Practice Questions Week 5 Day 1

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Which of the following assumptions is made regarding a firm's production function?
   a. The quantity of labor used in production is fixed.
   b. The level of technology is fixed.
   c. The quantity of capital used in production is fixed.
   d. Total revenue rises as output increases.
   e. Total cost rises as total revenue increases.

2. The largest amount of output that a firm can produce with a given combination of inputs is determined by the
   a. marginal product of labor
   b. gains from specialization
   c. cost function
   d. production function
   e. input-output function

3. If the physical plant for a corporation is considered to be a fixed input, then
   a. it is held constant in the long run
   b. it can be changed in the long run
   c. labor must be a variable input
   d. technology must be changing
   e. the firm will lose money in the short run, except under perfect competition

4. In the short run,
   a. utilization of any input can be varied
   b. production takes less than one year
   c. all resources are limited in supply
   d. utilization of some inputs is assumed constant
   e. equilibrium cannot occur

5. Consider a firm that needs one day to hire more labor, one week to increase its purchases of raw materials, and
   three months to change the amount of its capital. This firm's long run is
   a. three months
   b. one week
   c. one day
   d. three months plus eight days
   e. three months plus one week

6. Fixed inputs are those whose
   a. quantity changes as the level of output changes
   b. costs are irreversible
   c. quantity remains constant regardless of the level of output
   d. quantity determines the level of profit
   e. appearance was damaged while being transported, but has been fixed

7. Variable inputs are those whose
   a. quantity changes as the level of output changes
   b. costs are irreversible
   c. quantity remains constant regardless of the level of output
   d. quantity determines the level of profit
   e. price is in a continuously changing
8. **Figure 6-1** shows the amounts of coal that a mining company could produce per week by changing the number of workers while capital and technology remain constant. The marginal product of employing the fourth worker is
   a. 120 tons of coal
   b. 480 tons of coal
   c. 319 tons of coal
   d. 180 tons of coal
   e. 106.33 tons of coal

9. **Figure 6-1** shows the production function of a mining company. How many workers could the mine hire before the marginal product of labor begins to decline?
   a. 1 worker
   b. 2 workers
   c. 3 workers
   d. 4 workers
   e. 5 workers

10. The marginal product of labor is the
    a. additional output produced when one more worker is hired
    b. amount of output associated with labor inputs
    c. maximum amount of output produced by a given set of inputs
    d. maximum profit "produced" by selling a firm's output
    e. additional cost associated with an additional unit of labor

11. If a firm is experiencing diminishing marginal returns to labor, then
    a. total output must be decreasing
    b. total output rises more slowly as additional workers are added
    c. the firm must decrease the amount of labor it hires
    d. total output per worker must be rising
    e. the firm is in the short run

12. The law of diminishing marginal returns says that
    a. total product eventually falls as more of an input is added to production
    b. total revenue decreases as output increases, holding technology fixed
    c. marginal product eventually falls as more of an input is employed
    d. the quantity demanded of a good decreases as its price rises
    e. utility falls as more of a good is consumed

<table>
<thead>
<tr>
<th>Quantity of Labor</th>
<th>Tons of Coal Mined</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>180</td>
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<tr>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>4</td>
<td>480</td>
</tr>
<tr>
<td>5</td>
<td>555</td>
</tr>
</tbody>
</table>
13. For the total product curve shown in Figure 6-3, the marginal product of hiring the fifth unit of labor is
   a. 200
   b. 50
   c. 20
   d. 1,000
   e. 1

14. For the total product curve shown in Figure 6-3, diminishing marginal returns to labor
   a. do not occur over this range
   b. begin with the third unit of labor
   c. exist for every unit of labor
   d. begin with the fourth unit of labor
   e. begin with the first unit of labor

15. A firm's total cost of production is the
   a. employees' opportunity cost
   b. owners' opportunity cost
   c. owners' opportunity cost minus the employees' opportunity cost
   d. owners' opportunity cost plus the employees' opportunity cost
   e. employees' opportunity cost minus the owners' opportunity cost

16. Which of the following is irrelevant when deciding whether to undertake an action?
   a. opportunity costs
   b. implicit costs
   c. sunk costs
   d. implicit costs and explicit costs
   e. opportunity costs and implicit costs
17. A corporation has been steadily losing money on one of its product lines. The factory used to produce that brand cost $20 million to build. The firm now is considering an offer to buy that factory for $15 million. Which of the following statements about the decision to sell or not is correct?
   a. The firm should turn down the purchase offer because the factory cost more than $15 million to build.
   b. The $20 million spent on the factory is a sunk cost that should not affect the decision.
   c. The $20 million spent on the factory is an implicit cost that should be included in the decision.
   d. The firm should sell the factory only if it can reduce its costs elsewhere by $5 million.
   e. The firm's opportunity cost would be $35 million if it decides to sell the factory.

18. Samantha has been working for a law firm and earning an annual salary of $90,000. She decides to open her own practice. Her annual expenses will include $15,000 for office rent, $3,000 for equipment rental, $1,000 for supplies, $1,200 for utilities, and a $35,000 salary for a secretary/bookkeeper. Samantha will cover her start-up expenses by cashing in a $20,000 certificate of deposit on which she was earning annual interest of $1,000. Assuming that there are no additional expenses, Samantha's total annual cost of production will equal
   a. $55,200
   b. $221,400
   c. $91,000
   d. $146,200
   e. $145,200

19. Samantha has been working for a law firm and earning an annual salary of $90,000. She decides to open her own practice. Her annual expenses will include $15,000 for office rent, $3,000 for equipment rental, $1,000 for supplies, $1,200 for utilities, and a $35,000 salary for a secretary/bookkeeper. Samantha will cover her start-up expenses by cashing in a $20,000 certificate of deposit on which she was earning annual interest of $1,000. Assuming that there are no additional expenses, Samantha's annual explicit costs will equal
   a. $55,200
   b. $221,400
   c. $91,000
   d. $146,200
   e. $145,200

20. Samantha has been working for a law firm and earning an annual salary of $90,000. She decides to open her own practice. Her annual expenses will include $15,000 for office rent, $3,000 for equipment rental, $1,000 for supplies, $1,200 for utilities, and a $35,000 salary for a secretary/bookkeeper. Samantha will cover her start-up expenses by cashing in a $20,000 certificate of deposit on which she was earning annual interest of $1,000. Assuming that there are no additional expenses, Samantha's annual implicit costs will equal
   a. $55,200
   b. $221,400
   c. $91,000
   d. $146,200
   e. $145,200
Practice Questions Week 5 Day 1
Answer Section

MULTIPLE CHOICE

1. B
2. D
3. B
4. D
5. A
6. C
7. A
8. D
9. D
10. A
11. B
12. C
13. C
14. B
15. B
16. C
17. B
18. D
19. A
20. C
Practice Questions Week 5 Day 2

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Which of the following, necessarily, equals zero when the firm's short-run output level is zero?
   a. sunk costs
   b. fixed costs
   c. implicit costs
   d. variable costs
   e. opportunity costs

2. Total cost is
   a. fixed cost plus variable cost
   b. irrelevant to decision making
   c. marginal cost plus fixed cost
   d. total product minus total input
   e. the additional cost associated with producing an additional unit

3. Average fixed cost is
   a. the sum of variable and fixed costs
   b. total cost minus variable cost
   c. variable cost plus marginal cost
   d. total fixed cost per unit of output
   e. constant as output changes

4. Marginal cost is
   a. the increase in total cost from producing one more unit of output
   b. total variable cost per unit of output
   c. fixed cost per marginal unit
   d. average total cost divided by the quantity of inputs used
   e. total cost per unit of output

<table>
<thead>
<tr>
<th>Figure 6-6</th>
</tr>
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<tbody>
<tr>
<td>Output (Q)</td>
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</tr>
<tr>
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<td>2</td>
</tr>
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<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

5. Figure 6-6 shows the total cost for six different levels of output for a particular firm. What is the average total cost (ATC) of producing four units of output?
   a. $2,600
   b. $200
   c. $650
   d. $50
   e. $10,400
6. **Figure 6-6** shows the total cost for six different levels of output for a particular firm. What is the marginal cost (MC) of the last unit of output listed in the table (i.e., the fifth unit of output)?
   a. $2,700
   b. $540
   c. $100
   d. $90
   e. $500

7. **Figure 6-6** shows the total cost for six different levels of output for a particular firm. Total fixed cost (TFC) if five units of output are produced is
   a. $1,700
   b. $540
   c. $1,000
   d. $100
   e. $2,700

8. At a firm's current output level of 200 units per week, it has 10 employees at a weekly wage of $500 each. Raw materials, which are ordered and delivered daily, cost $1,000 per week. The weekly cost of the firm's capital is $1,250. Which of the following statements is correct?
   a. Total variable cost is $5,000; total fixed cost is $2,250; total cost is $7,250.
   b. Total variable cost is $6,000; total fixed cost is $1,250; total cost is $7,250.
   c. Total variable cost is $1,250; total fixed cost is $6,000; total cost is $7,250.
   d. Total variable cost is $2,250; total fixed cost is $500; total cost is $2,750.
   e. Total variable cost is $1,500; total fixed cost is $1,250; total cost is $2,750.

<table>
<thead>
<tr>
<th>Output</th>
<th>TVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$ 0</td>
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<tr>
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<td>$200</td>
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<tr>
<td>20</td>
<td>$350</td>
</tr>
<tr>
<td>30</td>
<td>$575</td>
</tr>
<tr>
<td>40</td>
<td>$900</td>
</tr>
</tbody>
</table>

9. **Figure 6-7** shows a firm's total variable cost for different daily output levels. In addition, the firm has total fixed cost of $50 per day. If output increases from 20 to 30 units, average total cost rises from
   a. $17.50 to $19.17, and marginal cost is $225.00
   b. $400 to $625, and marginal cost is $225.00
   c. $15.00 to $22.50, and marginal cost is $22.50
   d. $20.00 to $20.83, and marginal cost is $22.50
   e. $20.00 to $20.83, and marginal cost is $225.00

10. If the marginal product of labor rises, the marginal cost of output
    a. rises
    b. falls
    c. remains constant
    d. rises and then falls
    e. dampens
11. **Figure 6-8** shows three different cost curves, labeled A, B, and C. Which of these curves is most likely to represent marginal cost?
   a. curve A
   b. curve B
   c. curve C
   d. neither A, B, nor C
   e. cannot be determined without more information

12. **Figure 6-8** shows three different cost curves, labeled A, B, and C, for a firm. Which of these curves could most likely represent total cost?
   a. curve A
   b. curve B
   c. curve C
   d. curves A or B
   e. none of the curves can represent total cost
13. **Figure 6-9** shows three different cost curves, labeled A, B, and C, for a firm. Which of these curves is most likely to represent average fixed cost?
   a. curve A
   b. curve B
   c. curve C
   d. neither A, B, nor C
   e. cannot be determined without more information

14. The vertical distance between a firm's average total cost curve and its average variable cost curve is its
   a. marginal cost
   b. sunk cost
   c. total variable cost
   d. total fixed cost
   e. average fixed cost

15. The marginal cost curve crosses
   a. both the average total cost and average variable cost curves at their respective minimum points
   b. the average total cost curve at its minimum point, and the average variable cost curve at its maximum point
   c. the average total cost curve and the average variable cost curves at the same output level
   d. both the average total cost and average variable cost curves at their respective maximum points
   e. the average total cost curve at its maximum point, and the average variable cost curve at its minimum point
Practice Questions Week 5 Day 2
Answer Section

MULTIPLE CHOICE

1. D
2. A
3. D
4. A
5. C
6. C
7. C
8. B
9. D
10. B
11. B
12. E
13. C
14. E
15. A
Practice Questions Week 5 Day 3

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Which of the following is true about the relationships among various cost curves?
   a. When MC exceeds ATC, ATC must be rising.
   b. When MC exceeds ATC, ATC could be rising or falling.
   c. When ATC is falling, MC must exceed ATC.
   d. When TC is rising, MC must exceed TC.
   e. TC falls when AFC falls.

2. The marginal cost curve crosses
   a. both the average total cost and average variable cost curves at their respective minimum points
   b. the average total cost curve at its minimum point, and the average variable cost curve at its maximum point
   c. the average total cost curve and the average variable cost curves at the same output level
   d. both the average total cost and average variable cost curves at their respective maximum points
   e. the average total cost curve at its maximum point, and the average variable cost curve at its minimum point

3. The total cost to a firm of producing zero units of output is
   a. zero in both the short run and the long run
   b. its fixed cost in the short run, zero in the long run
   c. its fixed cost in the long run, zero in the short run
   d. its fixed cost in both the short run and the long run
   e. its variable cost in both the short run and the long run

4. Along its long-run total cost curve, a firm is producing
   a. at the output level for each plant size that has the lowest cost
   b. at the minimum points of its various total cost curves
   c. each level of output using the input mix that has the lowest cost
   d. each level of output using the fewest possible inputs
   e. at the output level for each plant size that uses the fewest possible inputs

5. Long-run average total cost must always be
   a. rising
   b. declining
   c. greater than or equal to the marginal unit of variable cost
   d. greater than or equal to the short-run average total cost
   e. less than or equal to short-run average total cost

6. In comparing long-run and short-run costs, which of the following statements is true at each level of output?
   a. long-run total cost is always less than short-run total costs
   b. long-run total cost cannot exceed short-run total cost
   c. long-run and short-run total costs are equal when fixed costs are large
   d. firms usually make decisions about production levels based on long-run costs rather than short-run costs
   e. short-run total cost cannot exceed long-run total cost
The firm depicted in Figure 6-10 currently is producing 200 units of output per day. If it decides to increase its output level to 375 units, then it will
a. adjust from point F to point G in the short run
b. be unable to adjust to point G in the short run because some inputs are fixed
c. be unable to adjust to point G in the long run because some are fixed
d. be unable to adjust to point H in the short run because some inputs are fixed
e. adjust from point F to point H in the long run
8. The firm depicted in Figure 6-11 has a larger plant size at point
a. H than at point F
b. F than at point H
c. F than at point G
d. G than at point H
e. H than at point G

9. Which of the following explains why long-run average total cost at first decreases as output increases?
   a. diseconomies of scale
   b. less efficient use of lumpy inputs
   c. fixed costs become spread out over more units of output
   d. gains from specialization of inputs
   e. marginal costs rise at a slower rate than average costs in the short run

10. The firm's long-run average total cost curve
   a. intersects each short-run average total cost curve at its minimum point
   b. lies below its short-run average total cost curves at every output level
   c. lies above its short-run average total cost curves at every output level
   d. coincides with a small segment of its short-run average total cost
   e. touches each of the firm's short-run average total cost curves at the lowest points
Practice Questions Week 5 Day 3
Answer Section

MULTIPLE CHOICE

1. A
2. A
3. B
4. C
5. E
6. B
7. B
8. D
9. D
10. D
Practice Questions Week 5 Day 4

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. A lumpy input is one that is
   a. infinitely divisible
   b. not smooth
   c. one that can only be adjusted in large amounts
   d. one that can not be legally employed
   e. easily adjusted in small amounts

2. Which of the following explains why long-run average total cost at first decreases as output increases?
   a. diseconomies of scale
   b. less efficient use of lumpy inputs
   c. fixed costs become spread out over more units of output
   d. gains from specialization of inputs
   e. marginal costs rise at a slower rate than average costs in the short run

3. When long-run average total cost decreases as output increases, a firm experiences
   a. increasing average fixed cost
   b. decreasing total cost
   c. economies of scale
   d. diseconomies of scale
   e. constant returns to scale

4. When firms become so large that they have to add additional layers of management and decision making becomes more cumbersome,
   a. economies of scale are said to occur
   b. marginal cost begins to fall in the short run
   c. marginal cost begins to rise in the short run
   d. the long-run average total cost curve is flat
   e. the long-run average total cost curve slopes upward

5. Diseconomies of scale tend to occur in large firms because
   a. the many layers of management are cumbersome and because it is difficult to monitor employees
   b. such firms are operating at inappropriate plant sizes for their output levels
   c. such firms are operating at a point above their long-run average total cost curves
   d. their ability to adjust their plant sizes is constrained by the existence of fixed inputs
   e. they fail to garner all the possible gains from specialization

Short Answer

6. Hall and Lieberman Chapter 6 Problem set #3, #5, #6, and #8.
Practice Questions Week 5 Day 4
Answer Section

MULTIPLE CHOICE

1. C
2. D
3. C
4. E
5. A

SHORT ANSWER

6. See handout.