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

1) A firm has successfully adopted a positive technological change when
   A) it produces less pollution in its production process.
   B) it can produce more output using the same inputs.
   C) it sees an increase in worker productivity.
   D) it can pay its workers less yet increase its output.  

2) A firm’s cost of production is determined by all of the following except
   A) the amount of corporate taxes it must pay on its profit.
   B) the technology used to produce its output.
   C) the cost of raw material used in production.
   D) the productivity of its workers. 

3) A firm increased its production and sales because the firm's manager rearranged the layout of his factory floor. This is an example of
   A) positive technological change.
   B) economies of scale.
   C) inspired management.
   D) investment in human capital. 

4) If four workers can produce 18 chairs a day and five can produce 20 chairs a day, the marginal product of the fifth worker is
   A) 2 chairs.
   B) 3 chairs.
   C) 4 chairs.
   D) 38 chairs. 

5) Refer to Figure 10-1. The marginal product of the 3rd worker is
   A) 57.
   B) 19.
   C) 15.
   D) 11. 

6) Refer to Figure 10-1. The marginal product of the 7th worker is
   A) 66.
   B) 9.43.
   C) 2.
   D) -2. 

7) Which of the following equations is correct?
   A) AFC + AVC = ATC
   B) AVC - ATC = AFC
   C) AVC + ATC = AFC
   D) ATC + AVC = AFC
8) Average variable cost can be calculated using any of the formulas below except
A) \(\frac{TC}{Q} - AFC\).  B) \(\frac{TC - FC}{Q}\).  C) \(\frac{\Delta TC - FC}{\Delta Q}\).  D) \(\frac{TVC}{Q}\).

9) If production displays economies of scale, the long-run average cost curve is
A) below the long-run marginal cost curve.  B) upward sloping.  C) downward sloping.  D) above the short-run average total cost curve.

10) In the short run, if marginal product is at its maximum, then
A) marginal cost is at its minimum.  B) average variable cost is at its minimum.  C) total cost is at its maximum.  D) average cost is at its minimum.

11) Long-run cost curves are U-shaped because

12) If the average variable cost curve is above the marginal cost curve, then
A) marginal costs must be increasing.  B) average variable costs must be increasing.  C) marginal costs can be either increasing or decreasing.  D) marginal costs must be decreasing.

13) If the marginal cost curve is below the average variable cost curve, then
A) marginal cost must be decreasing.  B) average variable cost is decreasing.  C) average variable cost is increasing.  D) average variable cost could either be increasing or decreasing.

14) Marginal cost is the
A) the additional output when total cost is increased by one dollar.  B) change in average cost when an additional unit of output is produced.  C) additional cost of producing an additional unit of output.  D) change in the price of inputs if a firm buys more inputs to produce an additional unit of output.

15) The marginal product of labor is defined as
A) the additional sales revenue that results when one more worker is hired.  B) the cost of hiring one more worker.  C) the additional number of workers required to produce one more unit of output.  D) the additional output that results when one more worker is hired, holding all other resources constant.
The law of diminishing marginal returns states

A) that in the presence of a fixed factor, at some point average product of labor starts to fall as more and more variable inputs are added.
B) that at some point, adding more of a fixed input to a given amount of variable inputs will cause the marginal product of the variable input to decline.
C) that at some point, adding more of a variable input to a given amount of a fixed input will cause the marginal product of the variable input to decline.
D) average total costs of production initially fall and after some point starts to rise at a decreasing rate as output increases.

Red Stone Creamery currently hires 5 workers. When it added a 6th worker, its output actually fell.

Which of the following statements is true?

A) The marginal product of the sixth worker must be negative.
B) The total product becomes negative.
C) The sixth worker is not as skilled as the fifth worker.
D) The average product of the sixth worker is negative.

Which of the following is an implicit cost of production?

A) wages paid to labor plus the cost of carrying benefits for workers
B) rent that could have been earned on a building owned and used by the firm
C) the utility bill paid to water, electricity, and natural gas companies
D) interest paid on a loan to a bank

Vipsana’s Gyros House sells gyros. The cost of ingredients (pita, meat, spices, etc.) to make a gyro is $2.00. Vipsana pays her employees $60 per day. She also incurs a fixed cost of $120 per day.

Calculate Vipsana’s variable cost per day when she produces 50 gyros using two workers?

A) $100  B) $124.40  C) $220  D) $240

Calculate Vipsana’s total cost per day when she produces 50 gyros using two workers?

A) $100  B) $124.40  C) $220  D) $340

Which of the following is an example of a long run adjustment?

A) Your university offers Saturday morning classes next fall.
B) A soybean farmer turns on the irrigation system after a month long dry spell.
C) Ford Motor Company lays off 2,000 assembly line workers.

The average total cost of production

A) equals the explicit cost of production.
B) equals total cost of production multiplied times the level of output.
C) is the extra cost required to produce one more unit.
D) equals total cost of production divided by the level of output.

The production function shows

A) the total cost of producing a given quantity of output.
B) the maximum output that can be produced from each possible quantity of inputs.
C) the incremental output gained by improving the production process.
D) the technology used to produce output.
24) Implicit costs can be defined as
   A) the deferred cost of production.
   B) accounting profit minus explicit cost.
   C) total cost minus fixed costs.
   D) the non-monetary opportunity cost of using the firm’s own resources.

25) Which of the following is a factor of production that generally is fixed in the short run?
   A) water
   B) a factory building
   C) raw materials
   D) labor

26) Which of the following is the best example of a short run adjustment?
   A) Toyota builds a new assembly plant in Texas.
   B) A local bakery purchases another commercial oven as part of its capacity expansion.
   C) Smith University completed negotiations to acquire a large piece of land to build its new library.
   D) Your local Wal-Mart hires two more associates.

27) The difference between technology and technological change is that
   A) technology is product-centered, that is, developing new products with our limited resources while technological change is process-centered in that it focuses on developing new production techniques.
   B) technology involves the use of capital equipment while technological change requires the use of brain power.
   C) technology is carried out by firms producing physical goods but technological change is an intellectual exercise into seeking ways to improve production.
   D) technology refers to the processes used by a firm to transform inputs into output while technological change is a change in a firm’s ability to produce a given level of output with a given quantity of inputs.

28) A characteristic of the long run is
   A) plant capacity cannot be increased or decreased.
   B) there are both fixed and variable inputs
   C) there are fixed inputs.
   D) all inputs can be varied.