Sample Questions: Part 4

1. The marginal cost curve of a firm is *MC* = 6*y*. Total variable costs to produce 10 units of output are

a. $120.

b. $300.

c. $80.

d. $400.

e. $26.

2. A firm has a short-run cost function *c*(*y*) = 3*y* + 11 for *y* > 0 and *c*(0) = 8. The firm’s quasi-fixed costs are

a. $8.

b. $11.

c. $3.

d. $7.

e. They are not possible to determine from this information.

3. A firm has the production function *Q* = *X*1/21*X*2. In the short run it must use exactly 15 units of factor 2. The price of factor 1 is $75 per unit and the price of factor 2 is $2 per unit. The firm’s short-run marginal cost function is

a. *MC*(*Q*) = 10*Q*/15.

b. *MC*(*Q*) = 30*Q*-1/2.

c. *MC*(*Q*) = 30 + 75*Q*2.

d. *MC*(*Q*) = 2*Q*.

e. *MC*(*Q*) = 15*Q*-1/2.

4. The UJava espresso stand needs two inputs, labor and coffee beans, to produce its only output, espresso. Producing an espresso always requires the same amount of coffee beans and the same amount of time. Which of the following production functions would appropriately describe the production process at UJava, where *B* represents ounces of coffee beans, and *L* represents hours of labor?

a. *Q* = 0.5*B* + 0.5*L*0.5.

b. *Q* = *B*0.80*L*0.20.

c. *Q* = min(2*B*, 60*L*).

d. *Q* = *B*/2 + *L*/30.

e. None of the above.

5. A firm has a production function *f*(*x*, *y*) = 1.40(*x*0.60 + *y*0.60)2 whenever *x* > 0 and *y* > 0. When the amounts of both inputs are positive, this firm has

a. increasing returns to scale.

b. decreasing returns to scale.

c. constant returns to scale.

d. increasing returns to scale if *x* + *y* > 1 and decreasing returns to scale otherwise.

e. increasing returns to scale if output is less than 1 and decreasing returns to scale if output is greater than 1.

7. A competitive firm produces output using three fixed factors and one variable factor. The firm’s short-run production function is *q* = 305*x* - 2*x*2, where *x* is the amount of variable factor used. The price of the output is $2 per unit and the price of the variable factor is $10 per unit. In the short run, how many units of *x* should the firm use?

a. 37

b. 150

c. 21

d. 75

e. None of the above.

9. The marginal cost curve passes through the minimum point of the average fixed cost curve.

10. The cost function *C*(*y*) = 100 + 3*y*2 has marginal cost less than average cost for all positive levels of output.

11. If a competitive firm uses two inputs and has the production function *F*(*x*1, *x*2) = *x*1/21 + *x*1/22, then its marginal cost curve is horizontal.

12. The marginal cost curve of a firm is *MC* = 6*y*. Total variable costs to produce 10 units of output are

a. $120.

b. $300.

c. $80.

d. $400.

e. $26.

13. The following relationship must hold between the average total cost (*ATC*) curve and the marginal cost curve (*MC*):

a. If *MC* is rising, *ATC* must be rising.

b. If *MC* is rising, *ATC* must be greater than *MC*.

c. If *MC* is rising, *ATC* must be less than *MC*.

d. If *ATC* is rising, *MC* must be greater than *ATC*.

e. If *ATC* is rising, *MC* must be less than *ATC*.

14. A competitive firm has the short-run cost function *c*(y) = 2*y*3 - 16*y*2 + 64*y* + 50. The firm will produce a positive amount in the short run if and only if the price is greater than

a. $16.

b. $64.

c. $32.

d. $35.

e. $31.

15. The production function of a competitive firm is described by the equation *y* = 8*x*1/21 *x*1/22. The factor prices are *p*1 = $1 and *p*2 = $4 and the firm can hire as much of either factor it wants at these prices. The firm’s marginal cost is

a. constant and equal to .50.

b. constant and equal to 3.

c. increasing.

d. decreasing.

e. None of the above.

16. In the reclining chair industry (which is perfectly competitive), two different technologies of production exist. These technologies exhibit the following total cost functions:

*C*1(*Q*) = 500 + 560*Q* - 40*Q*2 + *Q*3

*C*2(*Q*) = 600 + 280*Q* - 20*Q*2 + *Q*3

Due to foreign competition, the market price of reclining chairs has fallen to $170. In the short run, firms using technology 1

a. and firms using technology 2 will remain in business.

b. will remain in business and firms using technology 2 will shut down.

c. will shut down and firms using technology 2 will remain in business.

d. and firms using technology 2 will shut down.

e. More information is needed to make a judgment.

17. Rocco’s Pasta Bar makes manacotti according to an old family recipe which states *M* = min{5/4*C*, 5*P*}, where *M*, *C*, and *P* are pounds of manicotti, cheese, and pasta respectively. If cheese costs $3 per pound and pasta costs $4 per pound, how much would it cost to produce 20 pounds of manicotti in the cheapest way possible?

a. $64

b. $48

c. $16

d. $33.33

e. $20

18. Using existing plant and equipment, Priceless Moments Figurines can be manufactured using plastic, clay, or any combination of these materials. A figurine can be manufactured by *F* = 2*P* + 5*C*, where *P* is pounds of plastic and *C* is pounds of clay. Plastic costs $5 per pound and clay costs $2 per pound. What would be the lowest cost of producing 60,000 figurines?

a. $30,000

b. $24,000

c. $87,000

d. $150,000

e. $60,000

19. A lobbyist must buy 250 votes to win passage of a bill. Votes in Congress can be purchased according to the following process: *V* = *CM*/100,000, where *C* is the number of dollars contributed to campaign funds and *M* is the number of three-martini lunches. If three-martini lunches cost $64 each, what is the smallest expenditure the lobbyist could make to ensure the passage of the bill?

a. $80,000

b. $390,625

c. $25,000,064

d. $325,000

e. $25,000,000

20. In the short run, a firm which has production function *F*(*L*, *M*) = 4*L*1/2*M*1/2 must use 4 machines. If the cost of labor is $4 per unit and the cost of machines is $4 per unit, the short-run total cost of producing 48 units of output is

a. $192.

b. $192.

c. $192.

d. $320.

e. $160.

21. Philip owns and operates a gas station. Philip works 40 hours a week managing the station but doesn’t draw a salary. He could earn $700 a week doing the same work for Terrance. The station owes the bank $100,000 and Philip has invested $100,000 of his own money. If Philip’s accounting profits are $1,000 per week while the interest on his bank debt is $400 per week, the business’s economic profits are

a. $0 per week.

b. -$100 per week.

c. $600 per week.

d. $300 per week.

e. $1,000 per week.

22. When Farmer Hoglund applies *N* pounds of fertilizer per acre, the marginal product of fertilizer is 1 - *N*/200 bushels of corn. If the price of corn is $1 per bushel and the price of fertilizer is $.20 per pound, then how many pounds of fertilizer per acre should Farmer Hoglund use in order to maximize his profits?

a. 84

b. 328

c. 320

d. 160

e. 200

1. b

2. c

3. a

4. c

5. a

7. d

9. False

10. False

11. False

12. b

13. d

14. c

15. a

16. b

17. a

18. b

19. a

20. e

21. b

22. d