Mikroekonomia B by Mikolaj Czajkowski

Test 3 – The Costs

Name_____

Group _____

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

1) Complete the following table:

Output	Total Cost	Variable Cost	Fixed Cost	Marginal Cost
0	50			
1	60			
2	75			
3	100			
4	150			
5	225			
6	400			

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

2) Which of the following costs always declines as output increases? 2) _____

A) average variable cost

B) average fixed cost

C) fixed cost

D) average cost

E) marginal cost

Scenario 1:
The average total cost to produce 100 cookies is $0.25 per cookie. The marginal cost is constant at $0.10 for all cookies produced.

3) Refer to Scenario 1. The total cost to produce 50 cookies is 3) _____

A) $50

B) $60

C) $25

D) $20

E) indeterminate

4) Constantine purchased 100 shares of IBM stock several years ago for $150 per share. The price of these shares has fallen to $55 per share. Constantine's investment strategy is "buy low, sell high." Therefore, he will not sell his IBM stock until the price rises above $150 per share. If he sells at a price lower than $150 per share he will have "bought high and sold low." Constantine's decision: 4) _____

A) is correct and shows a solid command of the nature of opportunity cost.

B) is incorrect because it treats the price of the shares as an explicit cost.

C) is incorrect because when the price of a stock falls, the law of demand states that he should buy more shares.

D) is incorrect because the original price paid for the shares is a sunk cost and should have no bearing on whether the shares should be held or sold.

Scenario 1:
The average total cost to produce 100 cookies is $0.25 per cookie. The marginal cost is constant at $0.10 for all cookies produced.

5) Refer to Scenario 1. Which piece of information would NOT be helpful in calculating the marginal cost of the 75th unit of output? 5) _____

A) The total cost of 74 units.

B) The total cost of 75 units.

C) The variable cost of 74 units.

D) The variable cost of 75 units.

E) The firm's fixed cost.

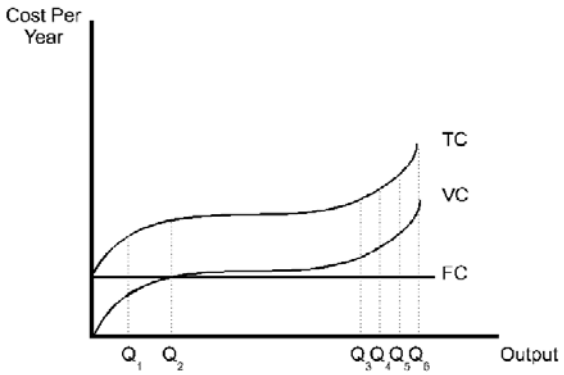


Figure 7.1

6) Refer to Figure 7.1. At output level Q_2 6) _____

A) marginal cost is negative.

B) average total cost is negative.

C) average variable cost equals average fixed cost.

D) average fixed cost is increasing.

E) none of the above.

7) Consider the following statements when answering this question 7) _____

I. If a firm employs only one variable factor of production, labor, and the marginal product of labor is constant, then the marginal costs of production are constant too.

II. If a firm employs only one variable factor of production, labor, and the marginal product of labor is constant, then short-run average total costs cannot rise as output rises.

A) I is false, and II is true. B) I is true, and II is false.

C) I and II are both false. D) I and II are both true.

8) In a shortrun production process, the marginal cost is rising and the average total cost is falling as output is increased. Thus, marginal cost is 8) _____

A) below average fixed cost.

B) above average total cost.

C) below average total cost.

D) between the average variable and average total cost curves.

9) For any given level of output: 9) _____

A) fixed cost must be greater than variable cost.

B) average variable cost must be greater than average fixed cost.

C) average fixed cost must be greater than average variable cost.

D) marginal cost must be greater than average cost.

E) none of the above is necessarily correct.

10) At the optimum combination of two inputs, 10) _____

A) the slopes of the isoquant and isocost curves are equal.

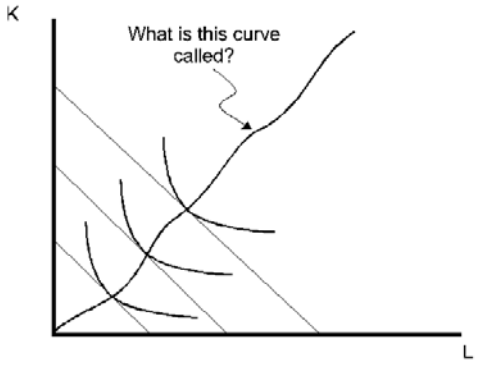
B) the marginal rate of technical substitution equals the ratio of input prices.

C) costs are minimized for the production of a given output.

D) all of the above.

E) A and C only.

11) The curve in the diagram is called 11) _____



A) the price-consumption curve.

B) the expansion path.

C) the long-run total cost curve.

D) the income-consumption curve.

E) none of the above.

12) A firm wants to minimize the total cost of producing 100 tons of dynamite. The firm uses two factors of production, chemicals and labor. The combination of chemicals and labor that minimizes production costs will be found where 12) _____

A) the ratio of the amount of chemicals used to the amount of labor used equals the ratio of the price of chemicals to the wage rate

B) the ratio of the amount of chemicals used to the amount of labor used equals the ratio of the marginal product of chemicals to the marginal product of labor

C) the production of an additional unit of dynamite costs the same regardless of whether chemicals or labor are used

D) the marginal products of chemicals and labor are equal

E) none of the above

13) When an isocost line is just tangent to an isoquant, we know that 13) _____

A) the two products are being produced at the highest input cost to the firm.

B) output is not being produced at minimum cost.

C) the two products are being produced at the least input cost to the firm.

D) output is being produced at minimum cost.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

14) One Guy's short-run cost function is: $C(q, K) = \frac{0.53125q^2}{K} + 0.25K$, where q is the number of pizzas produced and K is the number of ovens. Currently, One Guy's is leasing 4 ovens in the short run. Calculate the average cost of producing 10 pizzas. The manager of One Guy's is considering leasing 5 additional ovens. If One Guy's adds 5 more ovens, what is the average total cost of producing 10 pizzas?

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

15) At every output level, a firm's short-run average costs equals or exceeds its long-run average costs because 15) _____

A) diminishing returns apply in the short run.

B) there are at least as many possibilities for substitution between factors of production in the long run as in the short run.

C) returns to scale only exist in the long run.

D) opportunity costs are taken into account in the short run.

E) none of the above

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

16) Ronald's Outboard Motor Manufacturing plant has the following short-run cost function:

$C(q, A, K) = \frac{1500q^2}{A^2K} + 500K$, where q is the number of motors produced, K is the number of machines leased, and A is a productivity factor of technology. Currently, A is 25 and Ronald uses 20 machines. Ronald is investigating a new production technique. If he adopts the new technique, the productivity factor will become 36. If Ronald adopts the new technique, what is his average total cost of manufacturing 140 motors? Did the increase in the productivity factor increase or decrease the average total cost of producing 140 motors?

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

17) Assume that a firm's production process is subject to increasing returns to scale over a broad range of outputs. Long run average costs over this output will tend to 17) _____

A) decline. B) remain constant.

C) increase. D) fall to a minimum and then rise.

18) The cost-output elasticity is used to measure: 18) _____

A) economies of scope. B) economies of scale.

C) steepness of the production function. D) the curvature in the fixed cost curve.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

19) Trisha's Fashion Boutique can jointly produce evening gowns and formal gowns. The joint cost curve is:

$C_{E, F}(q_1, q_2) = 75q_1 + 125q_2 - 20q_1^{1/2}q_2^{1/2}$, where q_1 is the number of evening gowns and q_2 is the number of formal gowns Trisha produces. If Trisha produces evening gowns alone, the cost function is: $C_E(q_1) = 75q_1$. If Trisha produces formal gowns alone, the cost function is: $C_F(q_2) = 125q_2$. Calculate Trisha's degree of economies of scope if she produces 25 evening gowns and 9 formal gowns.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

20) Economies of scope refer to 20) _____

A) changes in technology.

B) single product firms that utilize multiple plants.

C) the very long run.

D) multiproduct firms.

E) short-run economies of scale.

21) The equation below gives the degree of economies of scope (SC): 21) _____

$$SC = (C(Q_1) + C(Q_2) - C(Q_1,Q_2)) / C(Q_1,Q_2)$$

where $C(Q_1)$ is the cost of producing output Q_1, $C(Q_2)$ is the cost of producing output Q_2, and $C(Q_1,Q_2)$ is the joint cost of producing both outputs. If SC is negative:

A) there are both economies and diseconomies of scope.

B) there are economies of scope.

C) there are diseconomies of scope.

D) there are neither economies nor diseconomies of scope.

Scenario 3:

Use the production function: $Q = 4L^{1/2}K^{1/2}$.

22) Refer to Scenario 3. What is the total cost of producing 200 units of output? 22) _____

A) 2000

B) 1500

C) 100

D) 1000

E) none of the above

23) Refer to Scenario 3. Suppose that the price of labor is $5 and the price of capital is $20. Your firm desires to produce 200 units of output. How much labor will be hired to minimize the costs of producing 200 units of output? 23) _____

A) 100

B) 25

C) 50

D) 200

E) none of the above

24) The production function in Scenario 3 exhibits: 24) _____

A) increasing returns to scale.

B) decreasing returns to scale.

C) constant returns to scale.

D) all of the above at various levels of output.

Scenario 2:

The production function for earthquake detectors (Q) is given as follows:

$$Q = 4K^{1/2}L^{1/2}$$

where K is the amount of capital employed and L is the amount of labor employed. The price of capital, P_K, is $18 and the price of labor, P_L, is $2.

25) Refer to Scenario 2. This production function is an example of which of the following types of production functions? 25) _____

A) Leontief

B) Cobb–Douglas

C) Lagrange

D) fixed proportions

E) none of the above

Answer Key
Testname: TEST 3 - THE COST

1)

Output	Total Cost	Variable Cost	Fixed Cost	Marginal Cost
0	50	0	50	–
1	60	10	50	10
2	75	25	50	15
3	100	50	50	25
4	150	100	50	50
5	225	175	50	75
6	400	350	50	175

2) B
3) D
4) D
5) E
6) C
7) D
8) C
9) E
10) D
11) B
12) C
13) D

14) With 4 ovens, the average cost per pizza is: $ATC(10, 4) = \frac{C(10, 4)}{10} = \frac{53.125/4 + 1}{10} = 1.43$. If One Guy's leases an additional 5 ovens, the average cost per pizza is: $ATC(10, 9) = \frac{C(10, 9)}{10} = \frac{53.125/9 + 2.25}{10} = 0.82$. Adding 5 ovens will decrease the average cost of producing 10 pizzas.

15) B

16) Initially, Ronald's average total cost of producing 140 motors is: $ATC(140, 25, 20) = \frac{\left(\frac{1500(140)^2}{(25)^2\,20} + 500(20)\right)}{140} = 88.23$. With the new technique, Ronald's average total cost of producing 140 motors is: $ATC(140, 36, 20) = \frac{\left(\frac{1500(140)^2}{(36)^2\,20} + 500(20)\right)}{140} = 79.53$. The increase in the productivity factor associated with the new technique decreases the average total cost of producing 140 units by \$8.70 per unit.

17) A

18) B

19) $SC = \frac{C_E(q1) + C_F(q2) - C_{EF}(q1, q2)}{C_{EF}(q1, q2)} = \frac{20(25)^{1/2}(9)^{1/2}}{75(25) + 125(9) - 20(25)^{1/2}(9)^{1/2}} = \frac{1}{9}$. Since the measure is positive, Trisha enjoys economies of scope for evening and formal gown production.

20) D
21) C
22) D
23) A
24) C
25) B