Multiple Choice (40 pts, 2 pts each): Answer on Scantron

1) As used in the video on book production, “vertical integration” means:
   a. A company that purchases its inputs from someone else.
   b. A company that also owns the supplier of some of its inputs
   c. A company that sells its product to someone else
   d. A company in a tall building

2) In the book production video, they noted that more publishers are moving to lower inventories of books. Given the capital intensive nature of production this may cause:
   a. Increased sales of books
   b. Increased fixed costs
   c. Decreased average costs of production
   d. Increased average costs of production

3) In general, if marginal costs are less than average variable costs, then:
   a. Marginal costs must be decreasing
   b. Average variable costs must be at their minimum
   c. Average total costs must be decreasing
   d. Average variable costs must be increasing

4) If MR is greater than MC, a firm should
   a. increase production
   b. lower the price
   c. decrease production
   d. increase price
   e. leave production and price unchanged

5) In the short-run, you will continue operating if the price you receive is sufficient to
   a. Cover some of your fixed costs Question Thrown Out due to poor wording
   b. Cover some of your variable costs
   c. Cover all of your total costs
   d. Earn a normal profit

6) In the short-run, if a firm shuts down,
   a. Cost will be reduced to zero
   b. Cost will be reduced to fixed costs
   c. Cost will be reduced to variable costs
   d. Cost will be less than revenues

7) “If a firm is earning an economic profit of zero, then it must be doing alright.” This means:
   a. A company’s economic profit equals its accounting profit
   b. It is operating at a loss
   c. It has a normal profit
   d. It must have low costs of production
Use the following information to answer the questions below:

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8) The marginal product of the 3rd worker is:
   a. 3
   b. 10
   c. 25
   d. 35

9) How much are the variable costs per unit of labor?
   a. 5
   b. 10
   c. 25
   d. 100

10) Find the marginal costs to increase production from 25 to 35
    a. $1.00
    b. $1.50
    c. $2.00
    d. $5.00

11) What is the price at which the firm will earn a normal profit?
    a. 3.71
    b. 3.5
    c. 1.19
    d. .8

12) Below what price would the company shutdown in the short-run
    a. 3.71
    b. 3.5
    c. 1.19
    d. .8

13) If the price is $2, how much would they produce?
    a. 10
    b. 25
    c. 35
    d. 40

14) At a price of $2,
    a. The firm is earning an economic profit
    b. The firm is earning a normal profit
    c. The firm is operating at a loss
    d. The firm should shut down in the short-run

15) At a price of $2, what is the marginal revenue product of the 3rd worker?
    a. 20
    b. 25
    c. 35
    d. 70
16) For a given range of production, the extra product of each additional worker is less than the extra product of the worker hired just before. This statement describes _______ returns.

a) constant b) negative c) diminishing d) increasing e) average

17) Average total cost will equal marginal cost when
a. MC is declining
b. AFC is decreasing
c. MC is at its lowest point
d. ATC is at its lowest point

18) The total revenue of a firm in perfect competition
a. is an upward sloping straight line
b. is a downward sloping straight line
c. increases when demand is elastic then declines
d. is a horizontal line equal to price

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Short Essay/Graph (60 pts): Answer on back of test or additional supplied paper. To receive full credit, you should make sure to fully explain your answer and use complete sentences. NOTE: Each essay is the equivalent of 5 or more multiple choice, gauge your effort accordingly.

1) (15 pts) Graph a typical production function for a firm. Be sure to label your axes and note the stages of production (increasing, diminishing marginal returns). Define the concepts of increasing and diminishing marginal returns and explain how they affect marginal product and costs in general.

![Production Function Graph]

Increasing means that the marginal product (additional output from hiring an additional worker) is increasing. This would result in decreasing marginal costs and hence decreasing average variable and total costs.

Diminishing means that the MP of each additional worker is decreasing (less than the worker before) and therefore MC would be increasing.
2) (10 pts) Describe the difference between marginal costs and average costs. How does marginal cost explain the price a company charges and why the cost of gasoline rose so quickly after hurricane Katrina.

Marginal cost is the cost to produce the next, additional unit of output (change in total costs/change in output). It represents how much the company must pay to increase production and hence is the most important to the company in considering whether to increase and how much they must charge. It represents the “expected” or future cost.

Average cost is the historical cost to produce a typical unit of output (costs/output). We may find the average costs for variable, fixed, and total costs. As historical, average, data, the average cost does not influence how much we should produce since it does not tell us about future or additional costs.

During Katrina, the loss of oil production and refining facilities meant that the potential to increase supply was dramatically reduced. As such, the marginal costs of production increased significantly, although average costs may not have. Since a company must charge the marginal cost, not average, the costs and prices of gasoline spiked.

3) (10 pts) Describe the market structure characteristics of a perfectly competitive firm. Use this to explain why it must be a “price taker” and what its marginal revenue or demand curve looks like.

Market structure:
- Number of firms: Many small, similar firms
- Product Differentiation: None, all firms sell the same (homogeneous) product
- Entry/Exit: Easy to enter or exit industry

Since there are numerous identical firms, offering the same product, customers are free to go wherever they want (lots of substitutes). Therefore, firms cannot raise the price since that would drive away customers and they will charge as low a price as they can afford. Because of this, the demand curve for the firm is completely elastic and therefore the marginal revenue (as well as the average revenue) is constant or a horizontal line.
4) (10 pts) Draw a graph including AVC, ATC, MC, and MR. Show a firm that is operating at an economic profit. Label all points including the firm’s chosen output (Q).

![Graph of Average and Marginal Costs and Marginal Revenue](image)

5) (15 pts) In the short run, a perfectly competitive firm can earn an economic profit, but in the long run, a perfectly firm can only earn a normal profit.” Explain and use graphs of market supply and demand and ATC/MR.

![Graph of Market Supply and Demand](image)

If a firm earns an economic profit in the short run (shown by MR at $3.00), new firms will be attracted into the industry in the long run. As new firms enter, the supply curve will shift to the right (increase). This will reduce the market price. Since the competitive firm is a price taker, this will lower its price to MR1 at $1.50 (the minimum of the ATC representing a normal profit).
EC 1: “In an industry with increasing returns to scale, one company may become a monopoly.” Explain and use a graph.

If a company has increasing returns to scale, then as it gets larger, its average costs to produce decrease (see graph). Therefore, a larger firm will have lower costs and hence can offer a lower price. New firms that try to enter or compete will need to charge a higher price and hence will not be able to compete with the larger firms everyday low prices. This is the argument behind why Walmart puts small local companies out of business.

![Graph showing Average and Marginal Costs for increasing returns to scale.](image-url)