreage limitations are used by the government because
- a) they induce less deadweight loss than cash transfers to farmers.
 - b) they raise the market price of an agricultural product without the surpluses associated with price supports.
 - c) the government wishes to lower agricultural prices.
 - d) they are an effective way to feed poor people.

Ans: B

Page Reference: 392-395

Difficulty: Easy

Heading: Price Supports in the Agricultural Sector

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

62. Identify the truthfulness of the following statements.
- I. Government purchase programs in agriculture tend not to be more expensive than acreage limitation programs.
 - II. Government purchase programs in agriculture tend to be politically more palatable than direct cash transfers, even though they induce more deadweight loss.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Price Supports in the Agricultural Sector

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

63. Which of the following is *not* a description of what a tariff can achieve in a perfectly competitive market?
- a) A tariff can achieve many of the same goals as an import quota.
 - b) A tariff can create less domestic deadweight loss than a quota if the tariff revenues are redistributed domestically.
 - c) A tariff can create greater government revenues than a quota.
 - d) A tariff creates enough government revenue to completely offset the impact of deadweight loss, thereby increasing total surplus.

Ans: D

Difficulty: Easy

Heading: Import Quotas and Tariffs

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

64. The domestic market for calculators is perfectly competitive and is in equilibrium. Domestic demand is given by $Q^d = 100 - P$ and domestic supply is given by $Q^s = 4P$. The world price for calculators is \$10. As an alternative to a tariff of \$10 per unit, the government considers an outright trade prohibition on calculators. Which is better for the domestic economy?
- a) The trade prohibition is better.
 - b) The tariff is better.
 - c) The trade prohibition is better for producers; the tariff is better for consumers.
 - d) Both policies generate exactly the same surpluses.

Ans: D

Difficulty: Medium

Heading: Import Quotas and Tariffs

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

65. Suppose the government decides to create a ceiling on the price of gasoline, which of the following is not likely to be true under the described circumstances?
- a) The ceiling will have no effect if the ceiling is above the equilibrium market price.
 - b) Producer surplus will likely increase if the ceiling is below the equilibrium market price.
 - c) Producer surplus will be lower with a binding ceiling (below the initial market equilibrium price).
 - d) The ceiling will lead to shortages if the ceiling is below the initial market price.

Ans: B

Difficulty: Medium

Heading: Price Ceilings and Floors

LO 4 Analyze the consequences of many forms of government intervention in *perfectly competitive markets*, including the impositions of excise taxes, subsidies to producers, price ceilings, price floors, production quotas, and import tariffs and quotas.

66. Which of the following statements regarding a price ceiling in a perfectly competitive market is *incorrect*?
- a) There will be no deadweight loss with the price ceiling.
 - b) There will be excess demand resulting from the price ceiling.
 - c) The market will under produce relative to the efficient level.
 - d) Consumer surplus may either increase or decrease with a price ceiling.

Ans: A

Difficulty: Easy

Heading: Price Ceilings and Floors

LO 4: Employ economic analysis to understand the forces and issues underlying public policy discussions about government intervention in many kinds of competitive markets.

File: ch11; Chapter 11: Monopoly and Monopsony

Multiple Choice

1. Which of the following statements is true?
 - a) Monopoly profits are generally zero.
 - b) Monopoly profits are maximized when total revenue is maximized.
 - c) The condition, $MC = MR$, is the optimizing condition for monopolists and firms in perfectly competitive markets.
 - d) Usually the demand and marginal revenue curves for a monopoly are the same.

Ans: C

Difficulty: Easy

Heading: Profit-Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

2. The marginal revenue curve for a monopolist
 - a) will never take a linear form.
 - b) will always have double the slope of the demand curve, when demand is linear.
 - c) will always have one-half the slope of the demand curve, when demand is linear.
 - d) will slope upward when demand is elastic.

Ans: B

Difficulty: Easy

Heading: Profit-Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

3. To compute the optimal monopoly price with a linear demand curve, the monopolist
 - a) should set $MC = MR$, which would determine the optimal quantity and price would equal MC and MR as well.
 - b) should set $MC = MR$, which would determine the optimal quantity and price would be found by inserting the optimal quantity into the monopolist's demand curve.
 - c) should set $MC = MR$, which would determine the optimal quantity and price would be found by doubling the marginal cost.
 - d) should set output where total revenue would be the greatest.

Ans: B

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

4. One argument for allowing monopolies to exist is
- a) it would be inefficient to break up natural monopolies into smaller units.
 - b) monopolies lead to net economic benefits as a rule.
 - c) the free market acts as a more effective regulator than the government.
 - d) they allow for greater standardization of products and improved quality control.

Ans: A

Difficulty: Medium

Heading: Why Do Monopoly Markets Exist?

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

5. A monopsony market is one with
- a) one buyer and one seller.
 - b) one buyer and many sellers.
 - c) many buyers and one seller.
 - d) many buyers and many sellers.

Ans: B

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

6. Identify the truthfulness of the following statements.
- I. A monopolist faces a downward-sloping demand curve, whereas a perfectly competitive firm faces a horizontal demand curve.
 - II. A monopolist maximizes profit, whereas a perfectly competitive firm cannot.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

7. Identify the truthfulness of the following statements.
- I. A monopoly market consists of a single seller facing many buyers.
 - II. Because the monopolist is the only seller of her product, she may sell any quantity that she chooses for any given price.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

8. A monopolist maximizes total revenue where marginal revenue
- a) equals marginal cost.
 - b) is maximized.
 - c) equals zero.
 - d) is negative.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

9. To maximize profit, the monopolist sets
- a) price equal to marginal cost.
 - b) total revenue equal to total cost.
 - c) marginal revenue equal to marginal cost.
 - d) marginal revenue equal to average cost.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

10. If the monopolist is producing where marginal revenue exceeds marginal cost, then the monopolist should _____ to maximize profits.
- a) produce more
 - b) produce less
 - c) stop producing
 - d) raise price

Ans: A

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

11. For a monopolist
- a) selling price is greater than marginal revenue.
 - b) selling price is equal to marginal revenue.
 - c) selling price is less than marginal revenue.
 - d) selling price may be above or below marginal revenue; it depends on the price buyers are willing to pay.

Ans: A

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

12. The monopolists average revenue can be defined as
- a) Total revenue per unit of average revenue
 - b) Total revenue per unit of output
 - c) Average revenue per unit of input
 - d) $AR = AR / Q$

Ans: B

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

13. Identify the truthfulness of the following statements.
- I. For the monopolist, the average revenue curve is the demand curve.
 - II. For the monopolist, marginal revenue is less than average revenue.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

14. For a monopolist
- a) selling price is greater than average revenue.
 - b) selling price is equal to average revenue.
 - c) selling price is less than average revenue.
 - d) selling price may be above or below average revenue; it depends on the price buyers are willing to pay.

Ans: B

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

15. A monopolist faces inverse demand $P = a - bQ$. The monopolist's marginal revenue function is
- a) $MR = a - bQ$.
 - b) $MR = a - Q$.
 - c) $MR = a - 2bQ$.
 - d) $MR = a/Q - b$.

Ans: C

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

16. Which of the following statements regarding a monopolist's profit maximizing condition is *false*?
- a) The monopolist's profit-maximizing price will be greater than marginal cost for the last unit supplied.
 - b) A monopolist can earn positive economic profit.
 - c) Because monopoly price is above marginal cost and a monopoly earns positive economic profit, there are no benefits to consumers in the monopoly market.
 - d) Price equals average revenue at the profit-maximizing quantity of output.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

17. Inverse demand for a monopolist's product is given by $P = 300 - 6Q$ while the monopolist's marginal cost is given by $MC = 3Q$. The profit-maximizing quantity of output for this monopolist is
- a) 33.33
 - b) 100
 - c) 50
 - d) 20

Ans: D

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

18. Inverse demand for a monopolist's product is given by $P = 300 - 6Q$ while the monopolist's marginal cost is given by $MC = 3Q$. The profit-maximizing price for this monopolist is
- a) 100
 - b) 180
 - c) 60
 - d) 150

Ans: B

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

19. A monopolist faces an inverse demand curve $P = 300 - 6Q$ and has a constant marginal cost of 20. The monopolist's profit-maximizing output is
- a) 46.67
 - b) 23.33
 - c) 20
 - d) 35

Ans: B

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

20. A monopolist faces inverse demand $P = 300 - 6Q$ and has marginal cost $MC = 120 + 6Q$. What price should this monopolist charge to maximize profit?
- a) 10
 - b) 50
 - c) 210
 - d) 240

Ans: D

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

21. A monopolist faces inverse demand $P = 300 - 6Q$ and has total cost $TC = 120Q + 6Q^2$ and marginal cost $MC = 120 + 6Q$. What is the maximum profit the monopolist can earn in this market?
- a) 60
 - b) 240
 - c) 600
 - d) 1200

Ans: C

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

22. Which of the following best explains why there is no meaningful supply curve for a monopolist?
- a) The monopolist is the only supplier.
 - b) Price is exogenous to the monopolist.
 - c) The monopolist is already maximizing profits; thus, it doesn't need a supply curve.
 - d) Price is endogenous. That is, the monopolist determines both quantity and price. Hence, there is no longer a unique association between price and quantity supplied.

Ans: D

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

23. A natural monopoly refers to
- a) Any monopoly based on natural resources.
 - b) Any monopolized market.
 - c) A monopolized market where the barriers to entry are not structural.
 - d) A market for which the total cost incurred by a single firm producing that output is less than the combined total cost of two or more firms producing the same total output between them.

Ans: D

Difficulty: Easy

Heading: Why do Monopoly Markets Exist?

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

24. A monopolist faces an inverse demand curve $P = 300 - 6Q$ and has a constant marginal cost of 20. The IEPR formula for this monopolist could be stated in the following way:
- a) $\frac{P - 20}{P} = \left(\frac{1}{P/6}\right)$

- b) $\frac{P - 20}{P} = \frac{300 - P}{P}$
- c) $\frac{P - 20}{P} = \frac{P}{300 - P}$
- d) $\frac{P - 20}{P} = -P(Q/6)$

Ans: B

Difficulty: Hard

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

25. A monopoly market is one with
- a) one buyer and one seller.
 - b) one buyer and many sellers.
 - c) many buyers and one seller.
 - d) many buyers and many sellers.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

26. Identify the *false* statement.
- a) A monopolist and a perfectly competitive firm both maximize profits.
 - b) A monopolist and a perfectly competitive firm both produce an output level where marginal revenue equals marginal cost.
 - c) A monopolist and a perfectly competitive firm both produce where price equals marginal cost.
 - d) A monopolist and a perfectly competitive firm both charge a price based on the demand curve facing the firm and the costs borne by the firm.

Ans: C

Difficulty: Easy

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

27. A monopolist faces inverse demand $P = 300 - 2Q$. The monopolist's marginal revenue function is
- a) $MR = 300 - 2Q$
 - b) $MR = 300 - Q$
 - c) $MR = 300 - 4Q$
 - d) $MR = \frac{300}{Q} - 2$

Ans: C

Difficulty: Medium

Heading: Profit Maximization by a Monopolist

LO 1 Explain how a monopolist chooses the level of its output (and thus, its price) to maximize profit.

28. The inverse elasticity pricing rule says that the optimal markup of price over marginal cost expressed as a percentage of price
- a) is equal to $\frac{1}{2}$ the inverse of the price elasticity of demand.
 - b) is equal to $-\frac{1}{2}$.
 - c) is equal to the negative of the inverse of the price elasticity of demand.
 - d) is equal to the inverse of the price elasticity of demand.

Ans: C

Difficulty: Medium

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

29. The monopolist will always produce
- a) in the inelastic portion of the demand curve.
 - b) at the unit elastic point on the demand curve.
 - c) at the point of perfect elasticity.
 - d) in the elastic portion of the demand curve.

Ans: D

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

30. The Lerner Index is
- a) equal to $(P - MR)/P$.
 - b) a measure of product differentiation.
 - c) equal to P/MC .
 - d) equal to $(P - MC)/P$.

Ans: D

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

31. An increase in demand for a monopolist will cause the
- a) profit-maximizing price to decrease when marginal cost decreases as quantity increases.
 - b) profit-maximizing price to increase when marginal cost decreases as quantity increases.
 - c) profit-maximizing price to decrease when marginal cost increases as quantity increases.
 - d) profit-maximizing price to stay constant regardless of the shape of the marginal cost curve.

Ans: A

Difficulty: Hard

Heading: Comparative Statics for Monopolists

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

32. As a monopolist's demand curve becomes more *inelastic*,
- a) the profit-maximizing price goes up.
 - b) the profit-maximizing price goes down.
 - c) the optimal mark-up of price over marginal cost goes down.
 - d) average revenue falls.

Ans: A

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

33. Which of the following describes the relation between price elasticity of demand and a monopolist's marginal revenue?
- $MR = P(1 + \varepsilon_{Q,P})$.
 - $MR = P(1 + \frac{P}{Q} \frac{\Delta Q}{\Delta P})$
 - $MR = 1 + \varepsilon_{Q,P}$
 - $MR = P(1 + \frac{1}{\varepsilon_{Q,P}})$

Ans: D

Difficulty: Medium

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

34. Which of the following describes a correct relation between price elasticity of demand and a monopolist's marginal revenue when inverse demand is linear, $P = a - bQ$?
- Demand is elastic when $Q > a/2b$.
 - Demand is inelastic when $Q > a/b$.
 - Demand is unit elastic when $P = a/2b$.
 - Demand is elastic when $Q < a/2b$.

Ans: D

Difficulty: Medium

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

35. Identify the truthfulness of the following statements.
- IEPR states that the monopolist's optimal markup of price above marginal cost can be expressed as follows: the monopolist's optimal markup, expressed as a percentage of price, is equal to minus the inverse of the price elasticity of demand.
 - IEPR tells us that the price elasticity of demand plays a vital role in determining what price a monopolist should charge to maximize profits.
- I and II are true.
 - I and II are false.
 - I is true; II is false.
 - II is true; I is false.

Ans: A

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

36. The inverse elasticity pricing rule tells us the monopolist's optimal mark-up of price over marginal cost. In general,
- a) the more price elastic the monopolist's demand, the smaller the mark-up will be.
 - b) the less price elastic the monopolist's demand, the smaller the mark-up will be.
 - c) price equals marginal revenue for the monopolist.
 - d) marginal revenue equals average revenue for the monopolist.

Ans: A

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

37. A monopolist faces a demand curve $Q = 50P^{-4}$ and that the monopolist has a constant marginal cost of 75. The monopolist's profit-maximizing price is
- a) 25
 - b) 50
 - c) 75
 - d) 100

Ans: D

Difficulty: Medium

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

38. Suppose a monopolist faces a demand curve $Q = aP^{-b}$ and that the monopolist has a constant marginal cost of C . The monopolist's profit-maximizing price is
- a) $P = C(1 - \frac{1}{b})$
 - b) $P = C(1/b)$
 - c) $P = C(\frac{1}{1 - \frac{1}{b}})$
 - d) $P = C(-1/b)$

Ans: C

Difficulty: Hard

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

39. A monopolist will produce where
- a) demand is elastic.
 - b) demand is perfectly elastic.
 - c) demand is inelastic.
 - d) demand is perfectly inelastic.

Ans: A

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

40. The term *product differentiation* refers to:
- a) A situation in which two or more products possess technical differences, which may or may not be perceived by consumers.
 - b) A situation in which two or more products possess attributes that, in the minds of consumers, set the products apart from one another and make them less than perfect substitutes.
 - c) A situation in which two or more firms produce products for a given market.
 - d) A situation in which two or more consumers purchase differing amounts of a product in a market.

Ans: B

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

41. A measure of monopoly power, the percentage markup of price over marginal cost ($(P - MC)/P$) is called
- a) The Inverse Elasticity Pricing Rule
 - b) Lerner Index of market power
 - c) Monopoly Midpoint Rule
 - d) Market Power Rule

Ans: B

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

42. In order to calculate the Lerner Index for a particular firm, you need to know _____ and _____ for that firm.
- a) marginal cost; marginal revenue
 - b) marginal cost; price
 - c) price; quantity
 - d) price; demand

Ans: B

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

43. Suppose a monopolist has a marginal cost of \$25 and charges a price of \$40. The monopolist's Lerner Index is
- a) 0.60
 - b) 0.625
 - c) 0.375
 - d) 1.60

Ans: C

Difficulty: Medium

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

44. The Lerner Index for a firm operating in a perfectly competitive industry would be
- a) less than zero.
 - b) zero.
 - c) between zero and one.
 - d) one.

Ans: B

Difficulty: Medium

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

45. Suppose that product X is sold by a monopolist who has constant marginal cost for producing X. Further suppose that there is an exogenous shock to the product X market, resulting in an increase in demand for X and a resulting rightward shift in marginal revenue. Which of the following statements is correct regarding the equilibrium price and quantity of X?
- a) Both price and quantity will rise.
 - b) Both price and quantity will fall.
 - c) Price will rise; the effect on quantity is uncertain.
 - d) Quantity will rise; the effect on price is uncertain.

Ans: D

Difficulty: Medium

Heading: Comparative Statics for Monopolists

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

46. A monopolist faces linear inverse demand $P = a - bQ$ and constant marginal cost, c . The term a increases by amount Δa . By how much does the monopolist's optimal price increase?
- a) Δa .
 - b) $\Delta a/2$.
 - c) $\Delta a - c$.
 - d) $\Delta a/b$.

Ans: B

Difficulty: Medium

Heading: Comparative Statics for Monopolists

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

47. A monopolist faces linear inverse demand $P = a - bQ$ and constant marginal cost, c . Which of the following gives a correct formula for the monopolist's profit maximizing price?
- a) $P = (a/b - c)$
 - b) $P = a/2$.
 - c) $P = (a+c)/2$

d) $P = a/2 + c.$

Ans: C

Difficulty: Medium

Heading: Comparative Statics for Monopolists

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

48. If a monopolist's marginal cost shifts upward,
- a) total revenue will remain unchanged.
 - b) total revenue will increase.
 - c) total revenue will fall.
 - d) total revenue may rise or fall depending on the slope of the demand curve.

Ans: C

Difficulty: Easy

Heading: Comparative Statics for Monopolists

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

49. Evaluate the truthfulness of the following statements
- I. The horizontal sum of the marginal cost curves of individual plants is called multiplant marginal cost curve.
 - II. A group of producers that collusively determines the price and output in a market is cartel.
- a) I and II are true.
 - b) I and II are false.
 - c) I is true; II is false.
 - d) II is true; I is false.

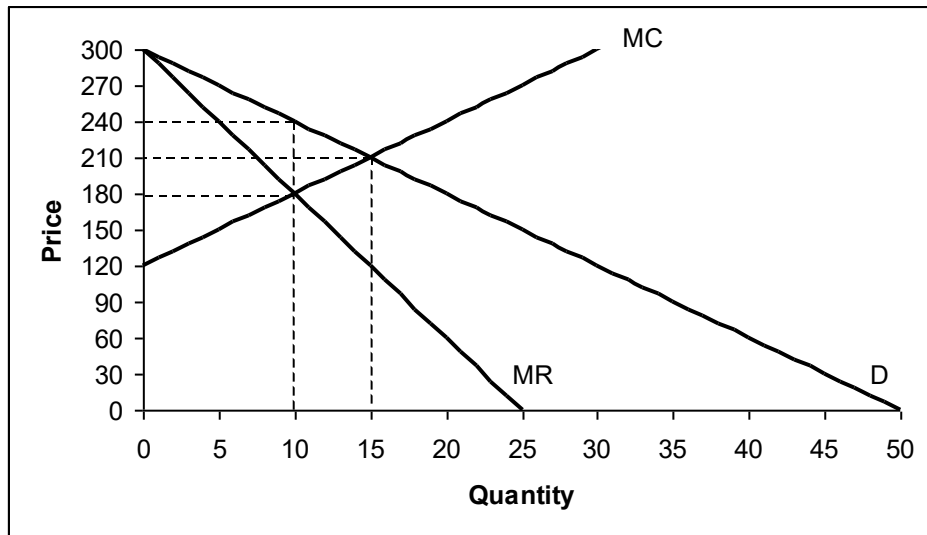
Ans: A

Difficulty: Easy

Heading: Comparative Statics for Monopolists

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

****Reference:** Use the following diagram to answer the next five questions (50-54).



50. **The profit-maximizing price for a perfectly competitive firm would be
- a) 180
 - b) 210
 - c) 240
 - d) Between 210 and 240

Ans: B

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 3 Compare the market equilibrium in a competitive market with the profit maximizing choices of a monopolist.

51. **The profit-maximizing price for a monopolist would be
- a) 180
 - b) 210
 - c) 240
 - d) Between 210 and 240

Ans: C

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 3 Compare the market equilibrium in a competitive market with the profit maximizing choices of a monopolist.

52. **The total economic benefit under perfect competition would be
- a) 2,700
 - b) 1,350
 - c) 675
 - d) 500

Ans: B

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 3 Compare the market equilibrium in a competitive market with the profit maximizing choices of a monopolist.

53. **The total economic benefit under monopoly would be
- a) 300
 - b) 600
 - c) 900
 - d) 1,200

Ans: D

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 3 Compare the market equilibrium in a competitive market with the profit maximizing choices of a monopolist.

54. **The deadweight loss under monopoly would be
- a) 75
 - b) 150
 - c) 225
 - d) 300

Ans: B

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 8 Explain how the choices of a monopolist or a monopsonist lead to economic inefficiency in a market.

55. Identify the truthfulness of the following statements.
- I. IEPR applies to any firm facing a downward-sloping demand curve for its products, not just a monopolist.
 - II. Firms producing differentiated products face downward-sloping demand

- a) I and II are true.
- b) I and II are false.
- c) I is true; II is false.
- d) II is true; I is false.

Ans: A

Page Reference: 428-429

Difficulty: Easy

Heading: The Importance of Price Elasticity of Demand

LO 2 Calculate a monopolist's profit maximizing price and quantity given information about demand and cost.

56. When a monopoly sells its product in multiple markets, it should
- a) add the demand curves in both markets, derive the marginal revenue curve from the aggregate demand curve and optimize its output by setting marginal cost equal to marginal revenue derived from the aggregate demand curve.
 - b) add the demand curves in both markets, derive the marginal revenue curve from the aggregate demand curve and optimize its output by setting price equal to marginal revenue.
 - c) let managers in each market determine the optimal output based on cultural preferences.
 - d) produce its product in each market and set $MC = MR$ as any single market monopolist.

Ans: A

Difficulty: Hard

Heading: Monopoly with Multiple Plants and Markets

L04 Determine how a monopolist with more than one plant allocates its production among those plants.

57. A monopolist owns two plants in which to produce product A. The marginal cost of producing A is increasing, but currently is lower in plant 1 than in plant 2. How should the monopolist allocate production?
- a) Produce all output in plant 1.
 - b) Produce all output in plant 2.
 - c) Produce 50 percent in plant 1 and 50 percent in plant 2.
 - d) Produce in plant 1 up to the point where marginal costs are equated across the plants. (In other words, reallocate production so that $MC_1 = MC_2$.)

Ans: D

Difficulty: Easy

Heading: Monopoly with Multiple Plants and Markets

L04 Determine how a monopolist with more than one plant allocates its production among those plants.

58. A monopolist owns two plants in which to produce a product which has inverse demand $P = (770/3) - 3Q$. The monopolist has marginal cost curves of $MC_1 = 20 + 3Q_1$ and $MC_2 = 10 + 6Q_2$ in the two plants, respectively. Which of the following represents the optimal outputs in the two plants, Q_1 and Q_2 and the market price?
- a) $Q_1 = 170/9$; $Q_2 = 100/9$; $P = 500/3$.
 - b) $Q_1 = 100/9$; $Q_2 = 170/9$; $P = 500/3$.
 - c) $Q_1 = 500/3$; $Q_2 = 170/9$; $P = 100/9$.
 - d) $Q_1 = 500/3$; $Q_2 = 100/9$; $P = 170/9$.

Ans: A

Difficulty: Hard

Heading: Monopoly with Multiple Plants and Markets

L04 Determine how a monopolist with more than one plant allocates its production among those plants.

59. A monopsonist maximizes profit when
- a) marginal revenue equals marginal cost.
 - b) marginal revenue product of labor equals marginal cost.
 - c) marginal revenue product is set equal to zero.
 - d) its marginal revenue product of labor equals its marginal expenditure on labor.

Ans: D

Difficulty: Medium

Heading: Monopsony

LO 5 Explain how a monopsonist chooses its inputs to maximize profits.

60. Which of the following examples comes the closest to describing a monopsony market?
- a) The market for beryllium.
 - b) The market for Microsoft Windows.
 - c) The market for breakfast cereal.
 - d) The market for United States military uniforms.

Ans: D

Difficulty: Medium

Heading: Monopsony

LO 5 Explain how a monopsonist chooses its inputs to maximize profits.

61. A monopsonist only uses labor to produce an output according to production function $Q = 2L$, where Q is output and L is labor. The output sells for a price of \$20 per unit. The supply curve for labor can be written $w = 4 + L$. What is the monopsonist's demand for labor in this market?
- a) $L = 12$.
 - b) $L = 18$.
 - c) $L = 22$.
 - d) $L = 24$.

Ans: B

Difficulty: Medium

Heading: Monopsony

LO 5 Explain how a monopsonist chooses its inputs to maximize profits.

62. Suppose that the perfectly competitive soybean industry in the United States is monopolized. Under perfect competition, the equilibrium price was \$2 and quantity was 100,000. The monopolist raises price to \$5 and restricts quantity to 70,000. Assume that the monopolist is maximizing profits and that the monopolist faces a linear, upward-sloping marginal cost curve that begins at the origin. Also assume that this marginal cost curve is the industry supply curve under perfect competition. What is the loss in consumer surplus that the monopolist captures in the form of profit?
- a) \$500,000
 - b) \$350,000
 - c) \$300,000
 - d) \$210,000

Ans: D

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 8 Explain how the choices of a monopolist or a monopsonist lead to economic inefficiency in a market.

63. Suppose that the perfectly competitive soybean industry in the United States is monopolized. Under perfect competition, the equilibrium price was \$2 and quantity was 100,000. The monopolist raises price to \$5 and restricts quantity to 70,000. Assume that the monopolist is maximizing profits and that the monopolist faces a linear, upward-sloping marginal cost curve that begins at the origin. Also assume that this marginal cost curve is the industry supply curve under perfect competition. What is the loss in consumer surplus that corresponds to dead-weight loss?
- a) \$210,000

- b) \$200,000
- c) \$90,000
- d) \$45,000

Ans: D

Difficulty: Medium

Heading: The Welfare Economics of Monopoly

LO 8 Explain how the choices of a monopolist or a monopsonist lead to economic inefficiency in a market.

64. Economists consider monopolists
- a) to be efficient, since they earn greater profits than perfect competitors.
 - b) to be inefficient since all consumer surplus is transferred to the monopolist in the form of profits.
 - c) to be inefficient since they earn less producers' surplus than all firms taken together in a competitive market.
 - d) to be inefficient since the monopolist restricts output from the competitive level, thus creating dead-weight loss.

Ans: D

Difficulty: Easy

Heading: The Welfare Economics of Monopoly

LO 8 Explain how the choices of a monopolist or a monopsonist lead to economic inefficiency in a market.

65. When comparing a monopoly with a perfectly competitive equilibrium, moving from a situation of perfect competition to monopoly leads to a
- a) deadweight gain.
 - b) deadweight loss.
 - c) net economic benefit.
 - d) welfare improvement.

Ans: B

Difficulty: Easy

Heading: The Welfare Economics of Monopoly

LO 8 Explain how the choices of a monopolist or a monopsonist lead to economic inefficiency in a market.

File: ch12; Chapter 12, Capturing Surplus

Multiple Choice

1. Price discrimination
- a) has been illegal in the United States since 1963.
 - b) is the practice of charging consumers different prices for the same good or service.
 - c) is customarily observed when the sales representative in a store charges each customer what he/she thinks is the highest price the customer will bear.
 - d) is most common in perfectly competitive industries.

Ans: B

Difficulty: Easy

Heading: Capturing Surplus

LO1 Explain how a firm with market power can capture more surplus by engaging in price discrimination.

2. Which of the following statements regarding price discrimination is true?
- a) In order to capture more surplus, the firm must have some market power.
 - b) Third-degree price discrimination is illegal.
 - c) Second-degree price discrimination refers to pricing differently for different market segments.
 - d) First-degree price discrimination is relatively easy to implement.

Ans: A

Difficulty: Easy

Heading: Capturing Surplus

LO1 Explain how a firm with market power can capture more surplus by engaging in price discrimination.

3. What is the difference between uniform pricing and price discrimination?
- a) Uniform pricing and price discrimination are the same.
 - b) With uniform pricing firms charge different prices for the same good or service and with price discrimination firms charge the same price for the same good or service.

- c) With uniform pricing firms charge the same price for the same good or service and with price discrimination the firms charge different prices for the same good or service.
- d) The uniform price is always higher than the discriminated price.

Ans: C

Difficulty: Easy

Heading: Capturing Surplus

LO1 Explain how a firm with market power can capture more surplus by engaging in price discrimination.

4. When a firm engages in _____, every unit of output is sold at the same price; when a firm engages in _____, different consumers are charged different prices for the same good.
- a) arbitrage; uniform pricing
 - b) price discrimination; uniform pricing
 - c) uniform pricing; price discrimination
 - d) surplus capturing; price discrimination

Ans: C

Difficulty: Easy

Heading: Capturing Surplus

LO1 Explain how a firm with market power can capture more surplus by engaging in price discrimination.

5. Which of the following is *not* necessary for a firm to be able to engage in price discrimination?
- a) A firm must have some market power.
 - b) A firm must have some information about its consumers' willingness to pay.
 - c) A firm must be a price-taker.
 - d) A firm must be able to prevent arbitrage.

Ans: C

Difficulty: Easy

Heading: Capturing Surplus

LO1 Explain how a firm with market power can capture more surplus by engaging in price discrimination.

6. The conditions for capturing more surplus from price discrimination include
- a) an ability to determine which groups of people have the greatest wealth.

- b) an ability to differentiate different market segments meaning that some groups of people are willing to pay more for a product than others.
- c) an ability to prevent presales of products.
- d) A perfectly competitive industry structure.

Ans: B

Difficulty: Easy

Heading: Capturing Surplus

LO2 Demonstrate why a firm must have information about reservation prices or elasticities of demand and be able to prevent resale to succeed with price discrimination.

7. Which of the following statements regarding price discrimination is *false*?
- a) In order to capture more surplus, the firm must have some market power.
 - b) The firm must have some information about the different amounts people will pay for the product.
 - c) The firm must be able to prevent resale.
 - d) The firm must be able accurately forecast total sales.

Ans: D

Difficulty: Easy

Heading: Capturing Surplus

LO2 Demonstrate why a firm must have information about reservation prices or elasticities of demand and be able to prevent resale to succeed with price discrimination.

8. An example of first-degree price discrimination would occur
- a) if a sales agent illegally sold a commodity to a federal agent above the competitive market price.
 - b) when you sell something illegally to an individual through the mail.
 - c) if a car salesman could accurately guess the maximum amount each customer would be willing to pay for a vehicle and charge him/her that price.
 - d) when you order 12 of something online and you pay less per unit than if you had bought only one.

Ans: C

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

9. An example of second-degree price discrimination is
- a) when you get an “early bird” discount by eating at a restaurant before 6:00 pm.

- b) when you sell something illegally to an individual through the mail.
- c) when you segment the market and charge individuals of different ages different prices for the same product or service.
- d) when you order 12 of something online and you pay less per unit than if you had bought only one.

Ans: D

Difficulty: Medium

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

10. When a movie theater charges a lower ticket price for senior citizens and/or students, the movie theater is engaging in
- a) price gouging.
 - b) third-degree price discrimination.
 - c) first-degree price discrimination.
 - d) second-degree price discrimination.

Ans: B

Difficulty: Medium

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

11. Some of the theme parks in Orlando, Florida offer lower entry rates or annual passes for Florida residents. Although this is not illegal, it is an example of
- a) price gouging.
 - b) first-degree price discrimination.
 - c) second-degree price discrimination.
 - d) third-degree price discrimination.

Ans: D

Difficulty: Easy

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

12. Which of the following statements regarding a monopoly's first-degree price discrimination is correct?
- a) With first-degree price discrimination, consumer surplus is small, yet still greater than zero.
 - b) With first-degree price discrimination, producer surplus is lower than with uniform pricing.

- c) With first-degree price discrimination, deadweight loss is large.
- d) With first-degree price discrimination, total surplus is greater than when the monopoly charges a uniform price.

Ans: D

Difficulty: Easy

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

13. With second-degree price discrimination
- a) the firm tries to price each unit at the consumer's reservation price.
 - b) the firm offers consumers a quantity discount.
 - c) the firm charges different consumer groups or market segments a different price.
 - d) a buyer can only purchase one product by agreeing to purchase some other product as well.

Ans: B

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

14. With _____, the firm tries to price each unit at the consumer's reservation price while with _____, the firm charges different uniform prices to different consumer groups or market segments.
- a) first-degree price discrimination; third-degree price discrimination.
 - b) first-degree price discrimination; second-degree price discrimination.
 - c) third-degree price discrimination; first-degree price discrimination.
 - d) second-degree price discrimination; first-degree price discrimination.

Ans: A

Difficulty: Easy

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

15. A monopolist faces inverse demand $P = 400 - 4Q^d$ and has constant marginal cost $MC = 80$. If this monopolist engages in first-degree price discrimination, total output will equal
- a) 20 units
 - b) 40 units
 - c) 60 units

- d) 80 units

Ans: D

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

16. A monopolist faces demand $P = 400 - 4Q^d$ and has constant marginal cost $MC = 80$. If this monopolist engages in first-degree price discrimination, consumer surplus will be
- a) 0
 - b) 1,600
 - c) 3,200
 - d) 12,800

Ans: A

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

17. A monopolist faces inverse demand $P = 400 - 4Q^d$ and has constant marginal cost $MC = 80$. If this monopolist engages in first-degree price discrimination, producer surplus will be
- a) 0
 - b) 1,600
 - c) 3,200
 - d) 12,800

Ans: D

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

18. A monopolist faces inverse demand $P = 400 - 4Q^d$ and has constant marginal cost $MC = 80$. If this monopolist changes from a policy of uniform pricing to a policy of first-degree price discrimination, deadweight loss will *decrease* by:
- a) 0
 - b) 1,600
 - c) 3,200
 - d) 12,800

Ans: C

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

19. Suppose that a firm faces a demand curve for its product of $P = 10 - Q^d$. The corresponding marginal revenue curve is $MR = 10 - 2Q$. The firm has a constant marginal cost of \$4 per unit. If the firm engages in uniform pricing, what price will the firm charge?
- a) \$7.
 - b) \$5.
 - c) \$4.
 - d) \$3.

Ans: A

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

20. Suppose that a firm faces a demand curve for its product of $P = 10 - Q^d$. The corresponding marginal revenue curve is $MR = 10 - 2Q$. The firm has a constant marginal cost of \$4 per unit. If the firm engages in first-degree price discrimination, how much producer surplus will it capture?
- a) \$21.
 - b) \$18.
 - c) \$9.
 - d) \$4.50

Ans: B

Difficulty: Medium

Heading: First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

21. Which of the following *is* a real-world example of first-degree price discrimination?
- a) A pizza parlor sells large and small pizzas. Although the large pizzas are twice as big as the small pizzas, they cost less than double the price of a small pizza.
 - b) An electric company sells “blocks” of power at different prices. Specifically, any customer who buys more than Q_1 units of electricity can purchase additional units at a lower block price.

- c) Different prices are charged to different customers at a flea market.
- d) A movie theater charges senior citizens a cheaper price for movie tickets than it charges non-senior citizens for the same movie ticket.

Ans: C

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

22. A block tariff is a form of
- a) first-degree price discrimination
 - b) second-degree price discrimination
 - c) third-degree price discrimination
 - d) tying

Ans: B

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

23. Which of the following is *not* a real-world example of second-degree price discrimination?
- a) A pizza parlor sells large and small pizzas. Although the large pizzas are twice as big as the small pizzas, they cost less than double the price of a small pizza.
 - b) An electric company sells “blocks” of power at different prices. Specifically, any customer who buys more than Q_1 units of electricity can purchase additional units at a lower block price.
 - c) Sam’s Club® warehouses sell bulk quantities of macaroni and cheese for a cheaper per unit price than a grocery store, but the boxes are packaged together so that the customer must buy six boxes at a time.
 - d) A movie theater charges senior citizens a cheaper price for movie tickets than it charges non-senior citizens for the same movie ticket.

Ans: D

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

24. With block pricing the monopolist
- a) charges each consumer her reservation price.

- b) charges each consumer the same price.
- c) sells the first number of units at one price and additional units at a second price.
- d) requires the consumer to purchase minimum quantities.

Ans: C

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

25. Let the inverse demand curve for a monopolist's product be $P = 100 - 2Q$ and the marginal cost of production be constant at $MC = 10$. Suppose that the firm considers moving from a uniform pricing strategy to a two-block tariff where the first block provides 15 units at a price of $P_1 = \$70$ and the second block provides an additional 15 units at a price of $P_2 = \$40$. How much does the monopolist's profit rise with this scheme?
- a) \$225
 - b) \$337.50
 - c) \$450.50
 - d) \$512

Ans: B

Difficulty: Medium

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

26. Let the inverse demand curve for a monopolist's product be $P = 100 - 2Q$ and the marginal cost of production be constant at $MC = 10$. Which of the following is the *optimal* two-block tariff for the firm?
- a) $P_1 = \$70$; $Q_1 = 15$; $P_2 = \$40$; $Q_2 = 30$
 - b) $P_1 = \$60$; $Q_1 = 20$; $P_2 = \$30$; $Q_2 = 15$
 - c) $P_1 = \$80$; $Q_1 = 10$; $P_2 = \$40$; $Q_2 = 15$
 - d) $P_1 = \$55$; $Q_1 = 22.5$; $P_2 = \$55$; $Q_2 = 22.5$

Ans: A

Difficulty: Hard

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

27. An expenditure schedule in which the average outlay changes with the number of units purchased is

- a) Block tariff
- b) Nonlinear outlay schedule
- c) Average expenditure
- d) Usage charges

Ans: B

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

28. Suppose you sign-up for a membership at a video rental store. When you sign-up you are charged a subscription fee, and in addition you will be charged for each video you rent. This is an example of
- a) first-degree price discrimination.
 - b) second-degree price discrimination.
 - c) third-degree price discrimination.
 - d) bundling.

Ans: B

Difficulty: Easy

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

29. All consumers are alike and each has an inverse demand curve for a monopolist's product of $P = 100 - 2Q$. The marginal cost of production is constant at $MC = \$10$. Let the monopolist charge a price of \$10 per unit purchased and a subscription fee of \$2025 that must be paid by each purchaser. What is the amount of consumer's surplus generated by this scheme?
- a) 0
 - b) \$2025
 - c) \$2025 multiplied by the number of consumers in the market.
 - d) \$90 multiplied by the number of units purchased.

Ans: A

Difficulty: Medium

Heading: Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

30. With third-degree price discrimination
- a) the firm tries to price each unit at the consumer's reservation price.

- b) the firm offers consumers a quantity discount.
- c) the firm charges different consumer groups or market segments a different price.
- d) a buyer can only purchase one product by agreeing to purchase some other product as well.

Ans: C

Difficulty: Easy

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

31. During the winter months, the price of natural gas is high. During the summer months, the price of natural gas is low. This could be an example of
- a) first-degree price discrimination.
 - b) second-degree price discrimination.
 - c) third-degree price discrimination.
 - d) bundling.

Ans: C

Difficulty: Easy

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

32. Which of the following is *not* a real-world example of third-degree price discrimination?
- a) A railroad charges more to haul 100 tons of coal than it does to haul 100 tons of grain.
 - b) An airline charges a lower price for a coach ticket purchased four weeks in advance than for the same type of ticket purchased three days in advance.
 - c) A movie theater charges senior citizens a cheaper price for movie tickets than it charges non-senior citizens for the same movie ticket.
 - d) Sam's Club® warehouses sell bulk quantities of macaroni and cheese for a cheaper per unit price than a grocery store, but the boxes are packaged together so that the customer must buy six boxes at a time.

Ans: D

Difficulty: Easy

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

33. With _____ degree price discrimination, the firm identifies different consumer groups or segments in a market and charges each group a different price.

- a) first
- b) second
- c) third
- d) fourth

Ans: C

Difficulty: Easy

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

34. A monopolist faces two consumer groups: old and young. The inverse demand of old clients for the output of the monopolist is $P_o = 100 - 2Q_o$. The inverse demand of young clients for the output of the monopolist is $P_y = 80 - Q_y$. The marginal cost of supplying any type of client is $MC = 10$. If the monopolist can price discriminate between the two groups (i.e., charge a different uniform price to each group), what price will old and young clients be charged?
- a) $P_o = \$45$; $P_y = \$55$
 - b) $P_o = \$55$; $P_y = \$45$
 - c) $P_o = \$50$; $P_y = \$50$
 - d) $P_o = \$40$; $P_y = \$60$

Ans: B

Difficulty: Medium

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

35. Let a monopolist face consumer group A with inverse demand $P_A = 100 - 2Q_A$ and consumer group B with inverse demand $P_B = 80 - Q_B$. The monopolist can conduct third degree price discrimination, but faces a capacity constraint that $Q_A + Q_B \leq 100$. What will be the amount supplied to each of the customer groups?
- a) $Q_A = 50$; $Q_B = 50$.
 - b) $Q_A = 60$; $Q_B = 40$.
 - c) $Q_A = 33.67$; $Q_B = 66.33$
 - d) $Q_A = 36.67$; $Q_B = 63.33$

Ans: D

Difficulty: Hard

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

36. Which of the following statements is not correct regarding a “damaged goods strategy”?
- a) A damaged good strategy is an example of “versioning”.
 - b) A damaged good strategy can be an example of third-degree price discrimination.
 - c) A damaged good strategy can be an example of “building fences”.
 - d) A damaged good strategy is generally less profitable than a uniform pricing strategy for a high quality product.

Ans: D

Difficulty: Medium

Heading: Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

37. With _____ degree price discrimination, the firm tries to price each unit at the consumer’s reservation price.
- a) first
 - b) second
 - c) third
 - d) fourth

Ans: A

Difficulty: Easy

Heading: 12.2 First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

38. With first-degree price discrimination, the marginal revenue curve
- a) is below the demand curve, with slope equal to twice the slope of demand.
 - b) is above the demand curve.
 - c) is the same as the demand curve.
 - d) is below the demand curve, with slope equal to one-half the slope of demand.

Ans: C

Difficulty: Easy

Heading: 12.2 First-Degree Price Discrimination: Making the Most from Each Consumer

LO3 Analyze three types (degrees) of price discrimination.

39. Identify the truthfulness of the following statements.
- I. If a seller engages in second-degree price discrimination, the seller captures more producer surplus than with uniform pricing.
 - II. The seller captures the maximum producer surplus by engaging in block pricing.
 - a) Both I and II are true.

- b) Both I and II are false.
- c) I is true; II is false.
- d) I is false; II is true.

Ans: C

Difficulty: Medium

Heading: 12.3 Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

40. Let the inverse demand curve for a monopolist's product be $P = 100 - 2Q$ and the marginal cost of production be constant at $MC = 10$. Suppose that the firm considers moving from a uniform pricing strategy to a two-block tariff where the first block provides 15 units at a price of $P_1 = \$70$ and the second block provides an additional 15 units at a price of $P_2 = \$40$. What is the average outlay schedule for the consumer?

- a) $\frac{E}{Q} = \$70$ if $Q \leq 15$ and $\frac{E}{Q} = 70 - 450/Q$ if $Q > 15$
- b) $\frac{E}{Q} = \$70$ if $Q \leq 15$ and $\frac{E}{Q} = 40 + 450/Q$ if $Q > 15$
- c) $\frac{E}{Q} = \$70$ if $Q \leq 15$ and $\frac{E}{Q} = 40$ if $Q > 15$
- d) $\frac{E}{Q} = \$70$ if $Q \leq 15$ and $\frac{E}{Q} = 70 - 40/Q$ if $Q > 15$
- e)

Ans: B

Difficulty: Hard

Heading: 12.3 Second-Degree Price Discrimination: Quantity Discounts

LO3 Analyze three types (degrees) of price discrimination.

41. Electricity prices may be an example of _____ as it often varies by the time of day, generally being set higher when demand is at its peak
- a) Intertemporal price discrimination
 - b) Tie-in-sales
 - c) First degree discrimination
 - d) Second degree discrimination

Ans: A

Difficulty: Easy

Heading: 12.4 Third-Degree Price Discrimination: Different Prices for Different Market Segments

LO3 Analyze three types (degrees) of price discrimination.

42. With tying
- a) the firm tries to price each unit at the consumer's reservation price.
 - b) the firm offers consumers a quantity discount.
 - c) the firm charges different consumer groups or market segments a different price.
 - d) a buyer can only purchase one product by agreeing to purchase some other product as well.

Ans: D

Difficulty: Easy

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

43. Which of the following is a real-world example of tying?
- a) A movie theater charges senior citizens a cheaper price for movie tickets than it charges non-senior citizens for the same movie ticket.
 - b) Sam's Club® warehouses sell bulk quantities of macaroni and cheese for a cheaper per unit price than a grocery store, but the boxes are packaged together so that the customer must buy six boxes at a time.
 - c) An airline charges more for a first-class ticket than for a coach ticket.
 - d) The manufacturer of an instant-prints camera is the only manufacturer of the film that the camera uses.

Ans: D

Difficulty: Easy

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

44. Bundling can increase the seller's profits when customers have different _____ for the two products and when the firm _____.
- a) supply curves; captures surplus.
 - b) supply curves; cannot price discriminate.
 - c) tastes; cannot price discriminate.
 - d) tastes; can price discriminate.

Ans: C

Difficulty: Easy

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

45. Bundling is a form of
- a) first-degree price discrimination.
 - b) second-degree price discrimination.
 - c) third-degree price discrimination.
 - d) tying.

Ans: D

Difficulty: Easy

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

**Reference: Use the following table to answer the next three questions (46-48).

Customer	Product A Reservation Price	Product B Reservation Price
1	1,000	200
2	800	400
Marginal Cost	500	100

46. *If the firm does not bundle the products, what single price should the firm charge for product A to maximize profit?
- a) 500
 - b) 800
 - c) 900
 - d) 1,000

Ans: B

Difficulty: Medium

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

47. *If the firm does not bundle the products, what single price should the firm charge for product B to maximize profit?
- a) 100

- b) 200
- c) 300
- d) 400

Ans: D

Difficulty: Medium

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

48. *If the firm bundles the products, what single price should the firm charge for the bundle to maximize profit?
- a) 600
 - b) 800
 - c) 1,000
 - d) 1,200

Ans: D

Difficulty: Medium

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

49. A computer manufacturer sells computers and monitors separately. This manufacturer also allows consumers to choose any type of computer and any type of monitor and sells the two components as a package. This manufacturer is engaging in a _____ pricing strategy.
- a) tying
 - b) third-degree
 - c) mixed bundling
 - d) first-degree

Ans: C

Difficulty: Easy

Heading: Tying (Tie-in Sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

50. Bundling, in economic terms, is demonstrated by which of the following statements?

- a) Homemakers in the upper Midwest typically buy all of their families' winter clothing at the same time.
- b) When an economics professor assigns numerous readings to a class, he/she is practicing bundling.
- c) When you purchase a personal computer, it generally is already loaded with software and comes with a monitor, keyboard and mouse.
- d) Performing multiple tasks simultaneously in a work environment is an example of bundling.

Ans: C

Difficulty: Easy

Heading: Tying (tie-in sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

51. Mixed bundling is sometimes the most profitable strategy for a firm
- a) because the firm can more accurately assess the reservation price of each consumer.
 - b) because consumers prefer to spend in binges and make multiple purchases at the same time.
 - c) when the firm has high delivery or shipping costs.
 - d) because this strategy discourages a customer from buying a component when his/her willingness to pay is less than the marginal cost of a component of the purchase.

Ans: D

Difficulty: Hard

Heading: Tying (tie-in sales)

LO5 Show how a firm can capture more surplus if it bundles two related products together and sells them as a package.

52. The firm's use of advertising is motivated
- a) by its desire to capture more surplus through shifting the demand curve to the right for its products.
 - b) by a desire to position itself in the marketplace as a monopolist.
 - c) through media manipulation and really is not cost effective.
 - d) only when the firm is in a perfectly competitive industry.

Ans: A

Difficulty: Medium

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

53. Advertising is an example of a firm's
- a) revenue-maximization strategy.
 - b) pricing strategy.
 - c) non-pricing strategy.
 - d) price-discrimination strategy.

Ans: C

Difficulty: Easy

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

54. The reason that profit-maximizing firms willingly incur the added expense of advertising is that they hope that successful advertising will increase profits by
- a) increasing average costs.
 - b) increasing marginal costs.
 - c) increasing supply.
 - d) increasing demand.

Ans: D

Difficulty: Easy

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

55. Suppose you own a business and your own price elasticity is -2 . In addition, suppose your advertising elasticity of demand is 0.50 . If your marginal cost per unit is \$4, what is your optimal advertising-to-sales ratio?
- a) 0.25
 - b) 0.375
 - c) 0.625
 - d) 1.25

Ans: A

Difficulty: Medium

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

56. You own a small bookstore. You have hired a marketing firm to calculate your own price elasticity of demand and your advertising elasticity of demand. The firm has provided you with the relevant numbers regardless of minor adjustments in price or advertising budget. Your own price elasticity of demand is around -1.7 , and your advertising elasticity of demand is around 0.05 . Interpret the advertising elasticity of demand.
- a) A one-percent increase in advertising expenditures will stimulate demand by about five-hundredths of one percent.
 - b) A one-percent increase in advertising expenditures will stimulate demand by about five-tenths of one percent.
 - c) A one-percent increase in advertising expenditures will stimulate demand by about five percent.
 - d) A one-percent increase in advertising expenditures will stimulate demand by about one-fifth of one percent

Ans: A

Difficulty: Medium

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

57. You own a small bookstore. You have hired a marketing firm to calculate your own price elasticity of demand and your advertising elasticity of demand. The firm has provided you with the relevant numbers regardless of minor adjustments in price or advertising budget. Your own price elasticity of demand is around -1.7 , and your advertising elasticity of demand is around 0.05 . How much should you mark-up your price over your marginal cost for your books?
- a) By approximately a factor of 0.41 .
 - b) By approximately a factor of 2.43 .
 - c) By approximately a factor of 37 percent.
 - d) By approximately a factor of 70 percent.

Ans: B

Difficulty: Medium

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

58. You own a small bookstore. You have hired a marketing firm to calculate your own price elasticity of demand and your advertising elasticity of demand. The firm has provided you with the relevant numbers regardless of minor adjustments in price or advertising budget. Your own price elasticity of demand is around -1.7 , and your advertising elasticity of demand is around 0.05 . What should your approximate advertising-to-sales ratio be?
- a) $\frac{1}{2}$ of 1 percent.
 - b) 1 percent.
 - c) 3 percent.
 - d) 34 percent.

Ans: C

Difficulty: Medium

Heading: Advertising

LO 6 Explain how a firm can use advertising, a form of nonprice competition, to create and capture surplus.

File: ch13, Chapter 13: Market Structure and Competition

Multiple Choice

1. All of the following statements are true except:
- a) Perfect competition can only exist in industries with a large number of firms.
 - b) A monopoly market structure cannot exist in an industry with an undifferentiated product.
 - c) Monopolistic competition implies that each firm has some ability to differentiate its product.
 - d) Oligopoly can exist in industries with differentiated and undifferentiated products.

Ans: B

Difficulty: Easy

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

2. Perfect competition
- a) in its purest form is probably difficult to observe in the real world because even such factors as location can lead to some market power.
 - b) is only observed where there are some barriers to entry in the industry.
 - c) requires each of the few firms in the industry to behave in the same profit-maximizing fashion.
 - d) only exists in differentiated product markets

Ans: A

Difficulty: Medium

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

3. A differentiated products oligopoly market consists of
- a) only a few firms producing similar, but differentiated products.
 - b) only a few firms producing the same products.
 - c) many firms producing differentiated products.
 - d) a single, large firm producing differentiated products.

Ans: A

Difficulty: Easy

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

4. If the modeling agents industry were characterized by only a few firms that represented models and handled their bookings, the industry could be characterized as
- a) an oligopoly with homogeneous products.
 - b) an oligopoly with differentiated products.
 - c) a dominant firm industry.
 - d) monopolistic competition.

Ans: A

Difficulty: Medium

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

5. Market structures differ on two important dimensions:
- a) price discrimination and product differentiation.
 - b) number of sellers and product differentiation.
 - c) surplus maximization and number of sellers
 - d) price discrimination and surplus maximization

Ans: B

Difficulty: Easy

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

6. When one firm possesses a large share of the market but competes against numerous small firms each offering identical products, such markets are called
- a) Oligopoly markets
 - b) Dominant firm markets
 - c) Differentiated markets
 - d) Homogenous product markets

Ans: B

Difficulty: Easy

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

7. A monopolistically competitive market consists of _____ firms selling _____ to many buyers.
- a) a small number; differentiated products
 - b) many; differentiated products
 - c) many; identical products
 - d) a small number; identical products

Ans: B

Difficulty: Easy

Heading: Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

8. A differentiated-products oligopoly market consists of _____ selling differentiated product that are _____ for each other.
- a) two firms; complements
 - b) fewer than five firms; substitutes
 - c) a small number of firms; complements
 - d) a small number of firms; substitutes

Ans: D

Difficulty: Easy

Heading: 13.1 Describing and Measuring Market Structure

LO1 Describe the conditions that characterize different types of market structures.

9. The Cournot reaction function
- a) maps out the best response a firm could take for each possible action of the rival firm.
 - b) maps out how firms work together to maximize profits.
 - c) is most applicable to monopoly markets.
 - d) shows how each firm makes its profit-maximizing decision while considering the entire market demand, the same as a monopolist.

Ans: A

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO2 Find the reaction function.

10. In the Cournot model, the curve that traces out the relationship between the market price and a firm's quantity when rival firms hold their outputs fixed is called _____
- a) Reaction function

- b) Best response
- c) Residual demand curve
- d) Cournot equilibrium

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO2 Find the reaction function.

11. In the Cournot model, the firm chooses
- a) its optimal price, holding the price of its competitors constant.
 - b) its best response to the price changes of the competitor firm.
 - c) its optimal level of output, holding the output of the other firm constant.
 - d) the level of output that would optimize profits for all firms.

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

12. In the Cournot model of oligopoly,
- a) each firm chooses simultaneously and non-cooperatively how much to produce to maximize its own profit.
 - b) each firm chooses simultaneously and non-cooperatively its own product's price to maximize its own profit.
 - c) one firm acts as a quantity leader, choosing its quantity first, while all other firms act as followers, choosing their quantities second and in reaction to the first.
 - d) each firm makes its profit-maximizing decision while considering the entire market demand, the same as a monopolist.

Ans: A

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

13. In a Cournot duopoly, a residual demand curve
- a) is the same as a market demand curve.
 - b) represents the demand curve that one firm faces given the output choice of the other firm.

- c) is the same as a marginal revenue curve when determining output in the Cournot model.
- d) is steeper than the market demand curve.

Ans: B

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

14. Suppose that firms A and B are Cournot duopolists in the computer industry. Firm A's best response function
- a) lists firm B's profit-maximizing choice of output given any level of output by firm A.
 - b) lists firm A's profit-maximizing choice of output given any level of output by firm B.
 - c) lists firm B's profit-maximizing choice of price given any level of price by firm A.
 - d) lists firm B's profit-maximizing choice of price given any level of price by firm B.

Ans: B

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

15. Suppose that firms A and B are Cournot duopolists in the salt industry. The market demand curve can be specified as $P = 200 - Q_A - Q_B$. The marginal cost to each firm is \$40. What is firm B's profit-maximizing quantity when firm A produces an arbitrary output Q_A ?
- a) $Q_B = 160 - Q_A$.
 - b) $Q_B = 160 - 2Q_A$.
 - c) $Q_B = 80 - Q_A$.
 - d) $Q_B = 80 - \frac{1}{2}Q_A$.

Ans: D

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

16. Suppose the market demand curve is given by $P = 100 - 2Q$. If one Cournot duopolist produces $Q_1 = 10$, the residual demand curve faced by the other Cournot duopolist is
- a) $P = 90 - 2Q_2$.
 - b) $P = 80 - 2Q_2$.
 - c) $Q_2 = 80 - P$.
 - d) $Q_2 = 80 - 2P$.

Ans: B

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

17. Suppose in a Cournot duopoly that two firms, Firm 1 and Firm 2, face market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. Firm 1's reaction function can be written as
- a) $Q_1 = 45 - 0.5Q_2$
 - b) $Q_1 = 25 - 0.5Q_2$
 - c) $Q_1 = 15 - 0.5Q_2$
 - d) $Q_1 = 10 - 0.5Q_2$

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

18. Suppose in a Cournot duopoly that two firms, Firm 1 and Firm 2, face market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. The equilibrium output for each firm will be
- a) $Q_1 = Q_2 = 7.5$
 - b) $Q_1 = Q_2 = 10$
 - c) $Q_1 = Q_2 = 15$
 - d) $Q_1 = Q_2 = 20$

Ans: B

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

19. Suppose in a Cournot duopoly that two firms, Firm 1 and Firm 2, face market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. The equilibrium price in this market will be
- a) $P = 10$
 - b) $P = 20$
 - c) $P = 30$
 - d) $P = 40$

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

20. Identify the truthfulness of the following statements.
- I. Cournot firms do not attain the monopoly or collusive equilibrium.
 - II. The equilibrium output in a Cournot oligopoly market does not maximize industry profit.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

21. Identify the truthfulness of the following statements.
- I. As the number of firms in an industry exhibiting Cournot competition increases, the greater the Cournot equilibrium diverges from the collusive outcome.
 - II. As the number of firms in an industry exhibiting Cournot competition increases, the market price increases.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

22. A Cournot oligopoly has 19 firms, and inverse market demand $P = 60 - Q$. All firms have marginal cost, $MC = \$20$. The equilibrium output for each firm will be
- a) 1 unit
 - b) 2 units
 - c) 3 units
 - d) 4 units

Ans: B

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

23. A Cournot oligopoly has 19 firms, and inverse market demand $P = 60 - Q$. All firms have marginal cost, $MC = \$20$. The equilibrium price in this market will be
- a) \$20.50
 - b) \$22
 - c) \$33.33
 - d) \$40.15

Ans: B

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

24. A Cournot oligopoly has 2 firms, and inverse market demand $P = 60 - Q$. All firms have marginal cost, $MC = \$20$. The equilibrium price in this market will be
- a) \$20.50
 - b) \$22
 - c) \$33.33
 - d) \$40.15

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

25. The percentage contribution margin (PCM) for each firm in a Cournot equilibrium can be calculated using the following formula:

- a) $\frac{P - MC}{P} = \frac{1}{N} \frac{1}{\epsilon_{Q,P}}$
- b) $\frac{P - MC}{P} = \frac{1}{N} \epsilon_{Q,P}$
- c) $\frac{P - MC}{P} = \frac{1}{N} \frac{1}{\epsilon_{Q,P}}$
- d) $\frac{P - MC}{P} = \frac{N}{N+1} \frac{1}{\epsilon_{Q,P}}$

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

26. Suppose that firms A and B are Cournot duopolists in the salt industry. The market demand curve can be specified as $P = 200 - Q_A - Q_B$. The marginal cost to each firm is \$40. Suppose that firm A is producing 100 units. What is firm B's profit-maximizing quantity?
- a) 100.
- b) 60.
- c) 30.
- d) 20.

Ans: C

Difficulty: Medium

Heading: 13.2 Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

27. Suppose in a Cournot duopoly that two firms, Firm 1 and Firm 2, face market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. The equilibrium industry profits in this market will be
- a) 150
- b) 200
- c) 250
- d) 300

Ans: B

Difficulty: Medium

Heading: 13.2 Oligopoly with Homogeneous Products

LO4 Compute the equilibrium in the Cournot model of oligopoly and illustrate it graphically.

28. In a Bertrand oligopoly,
- a) each firm chooses simultaneously and non-cooperatively how much to produce to maximize its own profit.
 - b) each firm chooses simultaneously and non-cooperatively its own product's price to maximize its own profit.
 - c) one firm acts as a quantity leader, choosing its quantity first, while all other firms act as followers, choosing their quantities second and in reaction to the leader.
 - d) each firm makes its profit-maximizing decision while considering the entire market demand, the same as a monopolist.

Ans: B

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO5 Explain how and why the Cournot equilibrium differs from a Bertrand equilibrium.

29. Bertrand duopolists, Firm 1 and Firm 2, face inverse market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. The equilibrium output this market will be
- a) 15
 - b) 20
 - c) 30
 - d) 40

Ans: C

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO5 Explain how and why the Cournot equilibrium differs from a Bertrand equilibrium.

30. Bertrand duopolists, Firm 1 and Firm 2, face inverse market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. The equilibrium industry profits this market will be
- a) 0
 - b) 10
 - c) 50
 - d) 90

Ans: A

Difficulty: Medium

Heading: Oligopoly with Homogeneous Products

LO5 Explain how and why the Cournot equilibrium differs from a Bertrand equilibrium.

31. Identify the truthfulness of the following statements.
- I. Cournot competitors behave less aggressively than Bertrand competitors because a Cournot firm cannot expect to “steal” customers from a rival whereas a Bertrand firm can.
 - II. Two firms are enough to replicate perfectly competitive outcomes in a Bertrand market, whereas a Cournot market only approaches perfectly competitive outcomes when the number of competitors becomes large.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO5 Explain how and why the Cournot equilibrium differs from a Bertrand equilibrium.

32. Bertrand duopolists, Firm 1 and Firm 2, face inverse market demand $P = 50 - Q$. Both have marginal cost, $MC = \$20$. The equilibrium price in the market will be
- a) \$10
 - b) \$20
 - c) \$30
 - d) \$40

Ans: B

Difficulty: Medium

Heading: 13.2 Oligopoly with Homogeneous Products

LO5 Explain how and why the Cournot equilibrium differs from a Bertrand equilibrium.

33. In a Stackelberg oligopoly,
- a) each firm chooses simultaneously and non-cooperatively how much to produce to maximize its own profit.
 - b) each firm chooses simultaneously and non-cooperatively its own product's price to maximize its own profit.
 - c) one firm acts as a quantity leader, choosing its quantity first, while all other firms act as followers, choosing their quantities second and in reaction to the leader.
 - d) each firm makes its profit-maximizing decision while considering the entire market demand, the same as a monopolist.

Ans: C

Difficulty: Easy

Heading: Oligopoly with Homogeneous Products

LO6 Find the Stackelberg equilibrium.

34. Stackelberg duopolists, Firm 1 and Firm 2, face inverse market demand $P = 50 - Q$. Both have marginal cost, $MC = \$20$. If the follower takes the leader's output as fixed at Q_1 , what is the equation of its reaction function?
- a) $30 - Q_1 = Q_2$
 - b) $15 - Q_1 = Q_2$
 - c) $15 - 2Q_1 = Q_2$
 - d) $15 - Q_1 / 2 = Q_2$

Ans: D

Difficulty: Hard

Heading: Oligopoly with Homogeneous Products

LO6 Find the Stackelberg equilibrium.

35. Stackelberg duopolists, Firm 1 and Firm 2, face inverse market demand $P = 50 - Q$. Both have marginal cost, $MC = \$20$. Let firm 2, the follower, set its output according to the formula $Q_2 = 15 - Q_1 / 2$. Which of the following outputs maximizes the leader's profit?
- a) $Q_1 = 7.5$
 - b) $Q_1 = 10$
 - c) $Q_1 = 15$
 - d) $Q_1 = 20$

Ans: C

Difficulty: Hard

Heading: Oligopoly with Homogeneous Products

LO6 Find the Stackelberg equilibrium.

36. Stackelberg duopolists, Firm 1 and Firm 2, face inverse market demand $P = 50 - Q$. Both have marginal cost, $MC = \$20$. Firm 1 produces output $Q_1 = 15$ and Firm 2 produces output $Q_2 = 7.5$. What is the price level in this market and what is the level of industry profits (i.e., the sum of Firm 1 and Firm 2's profits)?
- a) $P = 27.5$; industry profits = 168.75
 - b) $P = 30$; industry profits = 172.6
 - c) $P = 32.5$; industry profits = 180
 - d) $P = 34$; industry profits = 184.2

Ans: A

Difficulty: Hard

Heading: Oligopoly with Homogeneous Products

LO6 Find the Stackelberg equilibrium.

37. In a dominant firm market,
- a) one firm possesses a large share of the market but competes against numerous small firms, each offering identical products.
 - b) one firm possesses a large share of the market but competes against a small number of other firms, each offering differentiated products.
 - c) a small number of firms possess a large share of the market but compete against numerous small firms, each offering a differentiated product.
 - d) a small number of firms possess a large share of the market but compete against numerous small firms, each offering an identical product.

Ans: A

Difficulty: Easy

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

38. In a dominant firm market, the dominant firm chooses its output level by
- a) setting price equal to marginal cost.
 - b) setting marginal revenue from the market demand curve equal to marginal cost.
 - c) setting marginal revenue from its residual demand curve equal to marginal cost.
 - d) identifying first a profit-maximizing price for its product subject to the price being charged by the competitive fringe.

Ans: C

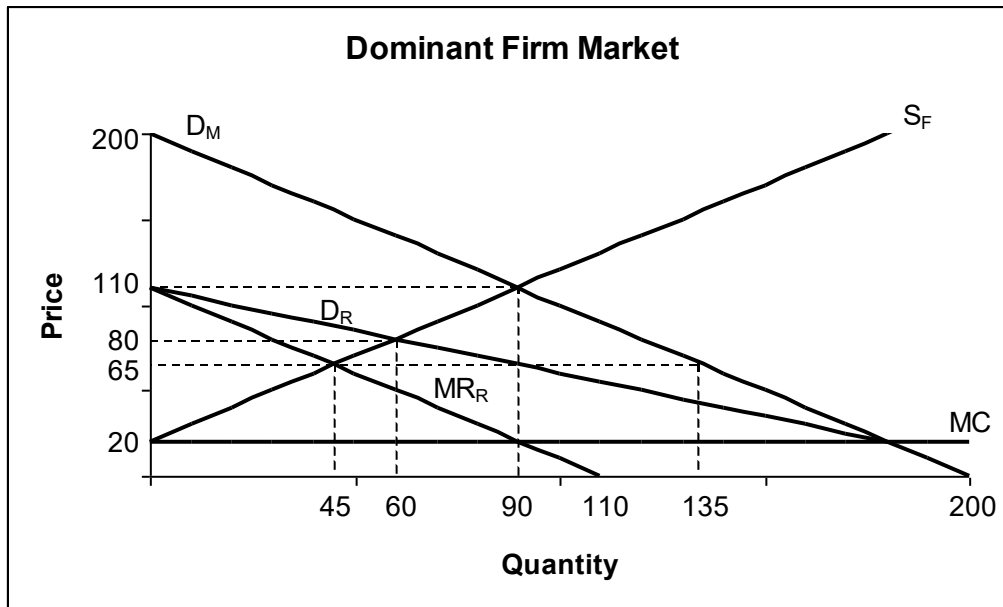
Difficulty: Easy

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

****Reference:** Use the following diagram depicting a dominant firm market to answer the next five questions (39-43).

D_M represents market demand, S_F represents the fringe supply curve, D_R represents the dominant firm's residual demand curve, MR_R represents the dominant firm's marginal revenue curve, and MC represents the dominant firm's marginal cost curve.



39. *In equilibrium, how many units will the fringe producers supply?
- 45 units
 - 60 units
 - 90 units
 - 135 units

Ans: A

Difficulty: Medium

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

40. *In equilibrium, how many units will the dominant firm supply?
- 45 units
 - 60 units
 - 90 units
 - 135 units

Ans: C

Difficulty: Medium

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

41. *In equilibrium, what will the market price be?

- a) \$20
- b) \$65
- c) \$80
- d) \$110

Ans: B

Difficulty: Medium

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

42. *In equilibrium, what will the dominant firm's profit be?
- a) \$8,100
 - b) \$2,025
 - c) \$4,050
 - d) \$3,600

Ans: C

Difficulty: Medium

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

43. *In equilibrium, what will consumer surplus be?
- a) \$8,100
 - b) \$9112.5
 - c) \$9,600
 - d) \$1,250

Ans: B

Difficulty: Medium

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

44. If a dominant firm follows a strategy of limit pricing, this firm charges a price _____ the current profit-maximizing level in order to _____.
- a) equal to; maximize profits.
 - b) below; reduce the rate of expansion by the fringe.
 - c) above; drive out the fringe.
 - d) below; limit dominant firm's marginal cost.

Ans: B

Difficulty: Easy

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

45. Which of the following is *false* regarding the practice of limit pricing by a dominant firm?
- a) Limit pricing is a strategy to keep price below the level that maximizes profit to reduce the number of firms entering the fringe.
 - b) Limit pricing is a strategy that sacrifices current profits to maintain higher future profits.
 - c) Limit pricing is most appealing when the dominant firm has a cost advantage over the fringe firms.
 - d) Limit pricing is most attractive to a dominant firm that is more interested in current profits than future profits.

Ans: D

Difficulty: Easy

Heading: Dominant Firm Markets

LO7 Compute the equilibrium in the dominant firm model and illustrate it graphically.

46. Horizontal differentiation occurs when
- a) one product is always considered superior to the other across a broad spectrum of consumers.
 - b) some consumers consider a company's product or group of products to be superior to another company's product or group of products, but not all consumers have the same viewpoint.
 - c) an inventor in the telecom industry comes up with a completely new and innovative product.
 - d) the demand curve is horizontal in an oligopolistic industry.

Ans: B

Difficulty: Medium

Heading: Oligopoly with Horizontally Differentiated Products

LO8 Differentiate between horizontal product differentiation and vertical product differentiation.

47. _____ differentiation is concerned with product quality (inferiority or superiority), whereas _____ differentiation is concerned with product substitutability.
- a) Horizontal; vertical
 - b) Vertical; horizontal

- c) Generic; vertical
- d) Vertical; oligopoly

Ans: B

Difficulty: Easy

Heading: Oligopoly with Horizontally Differentiated Products

LO8 Differentiate between horizontal product differentiation and vertical product differentiation.

48. Which of the following is an example of horizontally differentiated products?
- a) Product A, which everyone agrees is superior to Product B.
 - b) Product C, which everyone agrees is worse than Product D.
 - c) Product E, which some believe is better than Product F (while others believe Product F is better than Product E).
 - d) Product G, which everyone agrees is the same quality as product H.

Ans: C

Difficulty: Easy

Heading: Oligopoly with Horizontally Differentiated Products

LO8 Differentiate between horizontal product differentiation and vertical product differentiation.

49. Which of the following is true in markets with horizontally differentiated products?
- a) Bertrand competitors will generally earn zero profits in equilibrium.
 - b) Firms always act as monopolists when products are horizontally differentiated.
 - c) IEPR does not apply to markets with horizontal product differentiation.
 - d) Bertrand competitors will generally earn positive profits in equilibrium.

Ans: D

Difficulty: Medium

Heading: Oligopoly with Horizontally Differentiated Products

LO10 Compute the Bertrand equilibrium in a differentiated product oligopoly and illustrate it graphically.

50. Let firm A face demand curve $Q_A = 100 - P_A + .5P_B$ and firm B face demand curve $Q_B = 100 - P_B + .5P_A$. Products A and B both have constant marginal cost of production of 10 per unit (and no fixed cost). Each firm acts as a Bertrand competitor. What is firm B's profit-maximizing price when firm A sets a price of \$70 for its good?
- a) \$70
 - b) \$72.5
 - c) \$74
 - d) \$76.5

Ans: B

Difficulty: Hard

Heading: Oligopoly with Horizontally Differentiated Products

LO10 Compute the Bertrand equilibrium in a differentiated product oligopoly and illustrate it graphically.

51. Let firm A face demand curve $Q_A = 100 - P_A + .5P_B$ and firm B face demand curve $Q_B = 100 - P_B + .5P_A$. Products A and B both have constant marginal cost of production of 10 per unit (and no fixed cost). Each firm acts as a Bertrand competitor. What is the equation of firm B's (price) reaction function?
- a) $P_B = 50 - .5P_A$
 - b) $P_B = 55 - .25P_A$
 - c) $P_B = 55 + .25P_A$
 - d) $P_B = 50 + .5P_A$

Ans: C

Difficulty: Hard

Heading: Oligopoly with Horizontally Differentiated Products

LO10 Compute the Bertrand equilibrium in a differentiated product oligopoly and illustrate it graphically.

52. Let firm A face demand curve $Q_A = 100 - P_A + .5P_B$ and firm B face demand curve $Q_B = 100 - P_B + .5P_A$. Products A and B both have constant marginal cost of production of 10 per unit (and no fixed cost). Each firm acts as a Bertrand competitor. What are the Bertrand Equilibrium prices in this market?
- a) $P_B = 72.5; P_A = 70$
 - b) $P_B = P_A = 73.33$
 - c) $P_B = 74; P_A = 87$
 - d) $P_B = P_A = 74$

Ans: B

Difficulty: Hard

Heading: 13.4 Oligopoly with Horizontally Differentiated Products

LO10 Compute the Bertrand equilibrium in a differentiated product oligopoly and illustrate it graphically.

53. In the long run under monopolistic competition, profits will always be
- a) zero.
 - b) the industry average rate of return.

- c) positive.
- d) positive or zero, but never negative.

Ans: A

Difficulty: Easy

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

54. Under monopolistic competition, the firm optimizes

- a) by setting $MC = MR = P$.
- b) by setting $MC = MR$, but $P > MC$.
- c) by setting MC greater than MR .
- d) by setting $MC = MR$, but $P < MC$.

Ans: B

Difficulty: Medium

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

55. What of the following is completely true in long run, monopolistically competitive equilibrium?

- a) the slope of the demand and average cost curves are the same, $P = MC$, and $MC = MR$.
- b) the slope of the demand and average cost curves are negative, $P > MC$, and $MC > MR$
- c) the slope of the demand and average cost curves are positive, $P > MC$, and $MC = MR$
- d) the slope of the demand and average cost curves are the same, $P > MC$, and $MC = MR$.

Ans: D

Difficulty: Hard

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

56. Which of the following is a real-world example of a monopolistically competitive industry?

- a) The soft-drink industry.
- b) The breakfast cereal industry.
- c) The semiconductor industry.
- d) The Chicago restaurant industry.

Ans: D

Difficulty: Easy

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

57. Which of the following is *not* a characteristic of monopolistic competition?

- a) The market is fragmented.
- b) There is free entry and exit.
- c) In the long-run equilibrium, firms earn positive profits.
- d) Firms produce horizontally differentiated products.

Ans: C

Difficulty: Easy

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

58. For an individual firm operating in a monopolistically competitive industry, the firm _____ earn short-run economic profits and _____ earn long-run economic profits.

- a) can; can.
- b) cannot; cannot
- c) can; cannot
- d) cannot; can

Ans: C

Difficulty: Easy

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

59. In the long-run equilibrium in a monopolistically competitive industry, economic profits are _____ due to _____.

- a) positive; free entry into the industry.
- b) zero; monopoly power.

- c) positive; barriers to entry into the industry.
- d) zero; free entry into the industry.

Ans: D

Difficulty: Easy

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

60. In the short-run equilibrium in a monopolistically competitive industry, a firm's marginal cost is equal to its _____ but in the long run equilibrium, a firm's average cost is equal to its _____.
- a) price; demand.
 - b) average cost; price.
 - c) marginal revenue; marginal cost.
 - d) marginal revenue; price.

Ans: D

Difficulty: Easy

Heading: Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

61. Which of the following is a distinguishing feature of a monopolistically competitive market?
- a) A small number of buyers and sellers.
 - b) Barriers to entry and exit.
 - c) Firms produce differentiated products.
 - d) Firms set prices cooperatively.

Ans: C

Difficulty: Easy

Heading: 13.5 Monopolistic Competition

LO11 Illustrate graphically the short-run and long-run equilibrium in a monopolistically competitive industry.

File: ch14, Chapter 14: Game Theory and Strategic Behavior

Multiple Choice

1. Game theory refers to
- a) a plan for the actions that a player in a game will take under every conceivable circumstance that the player might face.
 - b) a situation in which each player chooses the strategy that yields the highest payoff, given the strategy chosen by the other players.
 - c) optimal decision making by microeconomic agents.
 - d) the branch of microeconomics concerned with the analysis of optimal decision making in competitive situations.

Ans: D

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO1 Explain the roles of strategies and payoffs in a game.

2. A dominant strategy
- a) is a strong strategy.
 - b) guarantees a Nash equilibrium.
 - c) is a strategy that is better for a player than any other the player might choose, regardless of the other player's strategy.
 - d) depends on the other player's strategy.

Ans: C

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

3. Player A has a dominated strategy
- a) when Player A has a dominant strategy.
 - b) in a game of chicken
 - c) when Player A has another strategy that gives a higher payoff regardless of what Player B does.
 - d) when there are less than three players per game.

Ans: C

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

4. Under a mixed strategy,
- a) players move sequentially.
 - b) a player chooses among two or more pure strategies according to pre-specified probabilities.
 - c) the players may never reach a Nash equilibrium.
 - d) players obtain lower payoffs than in a pure strategy equilibrium.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO3 Explain the difference between a pure strategy and a mixed strategy.

5. Pure strategy
- a) is a specific choice of a strategy from the player's possible strategies in the game, whereas a mixed strategy is a choice between quantity and price optimization.
 - b) is a specific choice of a strategy outside of the player's possible strategies in the game, whereas a mixed strategy is a choice among two or more pure strategies according to pre-specified probabilities.
 - c) is a specific choice of a strategy outside of the player's possible strategies in the game, whereas a mixed strategy is a choice between quantity and price optimization.
 - d) is a specific choice of a strategy from the player's possible strategies in the game, whereas a mixed strategy is a choice among two or more pure strategies according to pre-specified probabilities.

Ans: D

Difficulty: Hard

Heading: The Concept of Nash Equilibrium

LO3 Explain the difference between a pure strategy and a mixed strategy.

6. In a simultaneous move game with two players,
- a) if neither player has a dominant strategy, we successively eliminate each player's subordinate strategy.
 - b) a player chooses among two or more pure strategies according to pre-specified probabilities.

- c) if one player has a dominant strategy and the other doesn't, you can't reach a Nash equilibrium.
- d) if both players have a dominant strategy, these constitute their Nash equilibrium strategies.

Ans: D

Difficulty: Hard

Heading: The Concept of Nash Equilibrium

LO3 Explain the difference between a pure strategy and a mixed strategy.

7. A prisoners' dilemma game illustrates the conflict between
- a) law enforcement and criminals.
 - b) the judicial system and the police system.
 - c) law and order.
 - d) self-interest and collective interests.

Ans: D

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO4 Describe a Nash Equilibrium.

8. Which of the following is most consistent with the concept of a Nash equilibrium?
- a) A firm chooses its strategy with regard to pricing in collusion with another firm.
 - b) A player optimizes his/her outcome in a game by making his/her choice only after the other player has made his/her choice.
 - c) A firm makes its choice to optimize output without concerning itself as to what other firms are doing.
 - d) The players always optimize their level of output and no other variable.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO4 Describe a Nash Equilibrium.

9. All of the following statements are true except:
- a) In a Nash game, each player will have a dominant strategy.
 - b) A Cournot equilibrium is an example of a Nash equilibrium.
 - c) A Bertrand equilibrium is an example of a Nash equilibrium.
 - d) A game can be both Nash and Cournot at the same time.

Ans: A

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO4 Describe a Nash Equilibrium.

10. Which of the following statements is not true?
- a) Nash games cannot have more than one equilibrium.
 - b) A game can be both Cournot and Nash.
 - c) A game can be both Bertrand and Nash.
 - d) Whenever both players have a dominant strategy in a Nash game, that strategy will determine the outcome.

Ans: A

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO4 Describe a Nash Equilibrium.

11. The prisoners' dilemma shows that in a Nash equilibrium
- a) neither player can have a better result than the other.
 - b) sometimes players do not reach the optimal outcome.
 - c) only an irrational strategy will lead to an outcome worse than the optimal outcome.
 - d) each player acting independently will lead to the optimal outcome.

Ans: B

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

12. Which of the following statements is incorrect?
- a) A Nash equilibrium is a situation in which each player chooses their best strategy given the strategies chosen by the other players in the game.
 - b) A Cournot equilibrium is an example of a Nash equilibrium.
 - c) A Bertrand equilibrium is an example of a Nash equilibrium.
 - d) A Nash equilibrium maximizes the aggregate payoffs of the players of the game.

Ans: D

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

13. A strategy in which you do to your opponent in this period what your opponent did to you in the last period is a
- a) Live-and-let-live strategy
 - b) Shoot-to-kill strategy.
 - c) Grim trigger strategy.
 - d) Tit-for-tat strategy.

Ans: D

Difficulty: Easy

Heading: The Repeated Prisoner's Dilemma

LO 5 Solve for the Nash equilibria in one-shot games and repeated games.

14. Evaluate the truthfulness of the following statements
- I. A simultaneous game is commonly represented in a game matrix, whereas a sequential game is commonly represented with a game tree.
 - II. The concept of backwards induction applies to both simultaneous and sequential games.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Sequential Move Games and Strategic Moves

LO6 Solve for the Nash equilibria in simultaneous-move games and sequential games.

15. In order to solve a sequential game
- a) The game is generally solved from the end of the game tree, finding the optimal decision at each decision point and working back to the beginning.
 - b) The game is generally solved from the beginning of the game tree, finding the optimal decision at each decision point and working towards the end.
 - c) Only a single player's payoffs are necessary.
 - d) Tit-for-tat strategies are particularly helpful.

Ans: A

Difficulty: Easy

Heading: Sequential Move Games and Strategic Moves

LO6 Solve for the Nash equilibria in simultaneous-move games and sequential games.

16. Evaluate the truthfulness of the following statements
- I. A game situation in which there is a tension between the collective interest of all of the players and the self-interest of individual players is called a “prisoner’s dilemma”.
 - II. The Cournot and Bertrand models are examples of “prisoner’s dilemma” games.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: A

Difficulty: Hard

Heading: The Concept of Nash Equilibrium

LO6 Solve for the Nash equilibria in simultaneous-move games and sequential games.

17. Backward induction refers to
- a) a procedure for solving a sequential-move game by starting at the beginning of the game tree and finding the optimal decision for the player at each decision point.
 - b) a procedure for solving a sequential-move game by starting at the end of the game tree and finding the best response function at each decision point.
 - c) a procedure for solving a sequential-move game by starting at the end of the game tree and finding the player’s motives for making the decision at each decision point.
 - d) a procedure for solving a sequential-move game by starting at the end of the game tree and finding the optimal decision for the player at each decision point.

Ans: D

Difficulty: Medium

Heading: Sequential-Move Games and Strategic Moves

LO6 Solve for the Nash equilibria in simultaneous-move games and sequential games.

18. A game tree is
- a) a diagram that shows the different strategies that each player can follow in a game and the viability of those strategies for each player.
 - b) a diagram that shows the different strategies that each player can follow in a game and the probability that each player will choose each strategy.
 - c) a diagram that shows the different strategies that each player can follow in a game and the order in which those strategies get chosen.
 - d) a diagram that shows the optimal strategy for each player.

Ans: C

Difficulty: Medium

Heading: Sequential Move Games and Strategic Moves

LO6 Solve for the Nash equilibria in simultaneous-move games and sequential games.

19. The likelihood of a cooperative outcome in a repeated prisoners' dilemma type game increases when
- a) interactions between the players are frequent.
 - b) the players are impatient.
 - c) cheating is not detectable.
 - d) there is a large gain from cheating.

Ans: A

Difficulty: Easy

Heading: The Repeated Prisoner's Dilemma

LO7 Explain why some kinds of games lead players to cooperate, while other kinds do not.

20. The likelihood of a cooperative outcome in a repeated prisoners' dilemma type game decreases when
- a) they value payoffs in future periods much less than they value payoffs in the current period.
 - b) interactions between the players are frequent.
 - c) cheating is easy to detect.
 - d) the one-time gain from cheating is small in comparison to the eventual cost of cheating.

Ans: A

Difficulty: Medium

Heading: The Repeated Prisoner's Dilemma

LO7 Explain why some kinds of games lead players to cooperate, while other kinds do not.

21. Player A and Player B are playing a prisoners' dilemma game. Which of the following statements is false?
- a) If the players play the game repeatedly with each other, the players may play cooperatively.
 - b) If the game is played only once, the players would not be expected to cooperate.
 - c) If players play the game repeatedly with each other, they are more likely to cooperate if they are patient.

- d) If the game is played only once, the outcome minimizes total jail time.

Ans: D

Difficulty: Easy

Heading: The Repeated Prisoner's Dilemma

LO7 Explain why some kinds of games lead players to cooperate, while other kinds do not.

22. Consider a repeated prisoner's dilemma game. The likelihood of a cooperative outcome rises when
- a) they value payoffs in future periods much less than they value payoffs in the current period.
 - b) Interactions between the players are frequent.
 - c) Cheating is difficult to detect.
 - d) The one-time gain from cheating is large in comparison to the eventual cost of cheating.

Ans: B

Difficulty: Easy

Heading: The Repeated Prisoner's Dilemma

LO7 Explain why some kinds of games lead players to cooperate, while other kinds do not.

23. In a sequential game
- a) A player always obtains a higher payoff by maintaining the maximum flexibility in his or her actions.
 - b) The first mover always obtains a higher payoff than a second mover.
 - c) A player can sometimes obtain a higher payoff by making a move that restricts the flexibility he or she will have later in the game.
 - d) strategic moves include those that are easy to reverse.

Ans: C

Difficulty: Medium

Heading: Sequential Move Games and Strategic Moves

LO8 Explain how limiting your options can have strategic value.

****Reference:** In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (24-25).

GAME 1

Player B

B1 B2

<i>Player A</i>	A1	5, 6	7, 2
	A2	4, 5	9, 1

24. *In Game 1 above,
- a) Player A has a dominant strategy.
 - b) Player B has a dominant strategy.
 - c) Both players have dominant strategies.
 - d) Neither player has a dominant strategy.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

25. *In Game 1 above,
- a) Player A choosing A1 and Player B choosing B1 is a Nash equilibrium.
 - b) Player A choosing A2 and Player B choosing B2 is a Nash equilibrium.
 - c) there is no Nash equilibrium.
 - d) there are multiple Nash equilibria in pure strategies.

Ans: A

Difficulty: Hard

Heading: The Concept of Nash Equilibrium

LO6 Solve for the Nash equilibria in simultaneous-move games and sequential games.

****Reference:** In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (26-28).

GAME 2

		<i>Player B</i>	
		B1	B2
<i>Player A</i>	A1	6, 6	4, 12
	A2	12, 4	10, 10

26. *In Game 2 above,
- a) player A has a dominant strategy.
 - b) player B has a dominant strategy.
 - c) both players have dominant strategies.
 - d) neither player has a dominant strategy.

Ans: C

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

27. *Which statement below is correct concerning Game 2 above?

- a) This game is an example of a prisoner's dilemma game.
- b) This game is not an example of a prisoner's dilemma game.
- c) This game has no Nash equilibrium.
- d) This game has multiple Nash equilibria in pure strategies.

Ans: A

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

28. *In Game 2 above,

- a) Player A choosing A1 and Player B choosing B1 is a Nash equilibrium.
- b) Player A choosing A1 and Player B choosing B2 is a Nash equilibrium.
- c) Player A choosing A2 and Player B choosing B1 is a Nash equilibrium.
- d) Player A choosing A2 and Player B choosing B2 is a Nash equilibrium.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

**Reference: In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (29-32).

GAME 3

		<i>Player B</i>		
		B1	B2	B3
<i>Player A</i>	A1	10, 12	8, 8	12, 10
	A2	9, 3	7, 6	11, 8
	A3	8, 10	9, 4	14, 5

29. *In Game 3 above,

- a) Player A has a dominant strategy.
- b) Player B has a dominant strategy.
- c) Both players have a dominant strategy.
- d) Neither player has a dominant strategy.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

30. *In Game 3 above,
- a) A1 is a dominated strategy for Player A
 - b) A2 is a dominated strategy for Player A
 - c) A3 is a dominated strategy for Player A
 - d) Player A has no dominated strategies.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

31. *In Game 3 above,
- a) B1 is a dominated strategy for Player B
 - b) B2 is a dominated strategy for Player B
 - c) B3 is a dominated strategy for Player B
 - d) Player B has no dominated strategy.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

32. *In Game 3 above,
- a) Player A choosing A1 and Player B choosing B1 is a Nash equilibrium.
 - b) Player A choosing A1 and Player B choosing B3 is a Nash equilibrium.
 - c) Player A choosing A3 and Player B choosing B1 is a Nash equilibrium.
 - d) Player A choosing A3 and Player B choosing B3 is a Nash equilibrium.

Ans: A

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

****Reference:** In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (33-35).

GAME 4

		<i>Player B</i>		
		B1	B2	B3
<i>Player A</i>	A1	10, 12	8, 8	12, 10
	A2	9, 3	7, 6	11, 8
	A3	8, 5	9, 4	14, 10

33. *In Game 4 above,
- There is one Nash equilibrium.
 - There are two Nash equilibria.
 - There are three Nash equilibria.
 - There are four Nash equilibria.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

34. *For Game 4 above, which of the following statements is incorrect?
- Player A choosing A1 and Player B choosing B1 is a Nash equilibrium.
 - Player A choosing A3 and Player B choosing B3 is a Nash equilibrium.
 - Player A choosing A1 and Player B choosing B3 is a Nash equilibrium.
 - Both players in Game 4 have a dominated strategy.

Ans: A

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

35. *Suppose in Game 4 above that the players make their choices sequentially, with Player A choosing first. The Nash equilibrium in this game will be
- Player A choosing A1 and Player B choosing B1.
 - Player A choosing A1 and Player B choosing B3.

- c) Player A choosing A3 and Player B choosing B1.
- d) Player A choosing A3 and Player B choosing B3.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

****Reference:** In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (36-40).

GAME 5

		<i>Player B</i>	
		B1	B2
<i>Player A</i>	A1	7, 3	5, 10
	A2	3, 8	9, 6

36. *In Game 5 above,
- a) Player A has a dominant strategy.
 - b) Player B has a dominant strategy.
 - c) Both players have dominant strategies.
 - d) Neither player has a dominant strategy.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

37. *In Game 5 above,
- a) Player A choosing A1 and Player B choosing B1 is a Nash equilibrium.
 - b) Player A choosing A2 and Player B choosing B1 is a Nash equilibrium.
 - c) Player A choosing A1 and Player B choosing B2 is a Nash equilibrium.
 - d) there are no Nash equilibria in pure strategies.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

38. *In Game 5 above, in the Nash equilibrium in mixed strategies
- a) player B chooses B1 with a 30% probability.
 - b) player B chooses B1 with a 50% probability.
 - c) player B chooses B1 with a 60% probability.
 - d) player B chooses B1 with a 75% probability.

Ans: B

Difficulty: Hard

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

39. *In Game 5 above, in the Nash equilibrium in mixed strategies
- a) player A chooses A1 with a 2/9 probability.
 - b) player A chooses A1 with a 3/9 probability.
 - c) player A chooses A1 with a 4/9 probability.
 - d) player A chooses A1 with a 5/9 probability.

Ans: A

Difficulty: Hard

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

40. *In Game 5 above, if the players move sequentially with Player B choosing first, the Nash equilibrium will be
- a) Player A choosing A1 and Player B choosing B1.
 - b) Player A choosing A1 and Player B choosing B2.
 - c) Player A choosing A2 and Player B choosing B1.
 - d) Player A choosing A2 and Player B choosing B2.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

**Reference: In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (41-43).

GAME 6

		<i>Player B</i>	
		B1	B2
<i>Player A</i>	A1	30, 30	40, 20

A2

20, 40	35, 35
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41. *In Game 6 above,
- a) Player A has a dominant strategy.
 - b) Player B has a dominant strategy.
 - c) both players have dominant strategies.
 - d) neither player has a dominant strategy.

Ans: C

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

42. *In Game 6 above,
- a) Player A choosing A1 and Player B choosing B1 is a Nash equilibrium.
 - b) Player A choosing A2 and Player B choosing B2 is a Nash equilibrium.
 - c) there is no Nash equilibrium.
 - d) there are multiple Nash equilibria in pure strategies.

Ans: A

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

43. *In Game 6 above,
- a) the Nash equilibrium maximizes the total payoff.
 - b) the Nash equilibrium does not maximize the total payoff.
 - c) there is no Nash equilibrium.
 - d) neither player has a dominant strategy.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

**Reference: In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (44-45).

GAME 7

		<i>Player B</i>	
		B1	B2
<i>Player A</i>	A1	-60, -60	0, -120
	A2	-120, 0	-12, -12

44. *Game 7 is an example of prisoners' dilemma. Thus, the payoff matrix contains jail sentences in terms of months. For this game,
- Player A has a dominant strategy.
 - Player B has a dominant strategy.
 - both players have dominant strategies.
 - neither player has a dominant strategy.

Ans: C

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

45. *Game 7 is an example of prisoners' dilemma. Thus, the payoff matrix contains jail sentences in terms of months. For this game,
- the Nash equilibrium minimizes the total number of months spent in jail for both prisoners.
 - the Nash equilibrium does not minimize the total number of months spent in jail for both prisoners.
 - there is no Nash equilibrium.
 - neither player has a dominant strategy.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

**Reference: In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (46-48).

		GAME 8	
		<i>Coke</i>	
		Ad	No Ad
<i>Pepsi</i>	Ad	2, 4	4, 2
	No Ad	0.4, 8	3, 6

46. *Game 8 shows the payoff matrix in terms of profit (in millions of dollars) for two possible strategies: advertise or do not advertise. Which of the following is a true statement?
- a) Coke has a dominant strategy to not advertise.
 - b) Pepsi has a dominant strategy to not advertise.
 - c) The game has one Nash equilibrium.
 - d) The game has multiple equilibria.

Ans: C

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO2 Identify dominant and dominated strategies in a game.

47. *Game 8 shows the payoff matrix in terms of profit (in millions of dollars) for two possible strategies: advertise or do not advertise. If they legally could, why might the two companies agree to a binding contract committing both to not advertise?
- a) Because advertising is ineffective.
 - b) Because advertising is too expensive.
 - c) Because not advertising would lower the costs and therefore increase the profits to each firm.
 - d) Because not advertising would lower profits.

Ans: C

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

48. *Game 8 shows the payoff matrix in terms of profit (in millions of dollars) for two possible strategies: advertise or do not advertise. Suppose that the two companies can legally make a non-binding agreement to not advertise. Based on the payoff matrix shown above, will the two companies honor such an agreement to not advertise?
- a) Yes. Both Coke and Pepsi will not advertise.
 - b) No. Coke will advertise but Pepsi will not.
 - c) No. Pepsi will advertise but Coke will not.
 - d) No. Both Coke and Pepsi will advertise.

Ans: D

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

****Reference:** In the following games, all payoffs are listed with the row player's payoffs first and the column player's payoffs second (49-51).

GAME 9

		<i>Player B</i>	
		B1	B2
<i>Player A</i>	A1	0,0	50,10
	A2	10,50	5,5

49. *Game 9 has the structure of a
- prisoner's dilemma.
 - sequential game.
 - game of chicken.
 - tit-for-tat game

Ans: C

Difficulty: Easy

Heading: The Concept of Nash Equilibrium

LO1 Explain the roles of strategies and payoffs in a game.

50. *In Game 9 above,
- There is one Nash equilibrium.
 - There are two Nash equilibria.
 - There are three Nash equilibria.
 - There are four Nash equilibria.

Ans: B

Difficulty: Medium

Heading: The Concept of Nash Equilibrium

LO5 Solve for the Nash equilibria in one-shot games and repeated games.

51. *Games with structures like Game 9 above have been used to describe
- bank runs.
 - collusion in Sumo wrestling.
 - dominant strategy equilibria.
 - the decision to hire a lawyer.

Ans: A

Difficulty: Easy

Heading: The Concept of Nash Equilibrium
LO4 Describe a Nash Equilibrium.

File: ch15, Chapter 15: Risk and Information

Multiple Choice

1. In economics, a lottery is
- a) the likelihood that a particular outcome occurs.
 - b) a depiction of all possible outcomes of an event and their associated probabilities.
 - c) any event for which the outcome is uncertain.
 - d) a measure of risk associated with some event.

Ans: C

Difficulty: Easy

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

2. Which of the following statements is *false*?
- a) Some probabilities result from laws of nature; some reflect subjective beliefs about risky events.
 - b) The probability of any particular outcome is between 0 and 1.
 - c) The sum of the probabilities of all possible outcomes can exceed one.
 - d) The sum of the probabilities of all possible outcomes must equal exactly one.

Ans: C

Difficulty: Easy

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

3. The expected value of a lottery is
- a) the average payoff you would get from the lottery if the lottery were repeated many times.
 - b) the sum of the probability-weighted squared deviations of the possible outcomes of the lottery.
 - c) a measure of risk preference.
 - d) the amount an individual would be willing to pay to enter a lottery.

Ans: A

Difficulty: Easy

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

4. Suppose a fair, two-sided coin is flipped. If it comes up heads you receive \$5; if it comes up tails you lose \$1. The expected value of this lottery is
- a) \$2
 - b) \$3
 - c) \$4
 - d) \$5

Ans: A

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

5. The variance of a lottery is
- a) the average payoff you would get from the lottery if the lottery were repeated many times.
 - b) the sum of the probability-weighted squared deviations of the possible outcomes of the lottery.
 - c) a measure of risk preference.
 - d) the amount an agent would be willing to pay to enter a lottery.

Ans: B

Difficulty: Easy

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

6. Suppose a fair, two-sided coin is flipped. If it comes up heads you receive \$5; if it comes up tails you lose \$1. The variance of this lottery is
- a) 4.5
 - b) 9.0
 - c) 13.5
 - d) 18.0

Ans: B

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

7. Consider a lottery with four equally likely outcomes, A, B, C, and D. The associated payoffs are: \$10, \$30, \$70, and \$150, respectively. The expected value of this lottery is
- a) \$30
 - b) \$65
 - c) \$130
 - d) \$260

Ans: B

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

8. Consider a lottery with four equally likely outcomes, A, B, C, and D. The associated payoffs are: \$10, \$30, \$70, and \$150, respectively. The variance of this lottery is
- a) 2,875
 - b) 5,750
 - c) 8,625
 - d) 11,500

Ans: A

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

9. Consider a lottery with four possible outcomes, A, B, C, and D. The associated payoffs are: \$10, \$30, \$70, and \$150, respectively. The probabilities are $P(A) = 0.40$, $P(B) = 0.20$, $P(C) = 0.30$, and $P(D) = 0.10$. The expected value of this lottery is
- a) \$23
 - b) \$46
 - c) \$65
 - d) \$260

Ans: B

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

10. Consider a lottery with four possible outcomes, A, B, C, and D. The associated payoffs are: A - \$10, B - \$30, C - \$70, and D - \$150. The probabilities are $P(A) = 0.40$, $P(B) = 0.20$, $P(C) = 0.30$, and $P(D) = 0.10$. The variance of this lottery is
- a) 912
 - b) 1,824
 - c) 1,618
 - d) 3,326

Ans: B

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

11. Consider four lotteries, A, B, C, and D, all with an expected value of \$100. The associated standard deviations of the lotteries are: A is 10, B is 15, C is 5, and D is 20. Which lottery is the riskiest?
- a) Lottery A
 - b) Lottery B
 - c) Lottery C
 - d) Lottery D

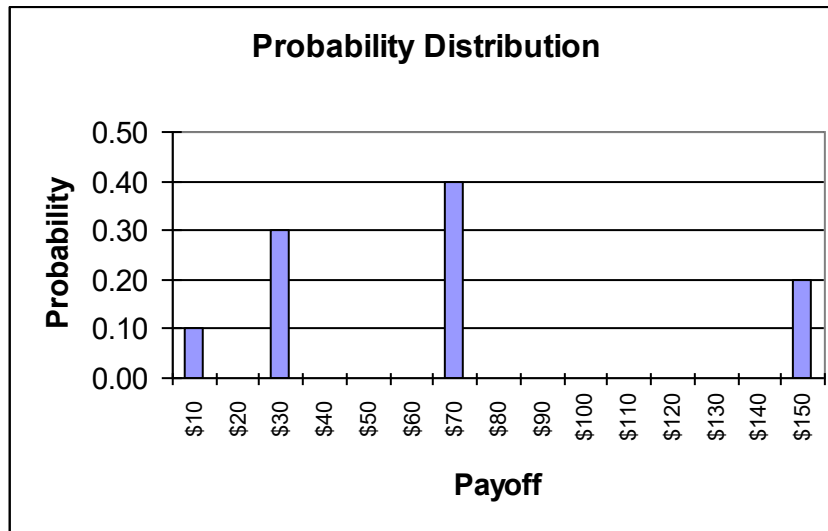
Ans: D

Difficulty: Easy

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

****Reference:** Use the following probability distribution for a lottery to answer the next two questions (12-13).



12. *Given the probability distribution for the lottery above, what is the expected value of this lottery?
- a) \$83
 - b) \$71
 - c) \$68
 - d) \$65

Ans: C

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

13. *Given the probability distribution for the lottery above, what is the standard deviation of this lottery?
- a) 2,401
 - b) 2,116
 - c) 49
 - d) 46

Ans: B

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

14. Suppose you purchase a collectible baseball card from an acquaintance for \$50. You think it could be worth \$1,000 with a 10% probability and \$0 with a 90% probability. What is your expected value for the baseball card?
- a) \$150
 - b) \$100
 - c) \$1000
 - d) \$50

Ans: B

Difficulty: Easy

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

15. The variance of a probability distribution can be described as
- a) a measure of the riskiness of a probability distribution and is calculated by finding the square root of the probability-weighted squared deviations of the possible outcomes.
 - b) a measure of the riskiness of a probability distribution and is calculated by finding the probability-weighted squared deviations of the possible outcomes times two.
 - c) a measure of the amplitude of a probability distribution and is calculated by finding the square root of the probability-weighted squared deviations of the possible outcomes.
 - d) a measure of the riskiness of a probability distribution and is calculated by finding the probability-weighted squared deviations of the possible outcomes.

Ans: D

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

16. What would be the expected value, variance and standard deviation of an event that always took the value one as its outcome?
- a) 1, 1, 1
 - b) 1, 0, 1
 - c) 1, 0, 0
 - d) 1, 1, 0

Ans: C

Difficulty: Medium

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

17. Given the possible outcomes to a lottery being only the values 2, 6 with equal probabilities, calculate the expected value, variance and standard deviation?
- a) EV = 4, variance = 16, standard deviation = 4
 - b) EV = 4, variance = 4, standard deviation = 2
 - c) EV = 4, variance = 4, standard deviation = 4
 - d) EV = 3.5, variance = 4, standard deviation = 2

Ans: B

Difficulty: Hard

Heading: Describing Risky Outcomes

LO 1 Describe risky outcomes using the concepts of probability, expected value, and variance.

18. A person who gets increasing marginal utility as income increases is described as
- a) risk-averse.
 - b) risk-neutral.
 - c) risk-loving.
 - d) risk-gaining.

Ans: C

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

19. Large firms that can take on a number of small investment projects whose returns are independent of each other would most likely be characterized as
- a) risk-averse, because large firms do not like to take any risk.
 - b) risk-neutral, because each investment project is small relative to the total and firms are incentivized to maximize profits.
 - c) risk-loving, because there are a lot of benefits to being the biggest and most powerful firm.
 - d) risk-gaining, because there are a lot of benefits to being the biggest and most powerful firm.

Ans: B

Difficulty: Hard

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

20. Which of the following statements is incorrect?
- a) A risk-averse decision maker will choose the alternative with the lowest variance among alternatives with identical expected utilities.
 - b) A risk-neutral decision maker will always choose the alternative with the lowest variance among alternatives with identical expected utilities.
 - c) A risk-loving decision maker will choose the alternative with the highest variance among alternatives with identical expected utilities.
 - d) The expected utility of a lottery is the expected value of the utility levels that the decision maker receives from the payoffs in the lottery.

Ans: B

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

21. A decision maker can be described with utility which is only a function of income and which exhibits diminishing marginal utility of income. This decision maker is
- a) risk-averse.
 - b) risk-neutral.
 - c) risk-loving.
 - d) risk-gaining.

Ans: A

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

22. A decision maker can be described with utility that is only a function of income. If this function is linear, the decision maker is
- a) risk-averse.
 - b) risk-neutral.
 - c) risk-loving.
 - d) risk-gaining.

Ans: B

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

23. A decision maker has a utility function $U = \sqrt{I}$. This decision maker is
- a) risk-averse.
 - b) risk-neutral.
 - c) risk-loving.
 - d) risk-gaining.

Ans: A

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

24. A decision maker has a utility function $U = I^2 + 500$. This decision maker is
- a) risk-averse.
 - b) risk-neutral.
 - c) risk-loving.
 - d) risk-gaining.

Ans: C

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

25. A decision maker has a utility function $U = 10I$. This decision maker is
- a) risk-averse.
 - b) risk-neutral.
 - c) risk-loving.
 - d) risk-gaining.

Ans: B

Difficulty: Easy

Heading: Evaluating Risky Outcomes

LO 2 Illustrate how the shape of an individual's utility function describes his or her attitudes toward risk.

26. Suppose a decision maker has a utility function $U = \sqrt{I}$ and is faced with a lottery where there is a 30% chance of earning \$30 and a 70% chance of earning \$80. What is the expected utility of this lottery?
- a) 7.6
 - b) 7.9
 - c) 8.2
 - d) 8.5

Ans: B

Difficulty: Medium

Heading: Evaluating Risky Outcomes

LO 3 Calculate expected utility as a way to evaluate risky outcomes.

27. A risk premium is
- a) a payment to an insurer by a policy-holder who faces a potential loss.
 - b) equal to the purchase price of an insurance policy.
 - c) the necessary difference between the expected value of a lottery and the payoff of a sure thing to make the decision maker indifferent between the lottery and the sure thing.
 - d) the difference between the expected value and the variance of a lottery.

Ans: C

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

28. A risk premium, RP , can be computed with the following formula, where I_1 and I_2 are the two payoffs to a lottery, with probabilities p and $(1-p)$, respectively :
- a) $p(I_1) + (1-p)I_2 = RP$
 - b) $pU(I_1) + (1-p)U(I_2) = RP$
 - c) $pU(I_1) + (1-p)U(I_2) = U(EV-RP)$
 - d) $U(EV) = RP$

Ans: C

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

29. A decision-maker is faced with a choice between a lottery with a 30% chance of a payoff of \$30 and a 70% chance of a payoff of \$80, and a guaranteed payoff of \$65. If the decision maker's utility function is $U = \sqrt{I}$, what is the risk premium associated with this choice?
- a) \$1.59
 - b) \$2.52
 - c) \$0
 - d) \$3.95

Ans: B

Difficulty: Medium

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

30. A decision-maker is faced with a choice between a lottery with a 30% chance of a payoff of \$30 and a 70% chance of a payoff of \$80, and a guaranteed payoff of \$65. If the decision maker's utility function is $U = I + 500$, what is the risk premium associated with this choice?
- a) \$0
 - b) \$1
 - c) \$2
 - d) \$3

Ans: A

Difficulty: Medium

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

31. Lotteries A and B have the same expected value, but B has larger variance. Which of the following statements is true, all else equal?
- a) If the decision maker is risk averse, lottery A will have the larger risk premium.
 - b) If the decision maker is risk neutral, lottery B will have the larger risk premium.
 - c) If the decision maker is risk loving, both lotteries will have a positive risk premium.
 - d) If the decision maker is risk averse, lottery B will have the larger risk premium.

Ans: D

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

32. Consider an insurance policy with \$15,000 worth of coverage. If there is a 10% chance the owner of the policy will file a claim for the \$15,000 (and a 90% chance they will not file a claim), a fair price for this policy is
- a) \$1,000
 - b) \$1,500
 - c) \$13,000
 - d) \$13,500

Ans: B

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

33. An insurance company that sells fairly-priced insurance policies to a large number of individuals with similar realized accident risk probabilities should expect to
- a) break even.
 - b) lose money.
 - c) make a profit.
 - d) sell policies to individuals with all types of risk preference.

Ans: A

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

34. Your current disposable income is \$10,000. There is a 10% chance you will get in a serious car accident, incurring damage of \$1,900. (There is a 90% chance that nothing will happen.) Your utility function is $U = \sqrt{I}$, where I is income. What is the fair price of this policy?
- a) \$100
 - b) \$190
 - c) \$199
 - d) \$270

Ans: B

Difficulty: Medium

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

35. Your current disposable income is \$10,000. There is a 10% chance you will get in a serious car accident, incurring damage of \$1,900. (There is a 90% chance that nothing will happen.) Your utility function is $U = \sqrt{I}$, where I is income. If this policy is priced at \$40, what is the change in your expected utility if you purchase the policy rather than no insurance?
- a) 1
 - b) 0.8
 - c) 0.2
 - d) 0

Ans: B

Difficulty: Medium

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

36. Your current disposable income is \$10,000. There is a 10% chance you will get in a serious car accident, incurring damage of \$1,900. (There is a 90% chance that nothing will happen.) Your utility function is $U = \sqrt{I}$, where I is income. What is the most you would be willing to pay for this policy (rather than no insurance)?
- a) \$100
 - b) \$190
 - c) \$199
 - d) \$270

Ans: C

Difficulty: Medium

Heading: Bearing and Eliminating Risk

LO 4 Compute the risk premium for a risk-averse decision maker.

37. A fairly-priced insurance policy is one in which
- a) the insurance premium is equal to the expected value of the promised insurance payment.
 - b) the insurance premium is equal to the expected value of the promised insurance payment plus a small profit for the insurance company.
 - c) the insurance premium is equal to the variance of the expected value of the promised insurance payment.
 - d) the insurance premium is equal to the variance of the expected value of the promised insurance payment plus a small profit for the insurance company.

Ans: A

Difficulty: Medium

Heading: Bearing and Eliminating Risk

LO 5 Explain why risk-averse individuals would purchase insurance if it was fairly priced.

38. Would you expect an insurance company in the “real world” to sell an insurance policy for exactly the “fairly-priced” level as defined in the text?
- a) Yes, because the fairly-priced insurance policy includes some profit for the insurance company.
 - b) Yes, because insurance companies are required to sell their policy at the fairly-priced level by law.
 - c) Probably not, because the expected value of profits for the insurance company would be zero.
 - d) Probably not, because insurance companies are not in a competitive industry and are able to earn monopoly profits.

Ans: C

Difficulty: Hard

Heading: Bearing and Eliminating Risk

LO 5 Explain why risk-averse individuals would purchase insurance if it was fairly priced.

39. Which of the following statements is correct for a decision maker facing a choice between a sure thing and a lottery when the sure thing has the expected payoff of the lottery?
- a) Risk-loving decision makers will require a positive risk premium to bear risk.
 - b) Risk-neutral decision makers will require a positive risk premium to bear risk.
 - c) Risk-averse decision makers will require a positive risk premium to bear risk.
 - d) The risk premium depends on the characteristics of the lottery, not on the characteristics of the utility function of the decision maker.

Ans: C

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 5 Explain why risk-averse individuals would purchase insurance if it was fairly priced.

40. Consider a fairly-priced insurance policy that fully indemnifies the purchaser against their loss. This insurance policy would most likely be purchased by
- a) a risk-loving decision maker.
 - b) a risk-neutral decision maker.
 - c) a risk-averse decision maker.
 - d) all decision makers.

Ans: C

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 5 Explain why risk-averse individuals would purchase insurance if it was fairly priced.

41. Asymmetric information refers to
- a) bad information.
 - b) incomplete information.
 - c) misleading information.
 - d) differences in the amount of information the parties have.

Ans: D

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 6 Contrast two different types of asymmetric information in insurance markets: moral hazard and adverse selection.

42. Moral hazard in auto insurance might refer to
- a) an auto owner failing to maintain the car, increasing the likelihood of an accident.
 - b) an applicant withholding information from the insurance company about the likelihood of having an accident.
 - c) an applicant lying on their application form about their health history.
 - d) an applicant having more cars than they announce when they complete their application.

Ans: A

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 6 Contrast two different types of asymmetric information in insurance markets: moral hazard and adverse selection.

43. A good way to deal with moral hazard faced by an insurance company would be to
- a) fully indemnify its policy holders.
 - b) require applicants to take a physical examination.
 - c) require policy holders to pay a deductible.
 - d) conduct detailed investigations of every accident.

Ans: C

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 6 Contrast two different types of asymmetric information in insurance markets: moral hazard and adverse selection.

44. Adverse selection in auto insurance might refer to
- a) an auto owner failing to maintain the car, increasing the likelihood of an accident.
 - b) an insured party driving faster than an uninsured party.
 - c) an applicant lying on their application form about their health history.
 - d) an insured driver using the car to conduct driving lessons for new learners.

Ans: C

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 6 Contrast two different types of asymmetric information in insurance markets: moral hazard and adverse selection.

45. A good way to deal with adverse selection faced by an insurance company would *not* be to
- a) fully indemnify its policy holders.
 - b) require applicants to take a physical examination.
 - c) require policy holders to pay a deductible.
 - d) insure groups of individuals (such as all employees of a particular firm).

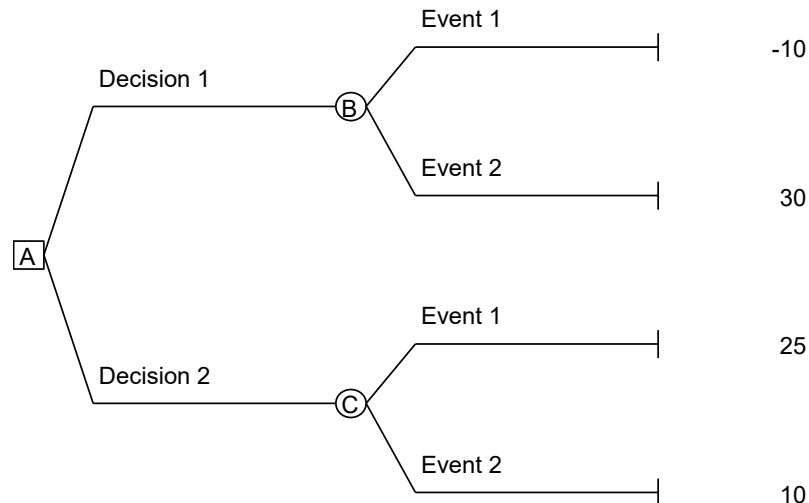
Ans: A

Difficulty: Easy

Heading: Bearing and Eliminating Risk

LO 6 Contrast two different types of asymmetric information in insurance markets: moral hazard and adverse selection.

****Reference:** Use the following decision tree to answer the next three questions (46-48).



46. *Consider the decision tree above. If the probability of Event 1 is 30% and the probability of Event 2 is 70%, which decision alternative should the decision maker choose?
- Decision 1
 - Decision 2
 - Either decision; they both have the same expected value.
 - Neither; more information is needed to make an accurate assessment.

Ans: A

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

47. *If the probability of Event 1 is 30% and the probability of Event 2 is 70% in the decision tree above, the expected value of Decision 1 is
- 10
 - 30
 - 14.5
 - 18

Ans: D

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

48. *In the decision tree above, for what probability of Event 1 will Decision 1 and Decision 2 have the same expected value?
- a) 0.24
 - b) 0.36
 - c) 0.44
 - d) 0.56

Ans: B

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

**Reference: Use the decision tree along with the given probabilities to answer the next six questions (49-54).

Probability Event A = 30% Probability Event B = 70%

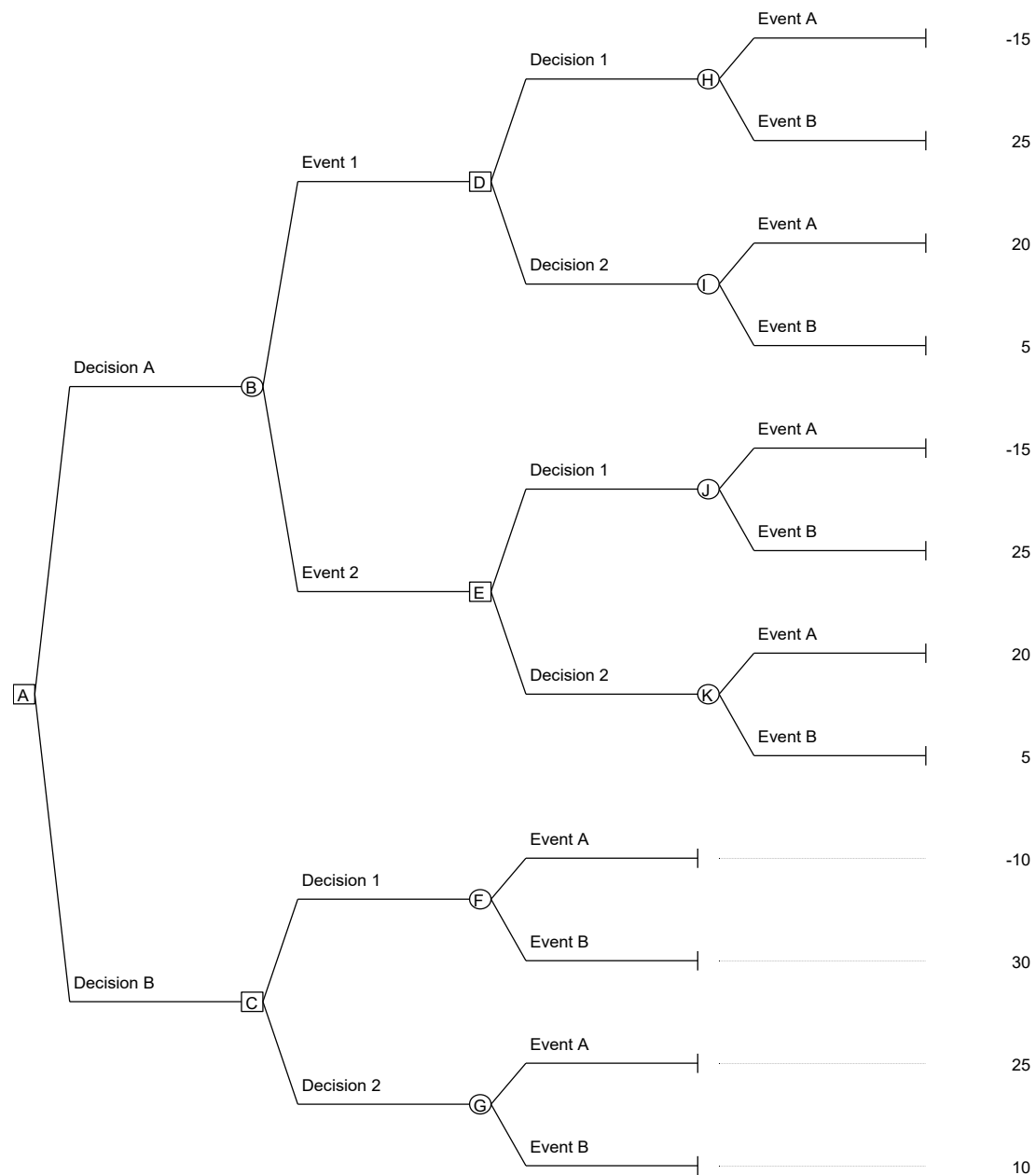
Probability Event 1 = 58% Probability Event 2 = 42%

Probability of Event A given that Event 1 occurs = 16%

Probability of Event B given that Event 1 occurs = 84%

Probability of Event A given that Event 2 occurs = 50%

Probability of Event B given that Event 2 occurs = 50%



49. *If the decision maker chooses Decision A and Event 1 occurs, which decision alternative should the decision maker choose at node D?
- Decision 1
 - Decision 2
 - Either Decision; they both have the same expected value.
 - Neither Decision; more information is needed.

Ans: A

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

50. *If the decision maker chooses Decision A and Event 2 occurs, which decision alternative should the decision maker choose at node E?
- a) Decision 1
 - b) Decision 2
 - c) Either Decision; they both have the same expected value.
 - d) Neither Decision; more information is needed.

Ans: B

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

51. *What is the expected value at node B?
- a) 18.60
 - b) 16.04
 - c) 13.76
 - d) 12.50

Ans: B

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

52. *If the decision maker chooses Decision B, which decision alternative should the decision maker choose at node C?
- a) Decision 1
 - b) Decision 2
 - c) Either decision; they both have the same expected value.
 - d) Neither decision; more information is needed.

Ans: A

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

53. *At node A, which decision has the higher expected value?
- a) Decision A
 - b) Decision B
 - c) Either decision; they both have the same expected value.
 - d) Neither decision; more information is needed.

Ans: B

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

54. *If the cost of obtaining information to determine Event 1 and Event 2 is \$5, what is the value of perfect information?
- a) -1.96
 - b) 0
 - c) 3.04
 - d) 5

Ans: C

Difficulty: Medium

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

55. A decision tree is
- a) a diagram that describes the options available to a decision maker as well as the certain events that can occur at each point in time.
 - b) a diagram that helps the observer calculate the expected value, variance and standard deviation of a probability distribution.
 - c) not applicable to making decisions under conditions of uncertainty.
 - d) a diagram that describes the options available to a decision maker as well as the risky events that can occur at each point in time.

Ans: D

Difficulty: Easy

Heading: Analyzing Risky Decisions

LO 7 Analyze risky decisions using a decision tree.

56. An English auction is an auction wherein
- a) the price called out continues to descend until someone is willing to pay that price.

- b) participants cry out their bids and the bids keep rising until no participant is willing to pay a higher price for the object being sold.
- c) bids are sealed and the individual with the highest bid wins.
- d) bids are sealed and everyone with a price higher than the reservation price wins.

Ans: B

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

57. An auction in which participants cry out their bids, and each participant can increase his bid until the auction ends with the highest bidder winning the object is known as
- a) an English auction.
 - b) first-price sealed-bid auction.
 - c) second-price sealed-bid auction.
 - d) Dutch ascending auction.

Ans: A

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

58. With common values in an auction
- a) each bidder has his own personalized valuation of an object.
 - b) no bidder knows how much the object is worth to the other bidders.
 - c) the object has the same value to all bidders.
 - d) individuals are likely to have idiosyncratic assessments of the value of the object.

Ans: C

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

59. In a first-price sealed-bid auction when bidders have private values, the best bidding strategy is to bid
- a) your value for the object since this gives you the highest probability of winning the auction.
 - b) the value of the second highest bidder since this gives you the highest probability of winning while maximizing your surplus.

- c) something less than your maximum willingness to pay, although how much less depends on a variety of factors.
- d) continuing bidding until you win if you like the object.

Ans: C

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

60. In general, with a first-price sealed-bid auction with private values, the Nash equilibrium bids will
- a) increase as the number of bidders goes up.
 - b) decrease as the number of bidders goes up.
 - c) not be affected by the number of bidders in the auction.
 - d) decrease at a rate of $1/N$ where N is the number of bidders in the auction.

Ans: A

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

61. In a second-price sealed-bid auction with private values, the winner of the auction is
- a) the second-highest bidder and pays the bid of the highest bidder.
 - b) the second-highest bidder and pays the bid of the third-highest bidder.
 - c) the highest-bidder and pays the bid of the second-highest bidder.
 - d) the highest-bidder and pays the amount they bid.

Ans: C

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

62. In a second-price sealed-bid auction the best bidding strategy is to bid
- a) your maximum willingness to pay for the object.
 - b) the value of the second highest bidder since this gives you the highest probability of winning while maximizing your surplus.
 - c) something less than your maximum willingness to pay, although how much less depends on a variety of factors.
 - d) continuing bidding until you win if you like the object.

Ans: A

Difficulty: Easy

Heading: Auctions

LO8 Differentiate between different types of auctions.

63. The winner's curse refers to
- a) bidding an amount higher than your maximum willingness to pay in an effort to 'win' in a private values auction.
 - b) winning a private values auction and later determining that you bid more than you had really intended to.
 - c) winning a common values auction and bidding more than the object is worth.
 - d) winning an item in a common values auction that you don't really want.

Ans: C

Difficulty: Easy

Heading: Auctions

LO 9 Explain the concept of the winner's curse.

File: ch16; Chapter 16: General Equilibrium Theory

Multiple Choice

1. Partial equilibrium analysis differs from general equilibrium analysis in that
- a) a partial equilibrium analysis studies the determination of price and output determination, whereas general equilibrium includes a greater number of variables.
 - b) prices are not held constant in all other markets in partial equilibrium, but in general equilibrium they are.
 - c) a partial equilibrium analysis studies the determination of price and output in a single market, whereas general equilibrium looks at more than one market simultaneously.
 - d) a general equilibrium holds prices constant in multiple markets, whereas partial equilibrium does not.

Ans: C

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

2. If we consider two spices, cumin and paprika, to be substitutes, a drop in the supply of paprika, will probably cause an increase in the price of
- a) both
 - b) neither
 - c) cumin
 - d) paprika

Ans: A

Difficulty: Easy

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

3. Suppose chicken breasts and barbeque sauce are known to be complements, a change in tastes toward a greater demand for chicken will likely cause
- a) an increase in the price of chicken and a drop in the price of barbeque sauce.
 - b) an increase in the price of chicken and an increase in the price of barbeque sauce.
 - c) a drop in the price of chicken and a drop in the price of barbeque sauce.

- d) a drop in chicken prices and an increase in the price of barbeque sauce.

Ans: B

Difficulty: Easy

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

4. The general equilibrium effects of an excise tax on a commodity which would then be used to fund improvements to our national parks
- a) would probably raise the price of the commodity and raise the price of labor in the national park system.
 - b) would probably lower the price of the commodity and raise the price of labor in the national park system.
 - c) would probably raise the price of the commodity and raise the price of labor in the economy as a whole.
 - d) would probably raise the price of the commodity and lower the price of labor in the economy as a whole.

Ans: A

Difficulty: Hard

Heading: General Equilibrium Analysis: Comparative Statics

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

5. Which of the following statements is incorrect?
- a) A partial equilibrium analysis studies the determination of price and output in a single market.
 - b) A general equilibrium analysis studies the determination of price and output in more than one market simultaneously.
 - c) A partial equilibrium analysis ignores either consumers or producers in the analysis and looks only at one-half of the market.
 - d) A general equilibrium analysis would be useful to study two goods that are linked in some way, such as complementary or substitutable goods.

Ans: C

Difficulty: Easy

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

6. Suppose coffee and cream are complementary goods. If the supply of cream falls we would expect the price of coffee to go _____ and the equilibrium quantity of coffee to go _____.
- a) down, down
 - b) down, up
 - c) up, down
 - d) up, up

Ans: A

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

7. Suppose chicken breasts and pork steaks are substitute goods. If the supply of chicken breasts increases we would expect the price of pork steaks to go _____ and the equilibrium quantity of pork steaks to go _____.
- a) down, down
 - b) down, up
 - c) up, down
 - d) up, up

Ans: A

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

8. Suppose that black tea and green tea are substitute goods. Suppose that an excellent growing season for green tea increases the supply of green tea. What happens in the market for black tea?
- a) Supply increases.
 - b) Supply decreases.
 - c) Demand increases.
 - d) Demand decreases.

Ans: D

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

9. The prices of substitute goods tend to be _____.

- a) positively correlated.
- b) inversely related.
- c) unrelated.
- d) related to the prices of substitute goods.

Ans: A

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

10. The prices of complementary goods tend to be _____.
- a) positively correlated.
 - b) inversely related.
 - c) unrelated.
 - d) related to the prices of substitute goods.

Ans: B

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

11. Let the demand and supply for two linked products, say corn and soy, be the following: $Q_c^d = 12 - 2p_c + p_s$; $Q_c^s = 4 + p_c$; $Q_s^d = 6 - 4p_s + p_c$; $Q_s^s = 4 + p_s$. The superscript refers to “demand” (d) or “supply” (s) and the subscript refers to corn (c) or soy (s). What are the equilibrium prices of corn and soy?
- a) $p_c = 2$; $p_s = 2$
 - b) $p_c = 1$; $p_s = 3$
 - c) $p_c = 3$; $p_s = 1$
 - d) $p_c = 1$; $p_s = 1$

Ans: C

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

12. Let the demand and supply for two linked products, say corn and soy, be the following: $Q_c^d = 12 - 2p_c + p_s$; $Q_c^s = 4 + p_c$; $Q_s^d = 6 - 4p_s + p_c$; $Q_s^s = 4 + p_s$. The superscript refers to “demand” (d) or “supply” (s) and the subscript refers to corn (c) or soy (s). Now, suppose that the demand for corn shifts to $Q_c^d = 18 - 2p_c + p_s$. If the price of soy does not adjust in response to this shift, what is the new equilibrium price of corn?

- a) $p_c = 2$
- b) $p_c = 1$
- c) $p_c = 3$
- d) $p_c = 5$

Ans: D

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

13. Let the demand and supply for two linked products, say corn and soy, be the following: $Q_c^d = 12 - 2p_c + p_s$; $Q_c^s = 4 + p_c$; $Q_s^d = 6 - 4p_s + p_c$; $Q_s^s = 4 + p_s$. The superscript refers to “demand” (d) or “supply” (s) and the subscript refers to corn (c) or soy (s). Now, suppose that the demand for corn shifts to $Q_c^d = 18 - 2p_c + p_s$. If the price of soy is free to adjust in response to this shift, what are the new equilibrium prices of corn and soy?
- a) $p_c = 5.14$; $p_s = 1.43$
 - b) $p_c = 6.20$; $p_s = 2.15$
 - c) $p_c = 2.50$; $p_s = 2.50$
 - d) $p_c = 4.35$; $p_s = 2.00$

Ans: A

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

14. Let the demand and supply for two linked products, say corn and soy, be the following: $Q_c^d = 12 - 2p_c + p_s$; $Q_c^s = 4 + p_c$; $Q_s^d = 6 - 4p_s + p_c$; $Q_s^s = 4 + p_s$. The superscript refers to “demand” (d) or “supply” (s) and the subscript refers to corn (c) or soy (s). Now, suppose that the demand for corn shifts to $Q_c^d = 18 - 2p_c + p_s$. If we conduct a partial equilibrium analysis of the corn market, taking the price of soy as given, rather than a general equilibrium analysis, allowing the price of soy to change, we:
- a) underestimate the new price of corn.
 - b) overestimate the new price of corn.
 - c) correctly estimate the new price of corn.
 - d) Overestimate the new price of soy.

Ans: A

Difficulty: Medium

Heading: General Equilibrium Analysis: Two Markets

LO 1 Distinguish between partial equilibrium analysis and general equilibrium analysis.

15. In a general equilibrium setting, the supply curves for final goods and services are determined by
- a) profit maximization by firms.
 - b) cost minimization by firms.
 - c) profit maximization by consumers.
 - d) utility maximization by consumers.

Ans: A

Difficulty: Easy

Heading: General Equilibrium Analysis: Many Markets

LO 2 Explain how one can use general equilibrium analysis to explore the total impact of government interventions with policies like an excise tax.

16. In a general equilibrium setting, the demand curves for production inputs are determined by
- a) utility maximization by firms.
 - b) profit maximization by firms.
 - c) cost minimization by firms.
 - d) utility maximization by consumers.

Ans: C

Difficulty: Easy

Heading: General Equilibrium Analysis: Many Markets

LO 3 Explain why Walras' law tells us that prices of goods and services are related to each other in a consistent way.

17. Your textbook discussed a model of a simple economy with four markets: labor, capital, energy, and food. Which of the following statements is inconsistent with a general equilibrium for this simple economy?
- a) The household demand for energy equals the industry supply of energy.
 - b) The household demand for food equals the industry supply of food.
 - c) The household demand for labor equals the industry supply of labor.
 - d) The household supply of capital equals the industry demand for capital.

Ans: C

Difficulty: Easy

Heading: General Equilibrium Theory: Many Markets

LO 2 Explain how one can use general equilibrium analysis to explore the total impact of government interventions with policies like an excise tax.

18. Walras' Law tells us that,
- a) supply will always equal demand.
 - b) if an economy has five markets and if supply equals demand in three of those markets, then supply will equal demand in the other two markets.
 - c) the prices in an N market economy can be determined for all N markets.
 - d) if an economy has five markets, then a general equilibrium analysis will yield the prices in four of the markets relative to the price in the fifth market.

Ans: D

Difficulty: Easy

Heading: General Equilibrium Analysis: Many Markets

LO 3 Explain why Walras' law tells us that prices of goods and services are related to each other in a consistent way.

19. According to Walras' Law, in a general competitive equilibrium with a total of ____ markets, if supply equals demand in the first ____ markets, then supply will equal demand in the ____ market as well.
- a) three; two; first
 - b) three; three; third
 - c) three; two; third
 - d) three; three; first

Ans: C

Difficulty: Easy

Heading: General Equilibrium Theory: Many Markets

LO 3 Explain why Walras' law tells us that prices of goods and services are related to each other in a consistent way.

20. Walras' Law states that general equilibrium determines the prices of all goods and inputs
- a) with absolute certainty.
 - b) relative to the price of another good or input.
 - c) only after the effects of an exogenous shock to a market are determined.
 - d) relative to efficient prices.

Ans: B

Difficulty: Easy

Heading: General Equilibrium Theory: Many Markets

LO 3 Explain why Walras' law tells us that prices of goods and services are related to each other in a consistent way.

21. The general equilibrium effects of an excise tax on gasoline which would then be used to purchase military equipment would tend to
- a) raise the price of energy and the price of military equipment, but not have an effect of the quantity of labor employed.
 - b) raise the price of energy and the price of military equipment, but lower the price of labor.
 - c) lower the price of energy and the price of military equipment, but not have an effect of the quantity of labor employed.
 - d) raise the price of energy and the price of military equipment, and increase the quantity of labor employed.

Ans: A

Difficulty: Medium

Heading: General Equilibrium Analysis: Comparative Statics

LO 4 Analyze the general equilibrium effects of an excise tax on a particular good.

22. The general equilibrium effects of an excise tax on agricultural commodities which would then be used to purchase books for school children would tend to
- a) raise the price of agricultural commodities and lower the price of books, but leave the quantity of labor employed unchanged.
 - b) raise the price of agricultural commodities and raise the price of books, and increase the quantity of labor employed.
 - c) raise the price of agricultural commodities and raise the price of books, and decrease the quantity of labor employed.
 - d) raise the price of agricultural commodities and raise the price of books, but leave the quantity of labor employed unchanged.

Ans: D

Difficulty: Medium

Heading: General Equilibrium Analysis: Comparative Statics

LO 4 Analyze the general equilibrium effects of an excise tax on a particular good.

23. Which of the following statements is incorrect?
- a) To be efficient, a competitive equilibrium must allocate goods to consumers so that no reallocation of the goods could make all consumers better off.
 - b) To be efficient, a competitive equilibrium must allocate inputs among firms so that no reallocation of inputs would result in a higher output of all goods.
 - c) To be efficient, a competitive equilibrium must satisfy substitution efficiency.
 - d) To be efficient, a competitive equilibrium must satisfy output efficiency.

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

24. Exchange efficiency means
- a) that we can reallocate a fixed basket of consumption goods among consumers in a way that makes all consumers better off.
 - b) that we cannot reallocate a fixed stock of inputs among firms so that we can simultaneously expand the output of all goods produced in an economy.
 - c) that we cannot reallocate a fixed basket of consumption goods among consumers in a way that makes all consumers better off.
 - d) that we can reallocate a fixed stock of inputs among firms so that we can simultaneously expand the output of all goods produced in an economy.

Ans: C

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

25. An allocation of goods and inputs in an economy is economically efficient if
- a) that allocation minimizes costs.
 - b) that allocation maximizes profits.
 - c) there exists an alternative, feasible allocation of goods and inputs that would make all consumers better off as compared with the initial allocation.
 - d) there does not exist an alternative, feasible allocation of goods and inputs that would make all consumers better off as compared with the initial allocation.

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

26. When a fixed stock of inputs cannot be reallocated among firms in an economy without reducing the output of at least one of the goods that is produced in the economy, the allocation satisfies.
- a) exchange efficiency.
 - b) input efficiency.
 - c) substitution efficiency.
 - d) Walras' Law.

Ans: B

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

27. When a fixed stock of inputs cannot be reallocated in such a way to make all consumers better off by producing more of one product and less of another product, the allocation satisfies
- a) exchange efficiency.
 - b) input efficiency.
 - c) substitution efficiency.
 - d) Walras' Law.

Ans: C

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

28. To begin with, John has 6 units of Good X and Jane has 3 units of Good X. If X is measured horizontally in an Edgeworth box, then how wide should the Edgeworth box be?
- a) 3 units
 - b) 6 units
 - c) 9 units
 - d) 18 units

Ans: C

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

29. When a fixed stock of consumption goods cannot be reallocated among consumers in an economy without making at least some consumers worse off, the allocation satisfies
- a) exchange efficiency.
 - b) input efficiency.
 - c) substitution efficiency.
 - d) Walras' Law.

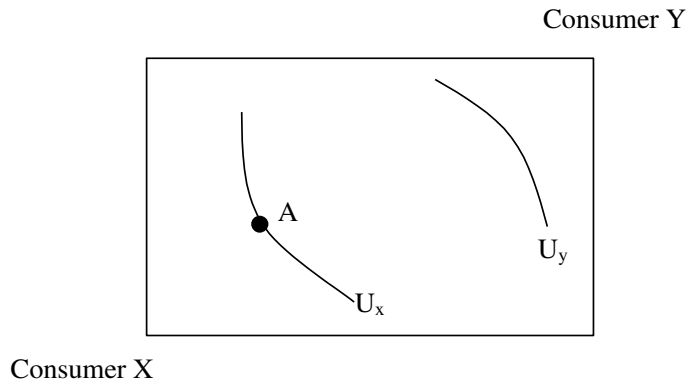
Ans: A

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

30. Consider point A in the Edgeworth box. Does point A satisfy the condition of exchange efficiency?



- a) Yes
- b) No
- c) Yes, as long as point A does not represent the initial endowments of goods for the two players.
- d) Cannot be determined from the figure.

Ans: D

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

31. In an Edgeworth box the line through all of the points that represent efficient allocations of two goods is called
- a) the core.
 - b) the contract curve.
 - c) the efficiency curve.
 - d) the Pareto curve.

Ans: B

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

32. In an Edgeworth box, apples are measured along the horizontal axes, and oranges are measured along the vertical axes. Player 1 is in the lower left-hand corner; player 2 is in the upper right-hand corner. Player 1 likes apples but gets no utility from the consumption of oranges. Player 2 likes oranges but gets no utility from the consumption of apples. In the initial endowment, Player 1 has 5 apples and 4 oranges. Player 2 also has 5 apples and 4 oranges. What is the contract curve?
- a) All points along the horizontal axis.
 - b) All points along the vertical axis.
 - c) All points to the right and below the initial endowment point.
 - d) The point where Player 1 has 10 apples and 0 oranges, and Player 2 has 8 oranges and 0 apples.

Ans: D

Difficulty: Hard

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

33. If each of the two players represented in an Edgeworth box has Cobb-Douglas indifference curves, then the contract curve will be
- a) The vertical axis.
 - b) the diagonal line that begins at the opposite corners of the two players' origins and divides the box into two equal triangles.
 - c) the series of tangency points where the two players' indifference curves have but one point in common.
 - d) the horizontal axis.

Ans: C

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

34. Identify the truthfulness of the following statements.
- I. The contract curve must contain the initial endowment point.
 - II. All points on the contract curve are economically efficient.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

35. In an analysis involving an Edgeworth box, the contract curve contains
- all potential trading points for the two players.
 - the endowment point.
 - all efficient allocations for the two players.
 - both b) and c) are correct.

Ans: C

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

36. Two individuals, A and B, consume two goods, x and y . Consumer A initially has 3 units of x and 2 units of y . Consumer B initially has 5 units of x and 6 units of y . Also, for Consumer A the $MRS_{x,y}^A = 5x/3y$ and for Consumer B the $MRS_{x,y}^B = 3x/y$. Does this initial allocation of x and y represent an efficient allocation?
- Yes
 - No, because both consumers could be made better off by giving A more x and less y .
 - No, because both consumers could be made better off by giving A more y and less x .
 - Cannot be determined from the given information.

Ans: A

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

37. Two individuals, A and B, consume two goods, x and y . Together they have 4 units of x and 8 units of y . For Consumer A the $MRS_{x,y}^A = 5x/3y$ and for Consumer B the $MRS_{x,y}^B = 3x/y$. Which of the following allocations is an efficient allocation of goods x and y ?
- Consumer A has 5 units of x and 3 units of y , and Consumer B has 3 units of x and 1 unit of y .

- b) Consumer A has 3 units of x and 5 units of y , and Consumer B has 1 unit of x and 3 units of y .
- c) Consumer A has 2 units of x and 6 units of y , and Consumer B has 6 units of x and 2 units of y .
- d) Consumer A has 7 units of x and 2 units of y , and Consumer B has 1 unit of x and 6 units of y .

Ans: B

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

38. The input contract curve represents:
- a) All consumption good allocations in an Edgeworth box that are exchange efficient.
 - b) all input allocations in an Edgeworth box for inputs that are economically efficient.
 - c) All possible combinations of consumption goods that can be produced in an economy given the economy's available supply of inputs.
 - d) the different combinations of capital and labor inputs that will produce a given level of output for a particular good.

Ans: B

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

39. Firm X produces output x and Firm Y produces output y using capital, K , and labor, L , as inputs. Firm X has marginal rate of technical substitution $MRTS_{K,L}^x = K_x/L_x$, while firm Y has marginal rate of technical substitution $MRTS_{K,L}^y = 9K_y/L_y$. Which of the following allocations satisfies input efficiency?
- a) Firm X has 5 units of K and 3 units of L , and Firm Y has 3 units of K and 1 unit of L .
 - b) Firm X has 5 units of K and 5 units of L , and Firm Y has 1 unit of K and 9 units of L .
 - c) Firm X has 9 units of K and 1 units of L , and Firm Y has 5 units of K and 5 units of L .
 - d) Firm X has 5 units of K and 5 units of L , and Firm Y has 1 unit of K and 3 units of L .

Ans: B

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

40. The Production Possibilities Frontier represents
- a) All consumption good allocations in an Edgeworth box that are exchange efficient.
 - b) all input allocations in an Edgeworth box for inputs that are input efficient.
 - c) All possible combinations of consumption goods that can be produced in an economy given the economy's available supply of inputs.
 - d) the different combinations of capital and labor inputs that will produce a given level of output for a particular good.

Ans: C

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

41. The slope of the Production Possibilities Frontier is
- a) The marginal rate of technical substitution.
 - b) The marginal revenue product.
 - c) The marginal rate of substitution.
 - d) The marginal rate of transformation.

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

42. The marginal rate of transformation where goods X and Y are produced by an economy using capital and labor as inputs equals
- a) X/Y .
 - b) w/r , where w is the wage and r is the rental rate of capital.
 - c) MP_L/MP_K , where L stands for labor and K stands for capital.
 - d) MC_X/MC_Y

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

43. In a competitive general equilibrium, which of the following relations will *not* be true?
- a) $MRS_{X,Y} = MRT_{X,Y}$.
 - b) $MRT_{X,Y} = MC_X/MC_Y$.
 - c) $MRS_{X,Y} = P_X/P_Y$.
 - d) $MRT_{X,Y} = w/r$.

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

44. Exchange efficiency, input efficiency, and substitution efficiency are satisfied when _____. This result is known as _____.
- a) free trade occurs; Walras Law.
 - b) all markets are at a general competitive equilibrium; Walras Law.
 - c) all markets are at a general competitive equilibrium; the First Fundamental Theorem of Welfare economics.
 - d) resources are scarce; the First Fundamental Theorem of Welfare economics.

Ans: C

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

45. The significance of the First Fundamental Theorem of Welfare Economics is that:
- a) even if the economy is in competitive general equilibrium, significant intervention will be required to bring about economic efficiency.
 - b) there is a possibility that an economy could simultaneously attain an efficient allocation and one in which the resulting distribution of utility is in some sense equitable.
 - c) Even though households and firms behave independently and each pursues its own self-interest, the resulting equilibrium is efficient in the sense that it exploits all possible mutually beneficial gains from trade or from reallocation of inputs.
 - d) resources are scarce in the economy and so must be managed for the long term.

Ans: C

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

46. Any _____ allocation of goods and inputs can be attained as a general competitive equilibrium through a judicious _____ of the economy's _____. This result is known as _____.
- a) arbitrary, allocation, resources; Walras Law.
 - b) equitable, allocation, goods; The First Fundamental Theorem of Welfare Economics
 - c) efficient, allocation, scarce supplies of resources; the First Fundamental Theorem of Welfare economics.
 - d) efficient, allocation, scarce supplies of resources; the Second Fundamental Theorem of Welfare economics.

Ans: D

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

47. The significance of the Second Fundamental Theorem of Welfare Economics is that:
- a) even if the economy is in competitive general equilibrium, significant intervention will be required to bring about economic efficiency.
 - b) there is a possibility that an economy could simultaneously attain an efficient allocation and one in which the resulting distribution of utility is in some sense equitable.
 - c) Even though households and firms behave independently and each pursues its own self-interest, the resulting equilibrium is efficient in the sense that it exploits all possible mutually beneficial gains from trade or from reallocation of inputs.
 - d) resources are scarce in the economy and so must be managed for the long term.

Ans: B

Difficulty: Easy

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

48. The term *Pareto efficient* means that there is no alternative, feasible allocation of goods and inputs
- a) that would make all consumers better off without hurting some consumers.
 - b) that would make any consumers better off without helping some consumers more than others.
 - c) that would make any consumers better off without hurting some consumers.
 - d) that would make any consumers worse off without helping some consumers.

Ans: C

Difficulty: Medium

Heading: The Efficiency of Competitive Markets

LO 5 Apply the general equilibrium theory to explore the efficiency of resource allocation.

49. The idea of comparative advantage is that
- a) each country can gain from trade as long as the opportunity cost of producing one good compared with another good is different between countries.
 - b) every country can gain from trade as long as all countries can produce roughly the same quantity of each good.
 - c) every country can gain from trade as long as the opportunity cost of producing one good compared with another good is the same as for other countries.
 - d) every country can gain from trade as long as the absolute amount of exports equals imports.

Ans: A

Difficulty: Medium

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

50. The idea of comparative advantage tends to imply that
- a) countries as a whole can be made better off through free trade and all segments of society will benefit.
 - b) the countries who have greater resources will earn the greatest benefit from allowing free trade.
 - c) when one country can produce more of a good than another country, that country should specialize in the production of that good.
 - d) countries as a whole can be made better off through free trade, but individuals within that country could be hurt by trade if not compensated by the groups or individuals who are made better off by trade.

Ans: D

Difficulty: Medium

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

**Reference: Use the following table to answer the next three questions (42-44).

Labor Requirements for Production in the East and West (labor hours per unit of output)
--

	<i>Food</i>	<i>Clothing</i>
<i>East</i>	10	20
<i>West</i>	5	15

51. *In above table, what is the opportunity cost of producing one additional unit of food in the West?

- a) 3 units of clothing
- b) 2 units of food
- c) $\frac{1}{2}$ unit of food
- d) $\frac{1}{3}$ unit of clothing

Ans: D

Difficulty: Medium

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

52. *Which of the following statements about the table above is correct?

- a) The East has an absolute advantage in the production of both goods.
- b) The East has an absolute advantage in the production of Food while the West has an absolute advantage in the production of Clothing.
- c) The East has an absolute advantage in the production of Clothing while the West has an absolute advantage in the production of Food.
- d) The West has an absolute advantage in the production of both goods.

Ans: D

Difficulty: Medium

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

53. *Which of the following statements about the table above is correct?

- a) The East has a comparative advantage in the production of both goods.
- b) The East has a comparative advantage in the production of Food and the West has a comparative advantage in the production of Clothing.
- c) The East has a comparative advantage in the production of Clothing and the West has a comparative advantage in the production of food.
- d) The West has a comparative advantage in the production of both goods.

Ans: C

Difficulty: Medium

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

54. Identify the truthfulness of the following statements.
- I. If country A has a comparative advantage over country B in the production of good X, then the opportunity cost of producing good X in country A is lower than in country B.
 - II. If country A has a comparative advantage over country B in the production of good X, then country A cannot gain from trade with country B.
- a) Both I and II are true.
 - b) Both I and II are false.
 - c) I is true; II is false.
 - d) I is false; II is true.

Ans: C

Difficulty: Easy

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

55. If country A has an absolute advantage over country B in the production of good X, then
- a) the opportunity cost of producing X in country A is lower than in country B.
 - b) the opportunity cost of producing X in country A is higher than in country B.
 - c) good X can be produced in country A using fewer inputs than in country B.
 - d) good X can be produced in country B using fewer inputs than in country B.

Ans: C

Difficulty: Easy

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

56. Gains from free trade are realized when countries specialize in the production of goods
- a) for which they have a comparative advantage.
 - b) which they can produce for low costs.
 - c) for which they have an international reputation for excellence.
 - d) which they can produce for a profit.

Ans: A

Difficulty: Easy

Heading: Gains from Free Trade

LO 6 Explain how countries benefit from free trade combined with specialization.

File: ch17; Chapter 17: Externalities and Public Goods

Multiple Choice

1. An example of a positive externality is
- a) a rear-end spoiler feature on the back of sports cars that helps to stabilize and improve handling for the vehicle.
 - b) legislation reducing air pollution.
 - c) a chemical plant that emits thermal pollution.
 - d) a chocolate factory whose aroma draws people to an area of the city that has a large quantity of tourist activities and shopping.

Ans: D

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

2. A rural road is generally considered
- a) a public good, but if it gets congested at times, it may not be considered as such because it is no longer true that one person's use of the road does not reduce the ability of others to "consume it"/use it productively.
 - b) a positive externality.
 - c) a public good, even when congested.
 - d) a natural monopoly.

Ans: A

Difficulty: Medium

Heading: Introduction

LO 1 Define externalities and public goods.

3. What must be true for the provision of wireless service in an airport to be considered a public good?
- a) It must be free and it must include the use of a laptop with no charge also.
 - b) It must be free and it would still be considered a public good even though additional users may crowd people off the network or make it too slow to utilize effectively.

- c) It must be free and it must have enough excess capacity in the network such that additional users do not reduce the ability of other individuals to utilize the network.
- d) It must be available to all, but the airport could charge for access to the service.

Ans: C

Difficulty: Medium

Heading: Introduction

LO 1 Define externalities and public goods.

4. A rival good is one
- a) wherein consumption by one person reduces the amount that can be consumed by others.
 - b) wherein two individuals may fight to gain access to the good.
 - c) which is made more or less freely available by the supplier.
 - d) wherein consumption by one person increases the amount that can be consumed by others.

Ans: A

Difficulty: Easy

Heading: Public Goods

LO 1 Define externalities and public goods.

5. An externality arises when
- a) an economic good is produced by many firms.
 - b) the actions of a decision maker affect other decision makers in a way not reflected in the market price.
 - c) the actions of a decision maker do not affect other decision makers.
 - d) the market equilibrium is inefficient.

Ans: B

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

6. A public good is a good
- a) that is produced by a government agency.
 - b) that, when it is consumed by one decision maker, affects other decision makers in a way not reflected in the market price.

- c) that, when it is consumed by one decision maker, does not reduce the quantity that may be consumed by other decision makers and to which all consumers have access.
- d) that is free.

Ans: C

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

7. Which of the following is a real-world example of a negative externality?
- a) You are craving a soda for lunch. However, the customer ahead of you in line at the hot dog stand buys the last can.
 - b) National defense is available even for people who do not pay income taxes.
 - c) A person seated in a non-smoking section of a restaurant decides to sneak a few puffs of a cigarette.
 - d) A child receives a vaccination to prevent the spread of measles.

Ans: C

Difficulty: Easy

Heading: Externalities

LO 1 Define externalities and public goods.

8. Which one of the following statements is false?
- a) A nonrival good is a good where consumption by one person does not reduce the quantity that can be consumed by others.
 - b) An exclusive good is a good to which consumers may be denied access.
 - c) A good that, once produced is not accessible to all customers, is nonexclusive good
 - d) A rival good is a good where consumption by one person reduces the quantity that can be consumed by others.

Ans: C

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

9. A non-rival good
- a) is also nonexclusive.
 - b) is also exclusive.

- c) must be free.
- d) is one where the consumption of the good by one person does not reduce the quantity available for consumption by another person.

Ans: D

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

10. A nonexclusive good
- a) is also non-rival.
 - b) is also rival.
 - c) must be free.
 - d) is one where once the good is produced, no one can be prohibited from consuming the good.

Ans: D

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

11. An example of a good that is nonexclusive but rival is
- a) hunting in a public game area.
 - b) national defense.
 - c) public radio.
 - d) a pay-TV channel.

Ans: A

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

12. An example of a good that is non-rival but exclusive is
- a) hunting in a public game area.
 - b) national defense.
 - c) public radio.
 - d) a pay-TV channel.

Ans: D

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

13. Which of the following is a key feature of a public good?
- a) The good is rival in its consumption, but a consumer cannot be excluded from the good.
 - b) The good is non-rival in its consumption and a consumer cannot be excluded from the good.
 - c) The good is non-rival in its consumption, but a consumer can be excluded from the good.
 - d) The good is rival in its consumption and a consumer can be excluded from the good.

Ans: B

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

14. Which of the following is a real-world example of a public good?
- a) You are craving a Diet Coke® for lunch, so you purchase one from the hot dog stand in front of your classroom building.
 - b) National defense is available even for people who do not pay income taxes.
 - c) A person seated in a non-smoking section of a restaurant decides to sneak a few puffs of a cigarette.
 - d) A child receives a vaccination to prevent the spread of measles.

Ans: B

Difficulty: Easy

Heading: Introduction

LO 1 Define externalities and public goods.

15. When the market for product X includes a negative externality,
- a) marginal social cost exceeds marginal private cost.
 - b) marginal private cost exceeds marginal social cost.
 - c) marginal social benefit exceeds marginal private benefit.
 - d) marginal private benefit exceeds marginal social benefit.

Ans: A

Difficulty: Easy

Heading: Externalities

LO 3 Distinguish between positive and negative externalities.

16. A governmental limit on the amount of pollution that may be emitted is referred to as
- a) a public good.
 - b) an emissions standard.
 - c) an emissions fee.
 - d) a positive externality.

Ans: B

Difficulty: Easy

Heading: Externalities

LO 3 Distinguish between positive and negative externalities.

17. Which of the following is not a good example of common property?
- a) The internet.
 - b) A hunting ground.
 - c) A reservoir of oil.
 - d) A dormitory room.

Ans: D

Difficulty: Easy

Heading: Externalities

LO 3 Distinguish between positive and negative externalities.

18. Negative externalities
- a) create a deadweight loss as do positive externalities.
 - b) move the economy closer to the social optimum.
 - c) create a deadweight loss and move the equilibrium away from the social optimum.
 - d) should be eliminated completely to move to the social optimum.

Ans: C

Difficulty: Easy

Heading: Externalities

LO 3 Distinguish between positive and negative externalities.

19. Which of the following is a real-world example of a positive externality?

- a) You are craving a soda for lunch. However, the customer ahead of you in line at the hot dog stand buys the last can.
- b) National defense is available even for people who do not pay income taxes.
- c) A person seated in a non-smoking section of a restaurant decides to sneak a few puffs of a cigarette.
- d) A child receives a vaccination to prevent the spread of measles.

Ans: D

Difficulty: Easy

Heading: Externalities

LO 3 Distinguish between positive and negative externalities.

20. When the market for product Y includes a positive externality,
- a) marginal social cost exceeds marginal private cost.
 - b) marginal private cost exceeds marginal social cost.
 - c) marginal social benefit exceeds marginal private benefit.
 - d) marginal private benefit exceeds marginal social benefit.

Ans: C

Difficulty: Easy

Heading: Externalities

LO 3 Distinguish between positive and negative externalities.

21. To move closer to the social optimum when a negative externality exists, the cost to society of the externality should be
- a) incorporated/added on to the price so that demand reflects the true social costs.
 - b) calculated per unit and producers taxed accordingly with a goal of making the supply curve reflective of the marginal social cost of the externality.
 - c) minimized by forcing producers of the externality to shut down when they produce a negative externality.
 - d) minimized by subsidizing the producers of the externality.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

22. If the detriment to society from a negative externality is measure as \$5 per unit of output of a particular good, the best way of moving closer to the social optimum would be to

- a) subsidize consumers who purchase the good by \$5 per unit to offset the negative externality that they may endure.
- b) limit the production of the good to four days per week.
- c) calculate the negative value of the externality and assess a fine on each producer to pay for clean up in proportion to their profits from production of the good.
- d) assess a simple tax of \$5 per unit of production on suppliers of the good.

Ans: D

Difficulty: Hard

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

23. The efficient amount of pollution in society
- a) is zero.
 - b) occurs when the detriment to society from every unit of pollution emitted is taken into account appropriately and remedies are created such that the supply curve for each industry is fully reflective of all marginal social costs.
 - c) is impossible to calculate and therefore it is probably better to set maximum limits for pollution output for each firm in industries that pollute in proportion to their profits.
 - d) is achieved without the government setting any emissions standards because the market equilibrium will coincide with the social optimum in the absence of intervention.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

24. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve for the industry can be expressed as $P = 60 - Q$. What is the socially optimal level of output?
- a) 20 units.
 - b) 15 units.
 - c) 10 units.
 - d) 6 units.

Ans: C

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

25. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve for the industry can be expressed as $P = 60 - Q$. If the industry currently does not take into account the negative externality in its supply decisions, the industry is _____ by _____ units relative to the social optimum.
- a) under-producing; 5
 - b) over-producing; 5
 - c) under-producing; 8
 - d) over-producing; 8

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

26. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. If the consultants have accurately measured the impact of the pollution externality, the equation of the marginal external cost is:
- a) $MEC = Q$.
 - b) $MEC = 2Q$.
 - c) $MEC = 2Q + 10$.
 - d) $MEC = 10$.

Ans: A

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

27. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. If the consultants have accurately measured the impact of the pollution externality, the cost of the externality at the market equilibrium (i.e. where the externality is not taken into account in production decisions) is
- \$0.
 - \$112.5.
 - \$150.
 - \$250.

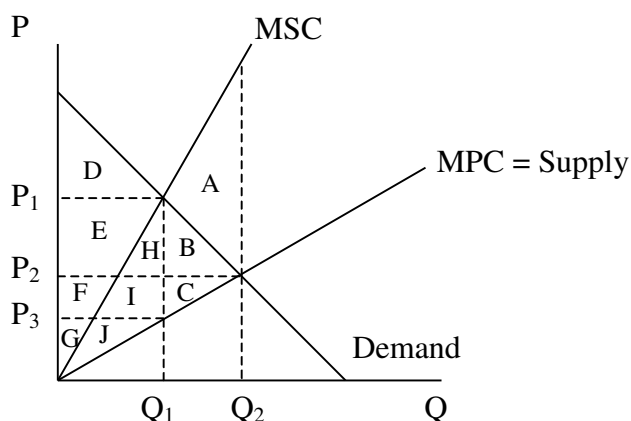
Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

28. In the diagram below, the external cost savings from producing at the socially optimal quantity rather than at the private equilibrium can be represented as:



- A
- B + C
- A + B + C
- E + F + H + I

Ans: C

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

29. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. The sum of the consumer surplus plus producer surplus at the market equilibrium (i.e. the equilibrium where production decisions do not take into account the externality) is:
- a) \$0.
 - b) \$112.5
 - c) \$150.
 - d) \$225

Ans: D

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

30. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. The net social benefit at the market equilibrium (i.e. the equilibrium where production decisions do not take into account the externality) is:
- a) \$0.
 - b) \$112.5
 - c) \$150.
 - d) \$225

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

31. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. If the consultants have accurately measured the impact of the pollution externality, the deadweight loss from producing at the market equilibrium is
- a) \$30

- b) \$37.5.
- c) \$55.
- d) \$67.5.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

32. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The consultants calculate the marginal social cost of production to be $MSC = 2Q + 30$ and the marginal private cost of production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. If the consultants have accurately measured the impact of the pollution externality, the net social benefit of producing at the social optimum (rather than at the private optimum) is
- a) \$0.
 - b) \$112.5
 - c) \$150.
 - d) \$250

Ans: C

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

33. An environmental economic consulting firm is hired to measure the negative externalities associated with the pollution from an industry. The marginal social cost production can be expressed as $MSC = 2Q + 30$. The consultants calculate the marginal private cost production to be $MPC = Q + 30$. The market demand curve can be expressed as $P = 60 - Q$. If the consultants have accurately measured the impact of the pollution externality, the change in social surplus from moving to the social optimum (rather than at the private optimum) is
- a) \$30
 - b) \$37.5.
 - c) \$55.
 - d) \$67.5.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

34. When the government can set emissions standards for polluting industries, which of the following statements is correct?
- a) The government should set the emissions standard to zero because pollution is bad for people.
 - b) The government should set the emissions standard to achieve the socially optimal level of production which, in general, is not equal to zero.
 - c) The government should employ emissions taxes instead because emissions standards cannot generally achieve the social optimum.
 - d) The government should not set emissions standards because the market equilibrium will coincide with the social optimum in the absence of intervention.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

35. Suppose that an industry emits a chemical that pollutes the ground water. Without considering the effects of the pollution, the industry has a marginal private cost curve of $MPC = Q + 30$. The market demand curve is $P = 60 - Q$, while the marginal social cost curve is $MSC = 2Q + 30$. What is the socially optimal emissions standard?
- a) 15.
 - b) 10.
 - c) 5.
 - d) 0.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

36. Suppose that the government could accurately measure the marginal cost of an externality such as water pollution. In order to reduce production from a plant that emits water pollution, the government places an optimal emissions fee on the plant. The final amount of production equates demand with the marginal social cost to society. The deadweight loss associated with this fee is

- a) equal to the amount of the tax.
- b) equal to the quantity reduction as a result of the tax.
- c) measured as $\frac{1}{2}(\Delta Q \Delta P)$.
- d) zero.

Ans: D

Difficulty: Easy

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

37. Suppose that an industry emits a chemical that pollutes ground water. Without considering the effects of the pollution, the industry has a marginal private cost curve of $MPC = Q + 30$. The market demand curve is $P = 60 - Q$, while the marginal social cost curve is $MSC = 2Q + 30$. What level of emissions fee would achieve the socially optimal level of output?
- a) \$54.
 - b) \$32.
 - c) \$12.
 - d) \$10.

Ans: D

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

38. Suppose that an industry emits a chemical that pollutes the ground water. Without considering the effects of the pollution, the industry has a marginal private cost curve of $MPC = Q + 30$. The market demand curve is $P = 60 - Q$, while the marginal social cost curve is $MSC = 2Q + 30$. How can the optimal level of emissions fee best be depicted on a graph in this problem?
- a) The optimal fee shifts down the marginal private cost of production until it intersects demand at the socially optimal output level.
 - b) The optimal fee shifts the demand curve out until it intersects the marginal private cost of production at the socially optimal level of production.
 - c) The optimal fee establishes a maximum level of output at the socially optimal level of production.
 - d) The optimal fee shifts the marginal private cost of production up until it intersects the demand curve at the socially optimal level of production.

Ans: D

Difficulty: Medium

Heading: Externalities

LO 4 Analyze how taxes or emissions standards could reduce the economic inefficiency that arises in a competitive market with a negative externality.

39. A congestion toll is
- a) like an emissions fee.
 - b) like an emissions standard.
 - c) like a negative externality.
 - d) like common property.

Ans: A

Difficulty: Easy

Heading: Externalities

LO 5 Analyze how a congestion toll can reduce the economic inefficiency due to negative externalities from traffic congestion.

40. Suppose that the marginal private benefit of a new vaccine could be measured as $MPB = 10 - Q$. Suppose that the marginal social benefit could be measured as $MSB = 12 - Q$. Suppose that the private marginal cost curve could be measured as $MPC = Q$. If there is no subsidy in this market,
- a) society will over-consume this product by 2 units.
 - b) society will over-consume this product by 1 unit.
 - c) society will under-consume this product by 2 units.
 - d) society will under-consume this product by 1 unit.

Ans: D

Difficulty: Medium

Heading: Externalities

LO 6 Explain how a subsidy could reduce the economic inefficiency that arises in a competitive market with a positive externality.

41. Suppose that the marginal private benefit of a new vaccine could be measured as $MPB = 10 - Q$. Suppose that the marginal social benefit could be measured as $MSB = 12 - Q$. Suppose that the private marginal cost curve could be measured as $MPC = Q$. What quantity represents the optimal societal consumption of the vaccine?
- a) 4 units.
 - b) 5 units.
 - c) 6 units.

- d) 10 units.

Ans: C

Difficulty: Medium

Heading: Externalities

LO 6 Explain how a subsidy could reduce the economic inefficiency that arises in a competitive market with a positive externality.

42. Suppose that the marginal private benefit of a new vaccine could be measured as $MPB = 10 - Q$. Suppose that the marginal social benefit could be measured as $MSB = 12 - Q$. Suppose that the private marginal cost curve could be measured as $MPC = Q$. What amount of a per-unit subsidy would encourage the optimal societal consumption of the vaccine?
- a) \$1.
 - b) \$2.
 - c) \$4.
 - d) \$6.

Ans: B

Difficulty: Medium

Heading: Externalities

LO 6 Explain how a subsidy could reduce the economic inefficiency that arises in a competitive market with a positive externality.

43. _____ states that regardless of how property rights are assigned with an externality, the allocation of resources will be efficient when the parties can costlessly bargain with each other.
- a) Bargaining power
 - b) Opportunity cost
 - c) The Coase Theorem
 - d) Common Property

Ans: C

Difficulty: Easy

Heading: Externalities

LO 7 Describe the Coase Theorem and discuss its economic significance.

44. According to the Coase Theorem, in the absence of bargaining costs,
- a) property rights are key to determining the final outcome of a dispute.

- b) regardless of the initial assignment of property rights, the parties will successfully bargain to the efficient outcome.
- c) whichever party has more money will determine the outcome of a dispute.
- d) whichever party has the larger initial assignment of property rights will control the outcome of a dispute.

Ans: B

Difficulty: Easy

Heading: Externalities

LO 7 Describe the Coase Theorem and discuss its economic significance.

45. The Coase Theorem implies that victims of pollution should be able to pay polluters not to pollute if the victims value a reduction in pollution more than the polluters value the production of the pollution. Which of the following does not explain why this type of payment does not work in “real life”?
- a) If there are many victims, the costs to them of organizing may be quite high.
 - b) If there are many firms in the industry, it may be difficult for the victims to negotiate with all of the firms.
 - c) The victims may have trouble quantifying the value to them of reducing the pollution.
 - d) Bargaining costs are likely to be small in this case, so the theorem does not apply.

Ans: D

Difficulty: Easy

Heading: Externalities

LO 7 Describe the Coase Theorem and discuss its economic significance.

46. Suppose that a smoker and a non-smoker are seated next to each other in a restaurant. This restaurant does not offer a non-smoking section. The smoker is indifferent between 1) smoking and 2) not smoking and consuming a \$6 dessert. The non-smoker values being able to eat in a smoke-free environment at \$10. According to the Coase Theorem, and assuming no bargaining costs, what will happen?
- a) The smoker will continue to smoke because that is his right.
 - b) The smoker will stop smoking, just to be a nice guy.
 - c) The non-smoker will offer to pay the smoker between \$6 and \$10 to stop smoking, but the smoker will refuse because he has the right to smoke.
 - d) The non-smoker will offer to pay the smoker between \$6 and \$10 to stop smoking, and the smoker will accept the money and refrain from smoking.

Ans: D

Difficulty: Easy

Heading: Externalities

LO 7 Describe the Coase Theorem and discuss its economic significance.

47. A commonality between externalities and public goods is that
- a) in each case, markets are not likely to allocate resources efficiently, even though they might otherwise be competitive.
 - b) in each case, government agency intervention would create inefficiency compared to the market solution.
 - c) competitive markets are likely to be efficient in each case.
 - d) the invisible hand (as discussed by Adam Smith) is likely to lead to efficiency in each case.

Ans: A

Difficulty: Easy

Heading: Public Goods

LO 8 Show how the efficient quantity of a public good is determined.

48. In markets with externalities or public goods,
- a) private benefits exceed social benefits.
 - b) private costs exceed social costs.
 - c) the private costs and benefits that decision makers face diverge from the social costs and benefits.
 - d) the private costs and benefits that decision makers face are the same as the social costs and benefits.

Ans: C

Difficulty: Easy

Heading: Public Goods

LO 8 Show how the efficient quantity of a public good is determined.

49. In public goods markets, the efficient provision of the public good is determined by
- a) the intersection of the horizontal sum of the demand curves of the consumers in the market with the marginal cost curve of the good.
 - b) the intersection of the vertical sum of the demand curves of the consumers in the market with the marginal cost curve of the good.
 - c) The intersection of the demand curve for each individual consumer with the marginal cost curve for the good.
 - d) the intersection of the total cost of producing the good and the vertical sum of the demand curves of the consumers in the market.

Ans: C

Difficulty: Easy

Heading: Public Goods

LO 8 Show how the efficient quantity of a public good is determined.

50. The reason why we sum the demand curves of individual consumers vertically rather than horizontally in a public goods market is that
- a) the willingness to pay in a public good market is smaller than that in a standard market.
 - b) individual consumers are unlikely to be willing to pay enough to cover the marginal cost of production of a public good.
 - c) the marginal social benefit of the X^{th} unit includes all consumers' marginal social benefits because the public good is non-exclusive and non-rival.
 - d) the concept of quantities is meaningless in the case of public goods.

Ans: C

Difficulty: Easy

Heading: Public Goods

LO 8 Show how the efficient quantity of a public good is determined.

51. Suppose that Bill, George, and Al constitute the entire market for consumers of national defense. Each man has an identical demand curve for national defense, which can be expressed as $P = 50 - Q$. Suppose that the marginal cost for national defense can be expressed as $MC = \$30$. What is the optimal quantity of national defense?
- a) 150 units.
 - b) 60 units
 - c) 40 units.
 - d) 20 units.

Ans: C

Difficulty: Medium

Heading: Public Goods

LO 8 Show how the efficient quantity of a public good is determined.

52. Efficient provision of a public good occurs when
- a) the marginal cost and the marginal social benefit curves intersect; the marginal social benefit curve is the sum of all the individual demand curves for the good.
 - b) the marginal cost and the marginal social benefit curves intersect; the marginal social benefit curve reflects the costs and benefits of producing the good.
 - c) each individual votes on the amount that is to be spent on public goods.
 - d) the free market is left to determine the social costs and benefits.

Ans: A

Difficulty: Hard

Heading: Public Goods

LO 8 Show how the efficient quantity of a public good is determined.

53. Suppose a particular national park imposes a voluntary contribution system for entrants of the park. It is suggested that all entrants pay something and there is an estimate given that \$5 per user on average will be sufficient to pay for the expenses of maintaining the park. It is most likely that
- a) everybody that enters the park will pay a sufficient amount to make sure that expenses are covered.
 - b) nobody who uses the park will contribute anything and the expenses will not be covered.
 - c) some users of the park will not pay anything and will act as *trespassers*.
 - d) some users of the park will not pay anything and will act as *free riders*.

Ans: D

Difficulty: Easy

Heading: Public Goods

LO 9 Explain the free rider problem.

54. The free rider problem occurs
- a) when externalities are unaccounted for.
 - b) for both exclusive and non-exclusive goods.
 - c) when a governmental body intervenes in the workings of a private market.
 - d) a consumer consumes a good that others pay for but pays nothing herself.

Ans: D

Difficulty: Easy

Heading: Public Goods

LO 9 Explain the free rider problem.

55. Which of the following is not an example of a free rider problem?
- a) Sally listens to public radio but never contributes to her local station.
 - b) Fred benefits when the National Guard arrives to help create a flood wall around his town, but he is so poor that he pays no taxes.
 - c) Joe works with two other students on a group project for his intermediate microeconomics class. The grade is based on a group paper, but Joe goes to a

- movie instead of working on the paper because he knows that the other group members will write it without him.
- d) John goes into his local corner shop and walks out with an apple without paying for it.

Ans: D

Difficulty: Easy

Heading: Public Goods

LO 9 Explain the free rider problem.