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Economics 610

(10 points) Answer both of the following essay questions (write only on the paper provided):

1. Carefully define Total Product of Labor (TP_L), Average Product of Labor (AP_L) and Marginal Product of Labor (MP_L). Carefully draw each of these three short-run production curves. Why do these three curves look the way that they do? How are these three curves related? Briefly explain your answer.

2. The Table below contains production information for a firm. Use your definitions of MP$_L$ and AP$_L$ from question 1 above to fill in the blanks in the table below. Carefully define the following costs: Total Cost (TC), Total Variable Cost (TVC), Total Fixed Cost (TFC), Marginal Cost (MC), Average Total Cost (ATC), Average Variable Cost (AVC), and Average Fixed Cost (AFC). In addition to the information in the completed table and the definitions of the costs you gave above, what information must you know in order to be able to calculate the firm's costs (all seven of those mentioned above)? Briefly explain your answer.

Amount of Capital	Amount of Labor	Total Output	AP$_L$	MP$_L$
2	0	0	--	--
2	2	150		
2	4		100	
2	6			100
2	8	760		
2	10			50
2	12		75	

(16 points) Answer all of the following 16 multiple-choice questions. Make sure that your answers are coded in the answer sheet provided.

1. Consider the following two statements:
   I.   A firm can produce on or below its isocost curve but cannot produce above it.
   II. The slope of the isocost curve equals the marginal rate of technical substitution.
   A. both statements are true.
   B. both statements are false.
   C. I is true while II is false.
   D. I is false while II is true.

2. The <u>short</u> run for a firm is a period:
   A. generally more than three years.
   B. sufficient to adopt new technology.
   C. during which at least one productive resource cannot be varied.
   D. during which all productive resources can be varied

3. Which of the following equations <u>represents</u> Total Fixed Cost (TFC)?
   A. AFC ÷ Q.
   B. AFC * Q.
   C. AVC * Q.
   D. TVC + TC.

4. When a firm faces decreasing returns to scale then as the firm doubles its use of all inputs then output will:
   A. More than double.
   B. Exactly double.
   C. Less than double.
   D. It is impossible to say what will happen to output.

5. In producing a given output, a profit maximizing firm would choose inputs in the long-run so that:
   A. The revenue gained by producing that output is maximized.
   B. The cost of producing that output is minimized.
   C. The average productivity of each input is maximized.
   D. The marginal productivity of each input is maximized.

6. Short-run cost curves are U-shaped due to:
   A. increasing input prices.
   B. the returns to specialization of labor that occurs at low production levels and the congestion that occurs at high production levels.
   C. increasing marginal product of labor (MP$_L$).
   D. decreasing MP$_L$.
   E. the returns to specialization of labor that occurs at high production levels and the congestion that occurs at low production levels.

7. Suppose that in the short-run (Labor is the only variable input) when output equals 50, (1) the firm uses 5 workers and pays them a wage $40 and (2) total fixed costs equal $200. Then we know all of the following except:
   A. Total Variable Cost (TVC) = $200.
   B. Average Total Cost (ATC) = $8.
   C. Average Variable Cost (AVC) = $4.
   D. Average Fixed Cost (AFC) = $8.

   Use the following Table to answer question 8

L	Q	TFC	TVC
6	84	2000	750
8	120	2000	1000
10	160	2000	1250

8. Given the Table above, we know all of the following except:
   A. the wage rate = $125.
   B. the marginal cost when L = 8 is 6.94.
   C. the average variable cost when L = 8 is 8.33.
   D. the marginal physical product of L when L = 10 is 40.

9. The Total Costs of Production include:
   A. both explicit and implicit costs.
   B. both average fixed costs and average variable costs.
   C. only explicit costs.
   D. only implicit costs.
   E. only average variable costs.

10. Consider the following two statements:
    I.   An isoquant curve shows different combinations of labor and capital that will all produce the same output.
    II. The slope of the isoquant equals negative the ratio of the price of labor to the price of capital.
    A. both statements are true.
    B. both statements are false.
    C. I is true while II is false.
    D. I is false while II is true.

11. Long-run cost minimization occurs when the firm chooses its inputs such that:
    A. The firm is on its isocost curve.
    B. The firm is on its isoquant curve.
    C. The firm's isocost curve is tanget to its isoquant curve.
    D. The firm's isocost curve intersects its isoquant curve.

12. Which of the following terms represents marginal cost?
    A. TC ÷ Q.
    B. Δ (change in) Q ÷ Δ TC.
    C. Wage ÷ Marginal Product of Labor.
    D. Wage ÷ Average Product of Labor.

13. When the Average Fixed Cost is declining then we know that:
    A. Marginal Cost (MC) is declining.
    B. MC is increasing.
    C. MC is above Average Total Cost (ATC).
    D. MC is below ATC.
    E. None of the above.

14. Consider the following two statements:
    I. The law of diminishing returns states that eventually, as the use of an input increases, ceteris paribus, that input's marginal product must decrease.
    II. Productivity curves and cost curves are ultimately based upon the law of diminishing returns.
    A. both statements are true.
    B. both statements are false.
    C. I is true while II is false.
    D. I is false while II is true.

15. When the marginal product of labor is increasing:
    A. the total product of labor is increasing.
    B. marginal cost is decreasing.
    C. the average product of labor is increasing.
    D. average variable costs are decreasing.
    E. all of the above are correct.

16. Consider the following two statements:
    I. A perfectly competitive firm maximizes profit where marginal revenue (MR) equals marginal cost (MC) while a monopoly maximizes profit by producing where MR > MC.
    II. A perfectly competitive firm's demand curve is perfectly elastic at the market price.
    A. both statements are true.
    B. both statements are false.
    C. I is true while II is false.
    D. I is false while II is true.