EconS 101-1
Spring, 2009
Final Examination
Answers

1. Use the information in the table below to answer the following question.

Price	Quantity demanded	Quantity supplied
$ 20	200	0
40	150	50
60	100	100
80	50	150
100	0	200

If the government mandates that prices in this market can fall no lower than $50, this results in
a. a situation of excess quantity demanded.
b. a situation of excess quantity supplied.
c. fewer than 100 units being supplied in this market.
d. no effect in this market, since the equilibrium price is greater than $50.

1. Answer d. Setting a lower limit on prices of $50 in this market is an example of an ineffective price floor since a price floor of $50 is less than the equilibrium price of $60. This price floor would have no effect on the market.

2. The cross-price elasticity of demand between movie tickets and movie theater popcorn is estimated to equal −0.6. Suppose movie ticket prices increased by 20% this year. The percentage change in the quantity demanded of movie theater popcorn will be a(n)
a. increase of 1.2%
b. increase of 12%.
c. decrease of 1.2%.
d. decrease of 12%.

2. Answer d. To compute this answer, first recall that the cross-price elasticity is the ratio of the percentage change in the quantity demanded of good A divided by the percentage change in the price of good B. The question provides the value for the cross-price elasticity of demand as well as the percentage change in the price of movie tickets. Plugging these values into our equation for cross-price elasticity of demand, we have $-0.6 = x/20\%$ where x is the percentage change in the quantity demanded of movie theater popcorn. Solving this equation, the percentage change in the quantity demanded of movie theater popcorn is a decrease of 12%.

3. Suppose the income elasticity of demand for a good is greater than one. Which of the following statements is true?

a. The percentage change in the quantity demanded of this good is larger than the percentage change in income.
b. This good is a necessity, since as income increases the quantity demanded of the good increases.
c. This good is an inferior good, since as income increases the quantity demanded of the good increases at a much greater rate than the rate of increase in income.
d. This good could not be a luxury good, since income and the quantity demanded have a positive relationship.

3. Answer a. When income elasticity of demand is greater than one, this tells us that the good is not an inferior good, since as income increases this leads to an increase in the quantity demanded of the good. From the definition of income elasticity of demand, a value greater than one implies that the percentage change in the quantity demanded of the good is greater than the percentage change in income. When the income elasticity of demand is greater than one, this implies that the good is a luxury, since the percentage increase in the quantity demanded is increasing at a faster rate than the percentage increase in income.

Answer the next question based on the following information. The graph below represents the market for cigarettes in Tinseltown. *D* is the demand curve, *S*1 is the supply curve, and *St* is the supply curve after an excise tax has been imposed on cigarettes. Letters *A* through *K* represent areas in the graph. Prices are denoted as *P*1, *P*2, *P*3, *P*4, and *P*5. Quantities are denoted as *Q*1, *Q*2, *Q*3, and *Q*4.
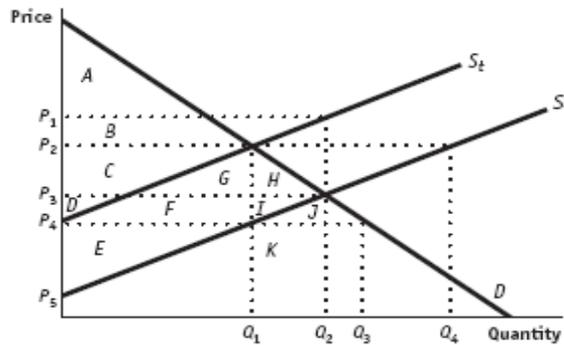
4. A mathematical expression for the deadweight loss caused by this excise tax is

a. $(P_2 - P_4)(Q_2)$.
b. $(P_2 - P_4)(Q_2 - Q_1)$.
c. $(1/2)(P_2 - P_4)(Q_2 - Q_1)$.
d. $(1/2)(P_2 - P_3)(Q_2 - Q_1)$.

4. Answer c. The area of deadweight loss can be calculated as an area of a triangle: thus, this area is equal to one-half times the product of the excise tax per unit and the change in quantity due to the imposition of the tax. In this example, the excise tax per unit is equal to $(P_2 - P_4)$ and the change in quantity is $(Q_2 - Q_1)$.

5. Consider Mary whose weekly income (*I*) for purchasing fruit (*F*) and milk (*M*) is $20. Each unit of fruit costs $1, while each unit of milk costs $2. The equation expressing Mary's budget line can be written as

a. $F = 20 + 2M$
b. $F = 10 - (1/2)M$
c. $F = 20 - 2M$
d. $F = 10 - M$

5. Answer c. To find Mary's equation for her budget line, recall that a budget line can be written as $I = $ (price of good X)(quantity of good X) + (price of good Y)(quantity of good Y). In this case we have $\$20 = (\$1)(F) + (\$2)(M)$, or $F = 20 - 2M$.

6. Which of the following statements best expresses the optimal consumption rule given a consumer's budget constraint?

a. A consumer should consume the maximum amount possible of the relatively cheapest good available to them.

b. A consumer should divide their income evenly among all the possible goods they consume.

c. A consumer will maximize their utility when they specialize.

d. A consumer will maximize their utility when the marginal utilities of the last dollar spent on each and every good or service in their consumption bundle are equal.

6. Answer d. This answer is definitional. The individual does not want to consume the maximum amount of the cheapest good available for many reasons, but a primary reason is that this would not offer the individual any variety in their consumption bundle. The individual does not want to divide their income evenly among the goods available: for instance, the individual does not want to spend the same amount on table salt as they do on housing. Consumer maximization focuses on consumption decisions and not production decisions. Specialization is essentially a production decision.

7. The slope of the indifference curve at any point on the indifference curve is equal to the negative of the
a. price of the good measured on the vertical axis divided by the price of the good measured on the horizontal axis.
b. price of the good measured on the horizontal axis divided by the price of the good measured on the vertical axis.
c. marginal utility of the good measured on the vertical axis divided by the marginal utility of the good measured on the horizontal axis.
d. marginal utility of the good measured on the horizontal axis divided by the marginal utility of the good measured on the vertical axis.

7. Answer d. The slope of the indifference curve at any point on the indifference curve is equal to the negative of the marginal rate of substitution, and the marginal rate of substitution is equal to the ratio of the marginal utility of the good measured on the horizontal axis to the marginal utility of the good measured on the vertical axis. The slope of the indifference curve at the

consumer's optimal consumption point is equal to the negative of the ratio of the price of the good measured on the horizontal axis to the price of the good measured on the vertical axis.

8. Suppose an individual consumes good X and good Y, where good X is measured on the horizontal axis and good Y is measured on the vertical axis. Holding everything else constant, if the price of good X increases, then the slope of the budget line gets
a. steeper, and the optimal consumption bundle is on a higher indifference curve.
b. flatter, and the optimal consumption bundle is on a lower indifference curve.
c. steeper, and the optimal consumption bundle is on a lower indifference curve.
d. flatter, and the optimal consumption bundle is on a higher indifference curve.

8. Answer c. The increase in the price of good X means that the individual can no longer afford as much of good X as he could before the price change. This price change therefore causes the budget line to pivot inward along the horizontal axis while not affecting the y-intercept. This implies that the budget line would be steeper. The individual now finds that the consumption bundle that maximizes his utility lies on a lower indifference curve.

Use the information below about the production function for Caroline's Ceramics to answer the following question.

| Quantity of variable input (units)	Quantity of output (ceramic vases)
0	0
2	100
4	250
6	500
8	700
10	800

9. Caroline's Ceramics' production experiences diminishing returns to labor when Caroline hires

a. the second unit of labor.

b. the fourth unit of labor.

c. the sixth unit of labor.

d. the eighth unit of labor.

9. Answer d. To answer this question, first calculate the marginal product of labor. Recall that the marginal product of labor is the change in total product divided by the change in labor. In this example, labor increases by 2 units at a time, so the change in labor is 2 units of labor. The marginal product of labor of hiring the second unit of labor is thus (100 units of output)/(2 units of labor), or 50 units of output per unit of labor. Once you have calculated the marginal product of labor for each level of labor in the table, you can then determine at what level of labor the marginal product first declines.

10. In the short run, a firm's fixed cost _____ while the firm's average fixed cost _____.

a. stays constant as output increases; increases as the firm produces higher levels of output

b. stays constant as output increases; decreases as the firm produces higher levels of output

c. increases as the firm produces higher levels of output; stays constant as output increases

d. decreases as the firm produces higher levels of output; stays constant as output increases

10. Answer b. *FC* does not vary as the level of production varies, but average fixed cost declines as output increases since *AFC* = *FC*/*Q* and *Q* is increasing.
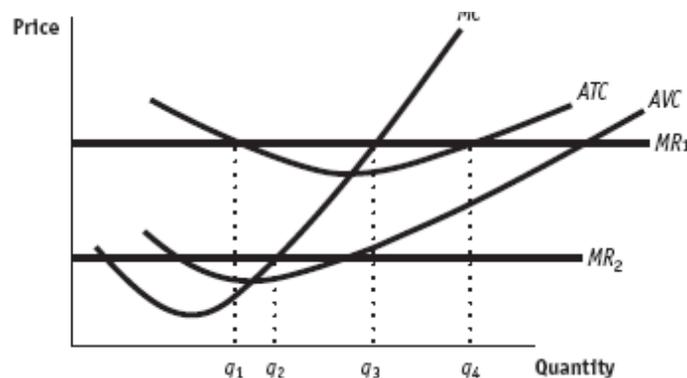
11. Use the above graph of a perfectly competitive firm in the short run to answer this question. If the firm's marginal revenue is *MR2*, then this firm profit maximizes by producing _____ units of output, and its economic profit will be _____.

a. *q*1; negative
b. *q*2; negative
c. *q*3; zero
d. *q*4; negative

11. Answer b. The perfectly competitive firm sets marginal revenue equal to marginal cost and produces that quantity of output (*q*2). When the firm produces *q*2 units of output, the market price is less than the average total cost of production for this level of output, and the firm will earn negative economic profit.

12. A natural monopoly

a. profit maximizes when it produces the quantity where *MR* = *MC*.

b. experiences decreasing costs throughout the relevant region of output.

c. is a monopoly whose *ATC* curve declines over the output levels at which price is greater than or equal to average total cost.

d. All of the above statements are true.

12. Answer d. A natural monopoly has increasing returns to scale over all the levels of output at which price is greater than or equal to average total cost. This implies that as its level of production increases its cost per unit declines. It is cheaper for a single firm to produce the total output for the market than it is for multiple firms to produce this level of total output.

Use the graph of a monopolist below to answer the next question.
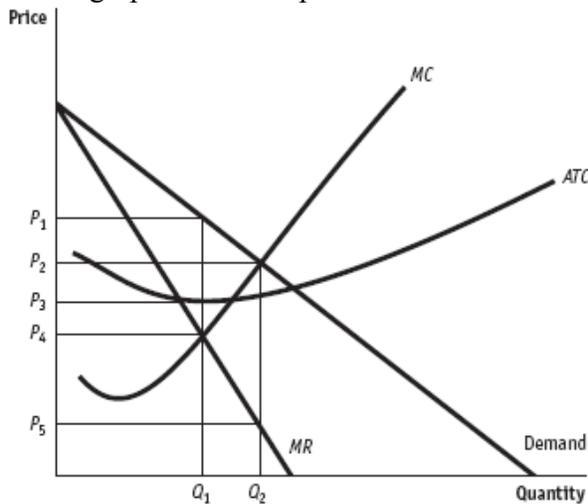
13. This monopolist will produce the profit-maximizing level of output ____ and sell each unit for _____.

a. *Q*1; *P*1. c. *Q*2; *P*2.

b. *Q*1; *P*2. d. *Q*1; *P*4.

13. Answer c. If this monopolist were to act as if it was a perfectly competitive industry, then it would produce the level of output where marginal cost intersected the demand curve, because this would represent the efficient level of output where the marginal cost of the last unit produced equals the price from selling the last unit of the good. It would sell these *Q*2 units of the good for the price on the demand curve (*P*2) that is associated with this level of output.

14. Which of the following statements is true?

I. A perfectly competitive industry produces an efficient level of output, since $P = MC$ for the last unit produced in this industry.
II. A monopoly produces an efficient level of output, since $MR = MC$ for the last unit produced by this monopoly.

III. A perfectly price-discriminating monopolist produces an efficient level of output, since the value consumers are willing to pay for the last unit sold is equal to the cost of producing this last unit.

a. Statement I is true.
b. Statements I and II are true.
c. Statements I and III are true.
d. Statements I, II, and III are true.

14. Answer c. Both statements I and III are true based on the profit-maximization rule for these two types of market structures. Statement II is not true: although monopolies produce where $MR = MC$, they charge a higher price, so that for the last unit produced, the marginal cost is less than the price. The monopolist does not produce the efficient level of output, since price does not equal marginal cost for this last unit.

Use the following graph of a monopolist to answer the next uestion.
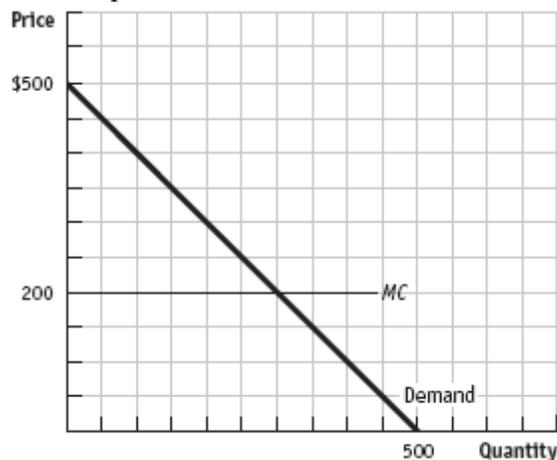
15. If this monopolist profit maximizes, it will produce _____ units of output, charge a price of _____, provide a producer surplus equal to _____, provide a consumer surplus equal to _____, and create a deadweight loss equal to _____.

a. 250; $250; $31,250; $31,250; $0

b. 150; $350; $22,500; $11,250; $11,250

c. 150; $350; $11,250; $22,500; $11,250

d. 300; $200, $0; $45,000; $0

Answer b. The monopolist profit maximizes by producing the quantity where $MR = MC$. The MR curve for this monopolist is $MR = 500 - 2Q$. So the monopolist will produce 150 units, and it will sell these units for a price of $350 (substitute 150 units into the demand curve to find the price the monopolist will charge). The graph below indicates the areas that correspond to consumer surplus, producer surplus, and deadweight loss.
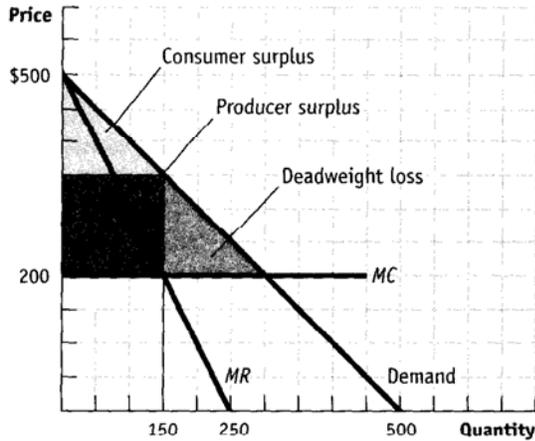
Use the graph of a monopolist below to answer the next question.
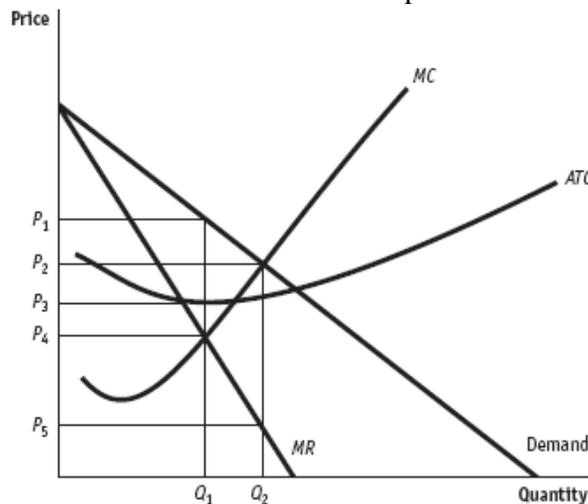
16. The deadweight loss associated with this monopoly can be measured as the area
a. $(1/2)(P2/\text{unit} - P4/\text{unit})(Q2 \text{ units} - Q1 \text{ units})$.
b. $(1/2)(P1/\text{unit} - P4/\text{unit})(Q1 \text{ units})$.
c. $(1/2)(P2/\text{unit} - P4/\text{unit})(Q1 \text{ units})$.
d. $(1/2)(P1/\text{unit} - P4/\text{unit})(Q2 \text{ units} - Q1 \text{ units})$.

16. Answer d. The deadweight loss associated with this monopoly is the area that represents the loss in total surplus due to the market being served by a monopoly instead of a perfectly competitive industry. This surplus loss is the area $(1/2)(P1/\text{unit} - P4/\text{unit})(Q2 \text{ units} - Q1 \text{ units})$.

Use the following information to answer the next question. The following payoff matrix indicates the level of profits earned by Printers Press and Typesetters, the only two firms in the

printing industry in an economy. The level of profits for each firm depends on whether they cooperate or compete with one another.

17. What is the Nash Equilibrium?

a. Both agents will choose to compete.

b. Both agents will choose to cooperate.

c. Printers Press will choose to cooperate and Typesetters will choose to compete.

d. Printers Press will choose to compete and Typesetters will choose to cooperate.

18. There are ten firms in an industry and five of these firms each have sales equal to 10% of the total market. Two of the other five firms each have sales equal to 20% of the total market, two of the other five firms each have sales equal to 3% of the total market, and the remaining firm has sales equal to 4% of the total market. If two of the firms with market share of 10% each were to merge, what would the new HHI equal?

a. 1,534 c. 1,000

b. 1,334 d. 1,743

18. Answer a. The HHI would equal HHI=$(10)^2 + (10)^2 + (10)^2 + (20)^2 + (20)^2 + (20)^2 + (3)^2 + (3)^2 + (4)^2 = 1,534$.

Use the figure below to answer the next question.
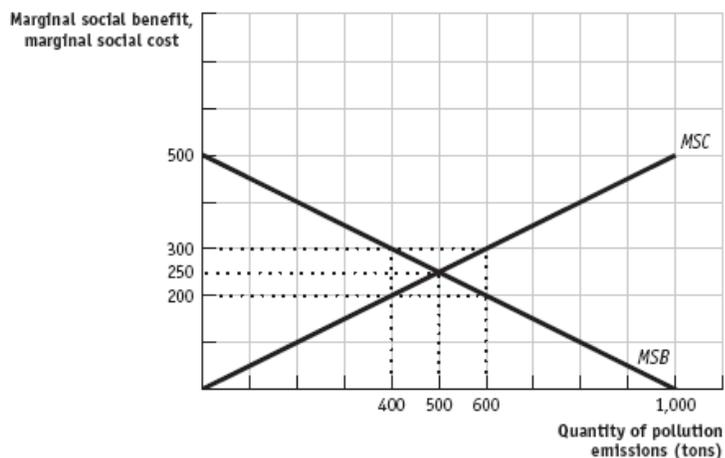
19. When 400 tons of pollution are emitted,
a. the marginal social cost of pollution is less than the marginal social benefit of pollution.
b. this economy would be better off producing more pollution emissions.
c. this economy would be worse off producing more pollution emissions.
d. Answers (a) and (b) are true.
e. Answers (a) and (c) are true.

19. Answer d. The socially optimal amount of pollution emissions is 500 tons where the marginal social benefit of pollution equals the marginal social cost of pollution. At 400 tons, the marginal social benefit of pollution equals $300 per ton, while the marginal social cost of this pollution equals $200 per ton. This society would be better off producing more pollution emissions.

Use the following information to answer the next two questions:
Residents of Smalltown recognize that there are private benefits to exercise, and they estimate that the marginal private benefits from exercise can be represented by the demand curve $P = 100 - 0.05Q$, where P measures the marginal private benefit and Q is hours of exercise per year. Exercise also generates positive external benefits for the community because it reduces health care costs, lowers the obesity rate, and results in a more energetic and engaged community. The marginal external benefit from a unit of exercise is estimated to have a value of $10 per hour of exercise. The supply curve for exercise can be represented by the equation $P = 0.05Q$, where P measures the marginal private cost of exercise and Q is hours of exercise per year.

20. What is the socially optimal amount of exercise per year for Smalltown?
a. 0 hours of exercise
b. 1,000 hours of exercise
c. 1,100 hours of exercise
d. 2,000 hours of exercise

20. Answer c. The socially optimal amount of exercise is the amount of exercise where $MSB =$ Supply (since there are no marginal social costs to include in this problem). Thus, to solve this question you must find the marginal social benefit of exercise, which is equal to the demand curve plus the marginal external benefit. The marginal external benefit is $10 per unit, so this means that the MSB curve can be expressed as

$$MSB = 110 - 0.05Q.$$
Setting this equation equal to the supply curve yields
$$110 - 0.05Q = 0.05Q.$$
Thus, the socially optimal amount of exercise is 1,100 hours of exercise.

21. Smalltown decides it is important for the community to consume the socially optimal amount of exercise. Smalltown therefore decides to enact a policy of
a. subsidizing everyone who exercises with a payment of $10 per hour of exercise.
b. taxing everyone who exercises with a tax payment of $10 per hour of exercise.
c. mandating that everyone exercise an additional 10 hours per year.
d. reducing the price of each hour of exercise by $20.

21. Answer a. When Smalltown subsidizes the consumption of exercise by an amount equal to the social benefit of the additional hour of exercise, it effectively causes the demand curve for exercise to shift to the right, resulting in more hours of exercise being demanded at every price. With a subsidy of $10 per hour of exercise, the subsidy exactly equals the marginal social benefit of an hour of exercise, and thus this subsidy results in the residents of Smalltown consuming the socially optimal amount of exercise.

22. When two firms have different marginal social benefit from pollution, this implies that

a. an equal reduction in pollution by both firms is not efficient.

b. one firm can reduce its level of pollution by a larger amount and still find that its marginal social benefit of pollution is equal to the other firm's marginal social benefit of pollution.

c. an emissions tax is more efficient than an emissions standard.

d. All of the above statements are true.

22. Answer d. When two firms have different marginal social benefit from pollution curves, this tells us that the marginal social benefit from reducing pollution by a set amount is different between the two firms. It is therefore more efficient to have the firms reduce pollution by different amounts until the marginal social benefit of pollution is the same for both firms. An emissions standard requires that both firms reduce pollution by an equal amount without regard to the marginal social benefit of pollution.

23. Policymakers decide they wish to encourage the consumption of an activity that generates positive externalities. Which of the following statements is true?

I. An excise tax on each unit of the good consumed helps the policymaker achieve the socially optimal amount of consumption of this good.
II. A subsidy per unit of the good consumed helps the policymaker achieve the socially optimal amount of consumption of this good.
III. Intervention in this market by the policymaker results in a socially less-optimal outcome for this market, since government intervention in any market results in a deadweight loss.

a. Statement I is true.

b. Statement II is true.

c. Statement III is true.

d. None of the above statements are true given this situation.

23. Answer b. When there is a positive externality, the government can encourage the consumption of the good by legislating a subsidy for the consumption of the good. Without the subsidy too little of the good is consumed, and therefore the government intervention in this market can move the market closer to the socially optimal outcome.

24. For a market to efficiently deliver a good, the good must be
a. rival in consumption.
b. excludable.
c. nonrival in consumption.
d. nonexcludable.
e. (a) and (b)
f. (c) and (d)

24. Answer e. Goods that are both rival in consumption and excludable are private goods and can be produced efficiently by the market. Goods that lack one or both of these characteristics are not efficiently provided by the market.

25. The Illinois Tollway that connects Rockford to Chicago is constantly congested with traffic jams. Motorists must pay a toll fee to use the Tollway. The Tollway is a good that is characterized as
a. rival in consumption and nonexcludable.
b. rival in consumption and excludable.
c. nonrival in consumption and nonexcludable.
d. rival in consumption and nonexcludable.

25. Answer b. The Tollway is rival in consumption, since one person's use of the Tollway reduces the benefit of using the Tollway for other people due to the high level of congestion. The Tollway is also excludable since no one can drive on the Tollway without paying the toll.

26. In the case of a common resource, the market does not recognize that
a. marginal social cost is greater than the private cost of providing the last unit of the good.
b. marginal social benefit is greater than the marginal benefit individuals receive from consuming the last unit of the good.
c. marginal social benefit and marginal social cost are both ignored by the market.
d. the marginal benefits and marginal costs from consumption of the good are ignored.

26. Answer a. With a common resource, the marginal cost of consuming an additional unit of the good does not take into account the cost of this consumption on other individuals. This implies that there is a divergence between the marginal social cost of consuming an additional unit of the good and the marginal cost to the individual of consuming an additional unit of the good. The market equates the marginal social benefit of consuming the good with the consumer's marginal cost of consuming the good, rather than equating the marginal social benefit to the marginal social cost.
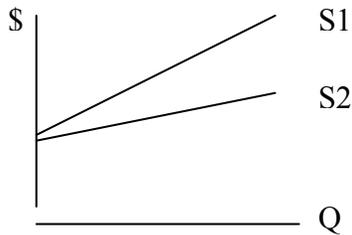
ASSESSMENT EXAM

1. (Dm-1) In a perfectly competitive market, the demand curve facing one producer is:

    A. A positively sloped price-quantity relationship.
    B. A negatively sloped price-quantity relationship.
    C. A horizontal price-quantity relationship.
    D. None of the above.

2. (Sp-1) Which of the diagrams BELOW show a decrease in quantity supplied?
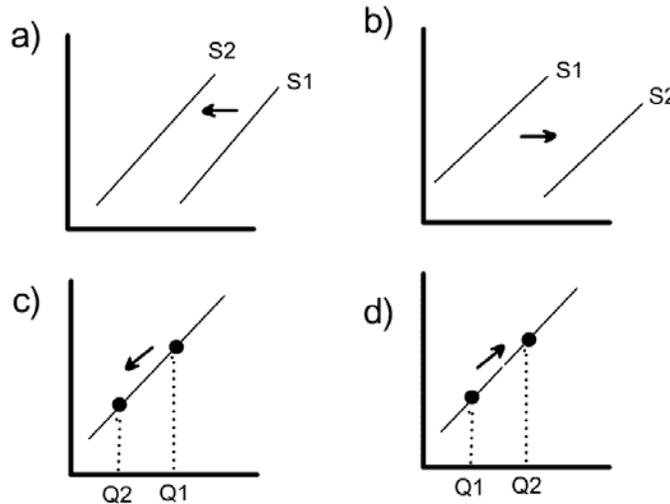
3. (Sp-3) In the diagram below, the

    A. supply curve S1 exhibits infinite elasticity.
    B. supply curve S1 is more elastic than the supply curve S1.
    C. supply curve S2 is more elastic than the supply curve S2.
   D. supply curve S2 exhibits infinite elasticity

4. (PM-1) Using the table below, if the market wage were $55 per unit of labor the profit maximizing firm will hire how many units of labor?

Unit of Labor	Total Output	Price of Output
0	0	$10
1	20	$10
2	35	$10
3	45	$10
4	50	$10
5	53	$10
6	55	$10
7	56	$10

A.   3 units
B.   4 units
C.   6 units
D.   7 units

5. (Cst-1) Marginal cost is defined as

A. the change in total fixed costs as output changes by 1 unit.
B. the change in total costs as output changes by 1 unit.
C. the change in average total cost as output changes by 1 unit.
D. the change in average variable cost as output changes by 1 unit.

6. (Dm-2) Assume that chicken and beef are substitutes. As a result of a decrease in the price of beef,

A. the demand for chicken decreases.
B. the quantity demanded of chicken increases.
C. the demand for beef decreases.
D. the demand for chicken increases.

7. (Cst-3) A new tax of $3 per unit of output is imposed on producers. The effect of this new tax on the firm's cost curves is that

A. there is a parallel shift upwards of the average total cost, marginal cost, and average variable cost curves by $3.
B. the minimum of the average total cost will occur at a higher level of output.
C. the minimum of the average variable cost will occur at a higher level of output.

D. the average total cost curve will shift upwards (and to the right), but the average
    variable cost and marginal cost curves will not change.

8. (UM-1) The goal of a consumer is to:

   A. Maximize utility subject to a budget constraint.
   B. Maximize utility with no consideration of monetary expense.
   C. Buy the least expensive goods and thereby maximize utility.
   D. None of the above.

9. (UM-2) Suppose that Mark only buys good 1 and good 2. And suppose that Mark's income is
         $40, the price of good 1 is $1 and the price of good 2 is $3. To maximize his utility,
         Mark will buy a combination of good 1 and 2 such that

   A. Mark's tradeoff is 3 units of good 1 for 1 unit of good 2.
   B. Mark spends $20 on good 1 and spends $20 on good 2.
   C. Mark spends $10 on good 1 and spends $30 on good 2.
   D. Mark spends $30 on good 1 and spends $10 on good 2.

10. (UM-3) Mary has a fixed income of $1600 per month that she spends on good X and good Y.
         The price of good X is $1 per unit and the price of good Y is $2 per unit. This year
         Mary maximized her utility and bought 1000 units of good X and 300 units of good Y.
         Next year, the price of good X will increase from $1 to $2 and the price of good Y will
         remain at $2, and Mary's monthly income will remain at $1600. From this information
         we know that next year Mary

   A.   be on a lower indifference curve
   B.   remain on the same indifference curve
   C.   continue to buy 1000 units of good X and 300 units of good Y
   D.   remain on the same budget line

11. (PM-2) Refer to Firm 1's cost curves shown in the diagram below. Firm 1 is a small firm operating in a perfectly competitive market. If the market price equals $7 then Firm 1 will maximize profits in the short run by
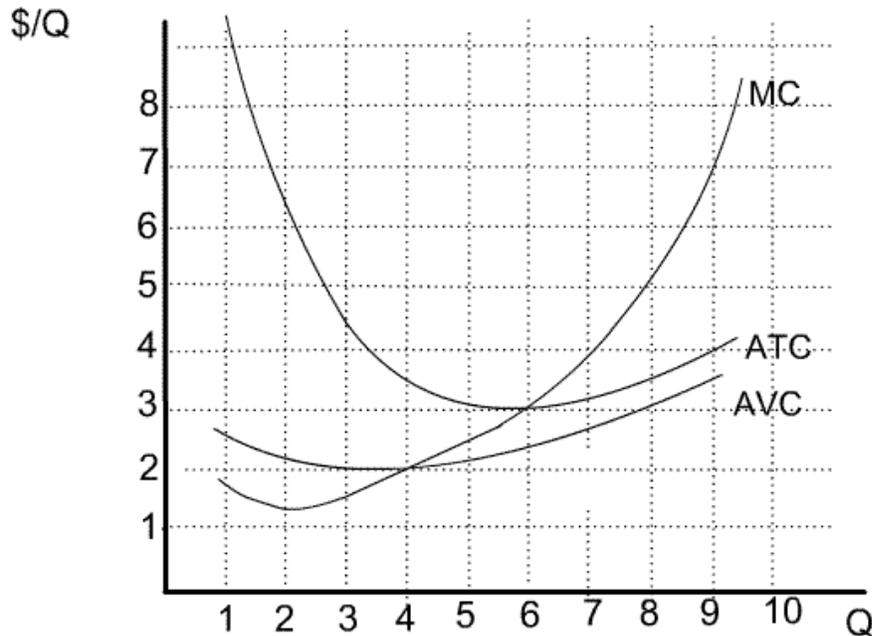
A. producing 6 units with total profits equal to zero.
B. producing 6 units with total profits equal to $24.
C. producing 9 units with total profits equal to $27.
D. producing 9 units with total profits equal to $36.

12. (PM-3) To maximize profits, a firm should produce every unit of output where

A. Marginal Revenue > Marginal Cost > Average Variable Cost.
B. Price > Average Variable Cost > Marginal Cost.
C. Price > Average Total Cost > Marginal Cost.
D. Average Total Cost > Average Variable Cost > Marginal Cost.

13. (Pd-1) The difference between long run costs and short run costs is that

A. in the long run **all** inputs are fixed while in the short run **all** inputs are variable.
B. in the long run **all** inputs are variable while in the short run **all** inputs are fixed.
C. the long run is over a year and the short run is less than a year.
D. in the long run **all** inputs are variable while in the short run **some** inputs are fixed.

EconS 101, Spring 2009   Name: _____

14. (Pd-2) Refer to the firm's short run production function described in the table below.
    For this firm, the marginal product of labor equals 7 for which unit of labor?

Units of Labor	Total Output
0	0
1	12
2	21
3	28
4	32
5	35

    A. the second unit.
    B. the third unit.
    C. the forth unit.
    D. the fifth unit.

15. (Pd-3) A profit-maximizing firm that has not shutdown will never produce at an output
        level where

    A. marginal cost is less than average total cost.
    B. marginal product of labor is decreasing.
    C. production exhibits diminishing returns.
    D. marginal product of labor exceeds the average product of labor.

16. (Sub-1) Choose the best definition of an *isoquant*:

    A. A curve that shows all combinations of two inputs that can be purchased for a
        constant amount of money.
    B. A curve showing all combinations of two inputs that can produce a given amount of
        output.
    C. A curve showing the all combinations of two outputs that can be produced with a
        given amount of input.
    D. A curve showing all combinations of output that generate a constant amount of
        satisfaction.

17. (Sub-2) The optimal combination of two inputs, X_1 and X_2, is determined by:
      A. Setting the marginal rate of technical substitution equal to the inverse price ratio.
      B. Setting the slope of the isoquant equal to the slope of the isocost line.
      C. Setting $\dfrac{\Delta X_1}{\Delta X_2} = -\dfrac{P_{X2}}{P_{X1}}$ or $\dfrac{\Delta X_2}{\Delta X_1} = -\dfrac{P_{X1}}{P_{X2}}$.
      D. All of the above

18. (MS-2) Which of the following statements is true

      A. If marginal revenue is less than average revenue, the firm is in a competitive market.
      B. The competitive firm has no influence over the output price.
      C. Profits are maximized when the firm maximizes total revenue.
      D. All of the above.

19. (Eq-1) Suppose the income of American consumers drops because of an economic
      downturn. Assuming King Crab is a luxury good, the market price of King Crab should:

      A. fall.
      B. rise.
      C. stay the same but sales should increase.
      D. stay the same but sales should decline.

20. (Eq-2) The diagram below shows the market for a product. This market is currently a competitive equilibrium. This product is a normal good. If incomes of consumers increased then in the new equilibrium
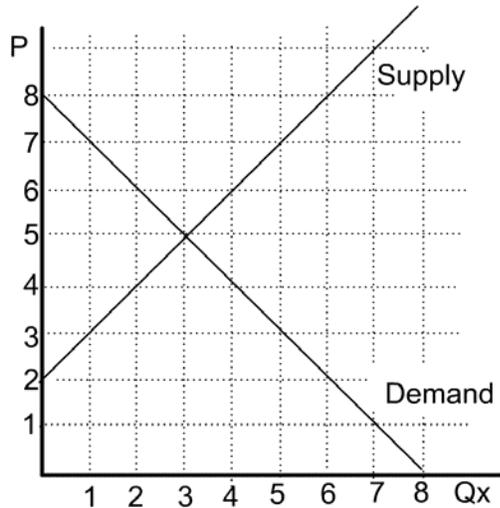
        A. the price would be greater than 5.
        B. the price would be between 2 and 5.
        C. the quantity would be less than 2.
        D. the quantity would be greater than 2 but less than 3.

21. (Eq-3) Suppose two things happened at once: (1) A new technology was introduced that lowered the costs of a product, and (2) the price of a substitute of this product decreased. In our model of the market for this product we can model these two events as causing

        A. an **increase** in supply; a **decrease** in demand; and a **fall** in the equilibrium price.
        B. an **increase** in supply; a **decrease** in demand; and a **rise** in the equilibrium price.
        C. a **decrease** in supply; a **decrease** in demand; and a **fall** in the equilibrium price.
        D. an **increase** in supply; an **increase** in demand; and a **fall** in the equilibrium price.

22. (Cst-2) Refer to Firm 1's short run costs shown in the table below. Total fixed costs for this firm are $100. For this firm, average variable cost equals $10 for which unit of output?

Output (Q)	Total Costs
0	$100
1	$104
2	$114
3	$130
4	$160
5	$250

A. the first unit.
B. the second unit.
C. the third unit.
D. the fourth unit.

23. (Ex-1) Consumers of a good with a positive externality

A.   do not capture all the benefits of consuming the good.
B.   capture all the benefits of consuming the good.
C.   capture more than their fair share of the benefits of consuming the good.
D.   accumulate positive credits in the balance of payments.

24. (OC-2) The following table shows the production possibility frontier for Katherine. The opportunity cost of one unit of corn for Katherine equals

Katherine

Corn	Fish
0	20
16	16
32	12
48	8
64	4
80	0

A. 0.25 fish.
B. 1 fish.
C. 4 fish.
D. None of the above.

Key:

1. C
2. C
3. C
4. A
5. B
6. A
7. A
8. A
9. A
10. A
11. C
12. A
13. D
14. B
15. D
16. B
17. D
18. B
19. A
20. A
21. A
22. C
23. A
24. A