Name: _____

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AP Microeconomics — Practice Exam

Instructions: Answer all questions in the spaces provided. Show your working — method marks are awarded even when the final answer is wrong. The answer key with worked solutions is available at examtex.com/free-exams.

Time Limit: 45 minutes

Multiple Choice (15 questions)

[2 points] 1. Maria can spend her Saturday afternoon working a shift that pays 60 dollars, studying for an exam, or hiking with friends. She chooses to study. The opportunity cost of studying is:

A. the 60 dollars plus the enjoyment of the hike
B. whichever single alternative Maria values most highly
C. the 60 dollars, because money is measurable
D. zero, because studying improves her exam score
E. the sum of the values of all alternatives forgone

[2 points] 2. In one hour, Ann can produce 4 loaves of bread or 2 sweaters, while Ben can produce 3 loaves of bread or 1 sweater. Which of the following is true?

A. Ann has a comparative advantage in both goods
B. Ben has a comparative advantage in sweaters
C. Ann has a comparative advantage in sweaters, Ben in bread
D. Ben has an absolute advantage in bread
E. Neither can gain from specialization and trade

[2 points] 3. A cinema raises ticket prices by 5 percent and finds that the quantity of tickets sold falls by 10 percent. Total revenue and the price elasticity of demand are:

A. revenue rises; demand is elastic
B. revenue rises; demand is inelastic
C. revenue falls; demand is elastic
D. revenue falls; demand is inelastic
E. revenue is unchanged; demand is unit elastic

[2 points] 4. During a recession, household incomes fall and the demand for store-brand instant noodles increases. For these consumers, instant noodles are:

A. a normal good
B. an inferior good
C. a complementary good
D. a Giffen good, because quantity demanded rose
E. a substitute good

[2 points] 5. In the market for coffee, a health study increases consumer preference for coffee while a frost destroys part of the harvest. Equilibrium price and quantity will change as follows:

A. price rises; quantity rises
B. price rises; quantity is indeterminate
C. price is indeterminate; quantity rises
D. price falls; quantity is indeterminate
E. both price and quantity are indeterminate

[2 points] 6. A binding minimum wage set above the equilibrium wage in a competitive labor market will most likely cause:

A. a shortage of labor
B. a surplus of labor (unemployment)
C. no change, because wages are sticky
D. an increase in the quantity of labor demanded
E. a rightward shift of the labor supply curve

[2 points] 7. A bakery adds workers one at a time and finds that total output continues to rise, but by less with each additional worker. The bakery is experiencing:

A. diseconomies of scale
B. negative marginal product
C. diminishing marginal returns
D. falling total product
E. increasing marginal returns

[2 points] 8. The marginal cost curve intersects:

A. ATC and AVC at their minimum points
B. ATC and AFC at their minimum points
C. AVC at its maximum point
D. ATC where AFC equals AVC
E. the demand curve at the profit-maximizing quantity

[2 points] 9. A perfectly competitive firm faces a market price of 6 dollars. At its best possible output, average variable cost is 7 dollars and average total cost is 9 dollars. In the short run the firm should:

A. produce at a loss, because price covers part of fixed cost
B. shut down, because price is below minimum AVC
C. raise its price above 9 dollars
D. produce, because in the short run firms never shut down
E. exit the industry immediately

[2 points] 10. For a single-price monopolist, marginal revenue is less than price at every output beyond the first unit because:

A. the monopolist faces a perfectly elastic demand curve
B. to sell an additional unit it must lower the price on all units sold
C. marginal cost rises as output expands
D. monopolists always produce where demand is inelastic
E. price is set by the government regulator

[2 points] 11. In long-run equilibrium, a firm in monopolistic competition earns zero economic profit and produces where:

A. $P = MC =$ minimum ATC
B. $P = ATC > MC$, with excess capacity
C. $P > ATC > MC$
D. $P = MC < ATC$
E. $MR = MC$ and $P =$ minimum ATC

[2 points] 12. Two rival firms each choose whether to advertise. If both advertise, each earns 4 million dollars; if neither advertises, each earns 6 million dollars; if only one advertises, the advertiser earns 8 million dollars and the other earns 2 million dollars. The Nash equilibrium of this game is:

A. neither firm advertises, because joint profit is highest
B. both firms advertise, because advertising is a dominant strategy
C. exactly one firm advertises
D. there is no Nash equilibrium in this game
E. both firms advertise only if they can collude

[2 points] 13. A profit-maximizing firm hires labor in a competitive labor market at a wage of 90 dollars per day. It should hire additional workers up to the point where:

A. the marginal product of labor equals 90
B. the marginal revenue product of labor equals 90 dollars
C. the average product of labor is maximized
D. total output is maximized
E. the marginal revenue product of labor equals zero

[2 points] 14. The production of paper pollutes a river, imposing costs on downstream users that the paper mill does not pay. Relative to the socially optimal outcome, the unregulated market for paper produces:

A. too little paper at too high a price
B. too much paper, because marginal social cost exceeds marginal private cost
C. the efficient quantity, because pollution is a fixed cost
D. too much paper, because demand overstates marginal social benefit
E. too little paper, because the externality raises production costs

[2 points] 15. A public good is underprovided by private markets primarily because it is:

A. rival and excludable, so firms overcharge for it
B. non-rival and non-excludable, so consumers can free-ride
C. always produced by natural monopolies
D. subject to diminishing marginal returns
E. non-rival but excludable, like a toll road

Calculations (2 questions)

[10 points] 16. Monopoly. A single-price monopolist faces the market demand curve $P = 20 - Q$, where P is the price in dollars and Q is output in thousands of units. Marginal cost is constant at $MC = 4$, and there are no fixed costs.

$P = 20 - Q, \qquad MC = 4$

[3 points] (a) Calculate the profit-maximizing quantity and price. Show your work.

[2 points] (b) Calculate the monopolist's profit at this output.

[2 points] (c) Identify the allocatively efficient level of output and explain why the monopolist does not produce it.

[3 points] (d) Calculate the deadweight loss caused by the monopoly.

[6 points] 17. Externality. The market demand for a chemical is $P = 16 - Q$ and the industry's marginal private cost is $MPC = 4 + Q$ (P in dollars, Q in tons). Production releases fumes that impose a constant marginal external cost of 2 dollars per ton on nearby residents.

$P = 16 - Q, \qquad MPC = 4 + Q, \qquad MEC = 2$

[2 points] (a) Calculate the unregulated market equilibrium quantity and price.

[2 points] (b) Calculate the socially optimal quantity. Show your work.

[2 points] (c) The government imposes a per-unit tax on producers to correct the externality. State the efficient tax and the new equilibrium price paid by consumers.

Short Answer (1 question)

[6 points] 18. Perfect competition. Wheat is produced in a perfectly competitive industry. The market price is 10 dollars per bushel. A representative farm is producing its profit-maximizing output, at which its average total cost is 8 dollars and rising marginal cost equals price.

[2 points] (a) Is the representative farm earning positive, zero, or negative economic profit in the short run? Explain.

[2 points] (b) Explain what happens in this industry in the long run, and state the resulting market price relative to average total cost.

[2 points] (c) A farmer complains that "zero economic profit means farming isn't worth doing." Briefly evaluate this claim.

Answer Key

1. **B**

2. **C**

3. **C**

4. **B**

5. **B**

6. **B**

7. **C**

8. **A**

9. **B**

10. **B**

11. **B**

12. **B**

13. **B**

14. **B**

15. **B**

16. (a) For a linear demand curve, MR has the same intercept and twice the slope: $MR = 20 - 2Q$. Set $MR = MC$: $20 - 2Q = 4 \Rightarrow Q^* = 8$ (thousand units). Price from the demand curve: $P^* = 20 - 8 = 12$ dollars.

(b) With constant $MC = 4$ and no fixed costs, $ATC = 4$. Profit $= (P - ATC) \times Q = (12 - 4) \times 8 = 64$ (thousand dollars).

(c) Allocative efficiency requires $P = MC$: $20 - Q = 4 \Rightarrow Q = 16$. The monopolist stops at $Q = 8$ because producing beyond the point where $MR = MC$ would lower its profit — for every unit past 8, the extra revenue (MR < 4... falling below MC) is less than the extra cost, even though consumers still value those units above MC.

(d) DWL is the triangle between demand and MC from the monopoly output to the efficient output: $DWL = \frac{1}{2} \times (16 - 8) \times (12 - 4) = \frac{1}{2} \times 8 \times 8 = 32$ (thousand dollars).

17. (a) The market equates demand with MPC: $16 - Q = 4 + Q \Rightarrow Q = 6$ tons, $P = 16 - 6 = 10$ dollars.

(b) Marginal social cost adds the externality: $MSC = MPC + MEC = 6 + Q$. Social optimum where demand = MSC: $16 - Q = 6 + Q \Rightarrow Q = 5$ tons. The market overproduces by 1 ton.

(c) The Pigouvian tax equals the marginal external cost: 2 dollars per ton. It shifts MPC up to $6 + Q$ (coinciding with MSC), giving $Q = 5$ and a consumer price of $P = 16 - 5 = 11$ dollars — quantity falls to the social optimum and the externality is internalized.

18. (a) Positive economic profit: $P = 10 > ATC = 8$ at the chosen output, so the farm earns $(10 - 8)$ dollars per bushel on every bushel sold.

(b) Positive economic profit attracts entry. Entry shifts market supply right, pushing the market price down until it equals minimum ATC. In long-run equilibrium $P =$ minimum ATC and economic profit is zero.

(c) The claim is false. Zero economic profit means revenue covers all explicit costs AND all implicit costs — including the normal return on the farmer's time and capital. The farmer is doing exactly as well as in the next-best alternative; accounting profit is still positive.

Worked Solutions

Question 16. *(a)* For a linear demand curve, MR has the same intercept and twice the slope: $MR = 20 - 2Q$. Set $MR = MC$: $20 - 2Q = 4 \Rightarrow Q^* = 8$ (thousand units). Price from the demand curve: $P^* = 20 - 8 = 12$ dollars.

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(c) Allocative efficiency requires $P = MC$: $20 - Q = 4 \Rightarrow Q = 16$. The monopolist stops at $Q = 8$ because producing beyond the point where $MR = MC$ would lower its profit — for every unit past 8, the extra revenue (MR < 4... falling below MC) is less than the extra cost, even though consumers still value those units above MC.

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(b) Marginal social cost adds the externality: $MSC = MPC + MEC = 6 + Q$. Social optimum where demand = MSC: $16 - Q = 6 + Q \Rightarrow Q = 5$ tons. The market overproduces by 1 ton.

(c) The Pigouvian tax equals the marginal external cost: 2 dollars per ton. It shifts MPC up to $6 + Q$ (coinciding with MSC), giving $Q = 5$ and a consumer price of $P = 16 - 5 = 11$ dollars — quantity falls to the social optimum and the externality is internalized.

Question 18. *(a)* Positive economic profit: $P = 10 > ATC = 8$ at the chosen output, so the farm earns $(10 - 8)$ dollars per bushel on every bushel sold.

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