

Name: _____

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AP Microeconomics — Practice Exam

Instructions: Section I style multiple choice (20 questions, five answer choices each, 1 point each) followed by one free-response question (10 points), 35 minutes in total. No calculator is needed. Wrong multiple-choice answers are not penalized. On the free-response question, show your work for every calculation and draw graphs large, labeling all axes, curves, prices and quantities.

Time Limit: 35 minutes

Multiple Choice (20 questions)

- [1 point] 1. Vellmar Pottery has a fixed number of kilns and hires potters by the day. The table shows its daily output of bowls. Which of the following is correct?

Potters	Bowls per day
0	0
1	10
2	28
3	44
4	59
5	71
6	79

- A. Diminishing marginal returns begin with the 5th potter, and average product is greatest with 4 potters
- B. Diminishing marginal returns begin with the 3rd potter, and average product is greatest with 3 potters
- C. Diminishing marginal returns begin with the 3rd potter, and average product is greatest with 4 potters
- D. Diminishing marginal returns have not set in, since total product still rises, and average product is greatest with 6 potters
- E. Diminishing marginal returns begin with the 2nd potter, and average product is greatest with 2 potters

- [1 point]** 2. Dornach Couriers pays each courier 96 dollars a day, and labor is its only variable input. With 3 couriers it makes 70 deliveries a day, with 4 couriers 82 deliveries, and with 5 couriers 90 deliveries. The marginal cost of a delivery when the firm adds the 4th courier, and when it adds the 5th courier, is respectively:
- A. 8 dollars and 12 dollars
 - B. 12 dollars and 8 dollars
 - C. 96 dollars and 96 dollars
 - D. 4.68 dollars and 5.33 dollars
 - E. 1,152 dollars and 768 dollars

- [1 point]** 3. The table shows the total cost of Quillon Candle Works at each daily output of boxes of candles. At which outputs are average variable cost and average total cost, respectively, at their minimum?

Output (boxes)	Total cost (dollars)
0	50
1	80
2	100
3	114
4	132
5	160
6	200

- A. 3 boxes and 3 boxes
 - B. 3 boxes and 5 boxes
 - C. 5 boxes and 4 boxes
 - D. 4 boxes and 5 boxes
 - E. 4 boxes and 4 boxes
- [1 point]** 4. At an output of 40 bolts of cloth a day, Brenmoor Textiles has an average total cost of 25 dollars and an average variable cost of 19 dollars. If Brenmoor raises its output to 60 bolts a day, its average fixed cost will be:
- A. 6 dollars
 - B. 4 dollars
 - C. 9 dollars
 - D. 12 dollars
 - E. 240 dollars
- [1 point]** 5. The price of olive oil, which Marrick Soapworks uses in every bar of soap it makes, rises. Nothing else changes. Which of Marrick's cost curves shift upward?
- A. Average fixed cost and average total cost only
 - B. Marginal cost only, since only the cost of the extra bar has changed
 - C. Average fixed cost, average variable cost, average total cost and marginal cost
 - D. Average variable cost and average total cost only, since technology has not changed
 - E. Marginal cost, average variable cost and average total cost, but not average fixed cost

- [1 point]** 6. At its current output of 200 units, Torvik Plastics has an average variable cost of 14 dollars and an average total cost of 20 dollars, and the marginal cost of the 201st unit is 17 dollars. If Torvik produces the 201st unit:
- A. average variable cost and average total cost will both fall
 - B. average variable cost will fall and average total cost will rise
 - C. average variable cost will rise and average total cost will fall
 - D. average variable cost and average total cost will both rise
 - E. average variable cost will rise, and so will average fixed cost

- [1 point]** 7. Ardley Solar can build factories of any size. The table shows its long-run total cost at different annual outputs, with each output produced in the lowest-cost factory for that output. Ardley's minimum efficient scale is:

Output (thousands of panels)	Long-run total cost (thousands of dollars)
10	100
20	160
30	210
40	280
50	350
60	450

- A. 10 thousand panels
 - B. 30 thousand panels
 - C. 40 thousand panels
 - D. 50 thousand panels
 - E. 60 thousand panels
- [1 point]** 8. Harrowgate Motors produces 1,000 cars a month at a long-run total cost of 2,000,000 dollars. It doubles every input (workers, machines and factory space), input prices do not change, and its output rises to 1,600 cars a month. Over this range Harrowgate experiences:
- A. economies of scale, with long-run average total cost falling from 2,000 to 1,250 dollars
 - B. diminishing marginal returns, with marginal cost rising because the factory is fixed
 - C. constant returns to scale, with long-run average total cost staying at 2,000 dollars
 - D. diseconomies of scale, with long-run average total cost rising from 2,000 to 4,000 dollars
 - E. diseconomies of scale, with long-run average total cost rising from 2,000 to 2,500 dollars
- [1 point]** 9. Idris left a job as a software tester paying 52,000 dollars a year to run his own food truck, Lanterna Tacos. In its first year the truck took in 140,000 dollars of revenue and paid 78,000 dollars for ingredients, fuel, permits, the truck lease and an assistant's wages. Idris also kept 30,000 dollars of his own savings in the business as working capital instead of in a bank account paying 4 percent interest a year. The truck's accounting profit and economic profit for the year are, respectively:
- A. 62,000 dollars and 10,000 dollars
 - B. 62,000 dollars and a loss of 20,000 dollars
 - C. 8,800 dollars and 62,000 dollars
 - D. 62,000 dollars and 8,800 dollars
 - E. 60,800 dollars and 8,800 dollars

- [1 point]** 10. Marisol owns Oakhaven Bike Repair, a firm in a perfectly competitive industry that is in long-run equilibrium. If she closed the shop, she could earn 40,000 dollars a year as a salaried mechanic and rent out her equipment for 6,000 dollars a year. Oakhaven's accounting profit this year must be:
- A. 46,000 dollars
 - B. zero
 - C. 40,000 dollars
 - D. 6,000 dollars
 - E. a loss of 46,000 dollars

- [1 point]** 11. Saltmarsh Oyster Co. sells crates of oysters in a perfectly competitive market at 34 dollars a crate. The table shows its daily total cost. Saltmarsh's profit-maximizing output and its daily economic profit are:

Output (crates)	Total cost (dollars)
0	45
1	62
2	75
3	89
4	108
5	133
6	164
7	202

- A. 5 crates and 37 dollars
 - B. 6 crates and 40 dollars
 - C. 7 crates and 36 dollars
 - D. 6 crates and 85 dollars
 - E. 6 crates and 204 dollars
- [1 point]** 12. At its current output, a perfectly competitive firm faces a market price of 25 dollars, its marginal cost is 31 dollars and rising, and its average total cost is 19 dollars. To maximize profit the firm should:
- A. increase output, since price is 6 dollars above average total cost on every unit
 - B. keep output unchanged, since it is earning an economic profit
 - C. raise its price to 31 dollars so that price covers marginal cost
 - D. reduce output until marginal cost falls to 25 dollars
 - E. shut down, since marginal cost is greater than price
- [1 point]** 13. Lindqvist Ropeworks is a perfectly competitive firm. The market price is 21 dollars, and the firm's marginal cost equals 21 dollars at an output of 400 coils. At 400 coils its average total cost is 14 dollars and its average variable cost is 10 dollars. Its average total cost reaches its minimum, 13 dollars, at 300 coils. Lindqvist's maximum economic profit is:
- A. 4,400 dollars
 - B. 2,400 dollars
 - C. 3,200 dollars
 - D. 8,400 dollars
 - E. 2,800 dollars

- [1 point]** 14. The table shows the daily total cost of Hollin Brickworks, a perfectly competitive firm that sells pallets of bricks. The market price is 50 dollars a pallet. In the short run Hollin should:

Output (pallets)	Total cost (dollars)
0	100
1	150
2	190
3	220
4	264
5	320
6	390

- A. produce 4 pallets and lose 64 dollars
 - B. shut down and lose 100 dollars
 - C. produce 5 pallets and lose 70 dollars
 - D. shut down and lose nothing
 - E. produce 4 pallets and earn a profit of 36 dollars
- [1 point]** 15. Glenhallow Dairy is a perfectly competitive firm. Its average variable cost reaches its minimum, 9 dollars, at 300 gallons a day, and its average total cost reaches its minimum, 13 dollars, at 400 gallons a day. The market price of milk falls from 15 dollars a gallon to 11 dollars, and later to 8 dollars. In the short run, which of the following describes Glenhallow's best response at each of the two lower prices?
- A. At 11 dollars it shuts down; at 8 dollars it shuts down
 - B. At 11 dollars it produces at a loss; at 8 dollars it produces at a loss
 - C. At 11 dollars it produces at a loss; at 8 dollars it shuts down
 - D. At 11 dollars it produces at a profit; at 8 dollars it shuts down
 - E. At 11 dollars and at 8 dollars it exits the industry immediately
- [1 point]** 16. Ashby Glass is a perfectly competitive firm. At the market price of 30 dollars, the output at which its rising marginal cost equals the price is 500 units, and at that output its average total cost is 36 dollars and its average variable cost is 32 dollars. In the short run Ashby should:
- A. keep producing 500 units, losing 3,000 dollars, since its fixed cost has to be paid anyway
 - B. shut down, losing nothing
 - C. keep producing 500 units, losing 1,000 dollars
 - D. shut down, losing 2,000 dollars
 - E. produce more than 500 units, to spread its fixed cost over more output
- [1 point]** 17. Cranbrook Mills is one of many firms selling identical sacks of flour in a perfectly competitive market where supply and demand set a price of 12 dollars a sack. Cranbrook sells 250 sacks a day for a total revenue of 3,000 dollars. Which of the following describes the demand curve facing Cranbrook and its marginal revenue from a 251st sack?
- A. Downward-sloping like the market demand curve, so the marginal revenue is below 12 dollars
 - B. Vertical at 250 sacks, so the marginal revenue is zero
 - C. Horizontal at 12 dollars, and the marginal revenue is 3,012 dollars
 - D. Horizontal at 12 dollars, but the marginal revenue is below the average revenue of 12 dollars
 - E. Horizontal at 12 dollars, and the marginal revenue is 12 dollars

- [1 point]** 18. The market for wool hats in Pellandra is perfectly competitive and is an increasing-cost industry: as the industry expands, the price of wool rises. Starting from a long-run equilibrium price of 30 dollars a hat, the demand for hats increases permanently. Compared with the original long-run equilibrium, the new long-run equilibrium has:
- A. a price of 30 dollars, more firms and zero economic profit
 - B. a price above 30 dollars, more firms and zero economic profit
 - C. a price above 30 dollars, the same number of firms and positive economic profit
 - D. a price below 30 dollars, more firms and zero economic profit
 - E. a price above 30 dollars, more firms and positive economic profit
- [1 point]** 19. In a perfectly competitive, constant-cost industry, every firm has the same costs: average total cost reaches its minimum of 15 dollars at 250 units, and average variable cost reaches its minimum of 11 dollars at 200 units. Market demand is $Q_d = 80,000 - 2,000P$. In long-run equilibrium, the market price and the number of firms are:
- A. 15 dollars and 200 firms
 - B. 15 dollars and 250 firms
 - C. 11 dollars and 290 firms
 - D. 15 dollars and 320 firms
 - E. 11 dollars and 232 firms
- [1 point]** 20. In the short run, Brightwater Kelp, a perfectly competitive firm, produces the output at which price and marginal cost both equal 20 dollars. At that output its average total cost is 16 dollars. At this output Brightwater is:
- A. both allocatively and productively efficient, because price equals marginal cost
 - B. productively efficient, because price exceeds average total cost, but not allocatively efficient
 - C. allocatively efficient but not productively efficient, because average total cost is not at its minimum
 - D. neither allocatively nor productively efficient, because it earns an economic profit
 - E. neither, because it should expand output until average total cost equals the price of 20 dollars

Short Answer (1 question)

- [10 points]** 21. Perfect competition in the short run and the long run. The market for blueberries in Varnland is perfectly competitive and is a constant-cost industry of many identical farms. It begins in long-run equilibrium. The table shows the daily total cost of Fennick Farms, a typical farm; total cost at zero output is the farm's fixed cost.

Output (crates per day)	Total cost (dollars)
0	60
1	78
2	90
3	98
4	108
5	122
6	144
7	174
8	214

[1 point] (a) Using the table, calculate the farm's minimum average total cost. Identify the market price and the farm's daily output in the initial long-run equilibrium. Show your work.

[2 points] (b) The demand for blueberries increases, and the market price rises to 32 dollars a crate in the short run. (i) Using marginal analysis, determine the farm's profit-maximizing output. Explain. (ii) Calculate the farm's economic profit at that output. Show your work.

[2 points] (c) Draw correctly labeled side-by-side graphs of the blueberry market and of Fennick Farms. On the market graph, show the increase in demand, and label the initial price P_1 and the new short-run price P_2 . On the farm's graph, show the marginal cost and average total cost curves, the farm's demand curve at P_2 and its profit-maximizing output, labeled q_2 . Shade the area that represents the farm's economic profit.

- [3 points]** (d) Assume that at a price of 24 dollars the market quantity demanded was 6,000 crates a day before the increase in demand and is 9,000 crates a day after it. Explain how the industry adjusts in the long run. In your answer, state what happens to the number of farms, the market price, each farm's output and each farm's economic profit, and calculate the number of farms in the initial and in the new long-run equilibrium. Show your work.

- [2 points]** (e) Suppose instead that, starting from the initial long-run equilibrium, the demand for blueberries falls and the market price drops to 13 dollars a crate in the short run. (i) Should Fennick Farms produce or shut down in the short run? Explain, using average variable cost. (ii) Calculate the farm's loss if it follows your answer to (i), and compare it with the loss under the other choice. Show your work.