

# 2014 AP<sup>®</sup> MICROECONOMICS FREE-RESPONSE QUESTIONS

## MICROECONOMICS

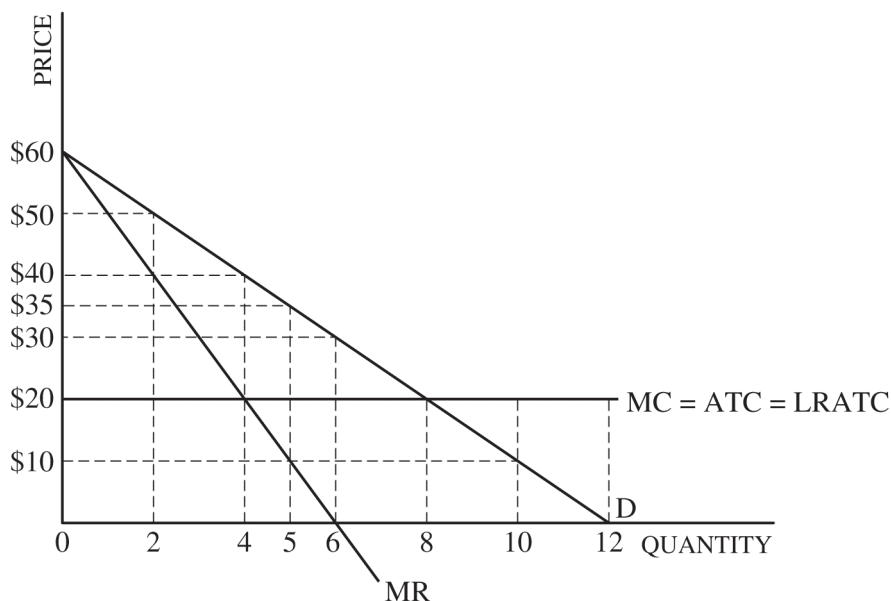
### Section II

Planning time—10 minutes

Writing time—50 minutes

**Directions:** You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. The graph below shows the demand curve (D), marginal revenue curve (MR), marginal cost curve (MC), average total cost curve (ATC), and long-run average total cost curve (LRATC) for a monopolist.



- (a) Using the numbers given in the graph, identify each of the following for the profit-maximizing monopolist.
- (i) The quantity produced
  - (ii) The price
  - (iii) The allocatively efficient quantity
- (b) At the profit-maximizing quantity from part (a)(i), is the monopolist experiencing economies of scale? Explain.

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- (c) Now assume that the monopolist produces 10 units. Using the numbers given in the graph, calculate each of the following. Show your work.
- (i) The monopolist's economic profit
  - (ii) The consumer surplus
  - (iii) The deadweight loss
- (d) At what quantity is demand unit elastic?
- (e) Suppose the monopolist perfectly price discriminates and chooses the quantity that maximizes profit. Determine the dollar value of each of the following.
- (i) The monopolist's profit
  - (ii) The consumer surplus
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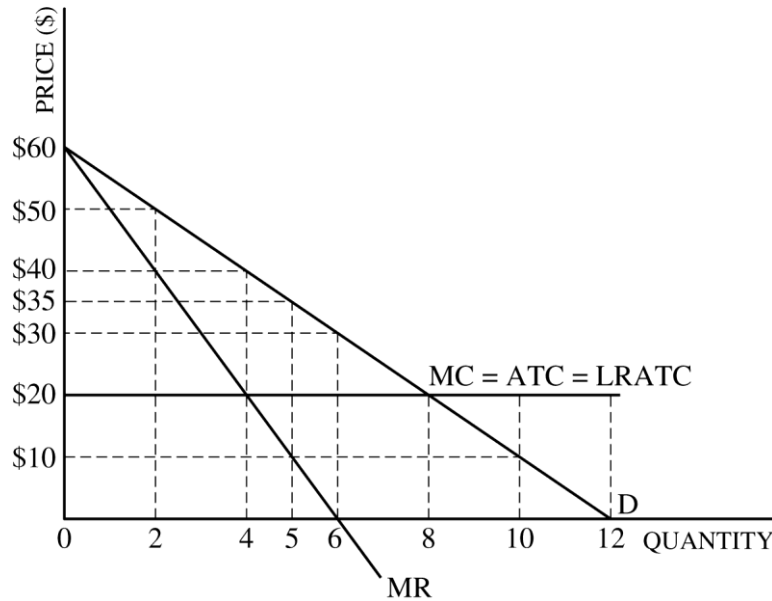
2. Ray's Stable hires workers in a perfectly competitive factor market for unskilled labor.

- (a) Using correctly labeled side-by-side graphs for the labor market and Ray's Stable, show each of the following.
- (i) The equilibrium wage and quantity for unskilled labor, labeled  $W_E$  and  $Q_E$ , respectively
  - (ii) The wage paid by Ray's Stable and the quantity of unskilled labor hired, labeled  $W_R$  and  $Q_R$ , respectively
- (b) Is the marginal factor cost of unskilled labor for Ray's Stable greater than, less than, or equal to  $W_E$ ? Explain.
- (c) Now assume that the government imposes an effective minimum wage for unskilled labor.
- (i) Show the minimum wage on your graphs in part (a), labeled  $W_{MIN}$ .
  - (ii) On the labor market graph in part (a), show the quantity of unskilled labor supplied in the labor market as a result of the minimum wage, labeled  $Q_S$ .
  - (iii) As a result of the new minimum wage, will the marginal revenue product of the last worker hired by Ray's Stable increase, decrease, or stay the same?

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## Question 1

**10 points** (3 + 1 + 3 + 1 + 2)



(a) 3 points:

- One point is earned for identifying the profit-maximizing quantity,  $Q = 4$ .
- One point is earned for identifying the profit-maximizing price,  $P = \$40$ .
- One point is earned for identifying the allocatively efficient output,  $Q = 8$ .

(b) 1 point:

- One point is earned for stating that the firm is not experiencing economies of scale and for explaining that the LRATC is not downward sloping as output increases or LRATC remains constant as output increases.

(c) 3 points:

- One point is earned for correctly showing the calculation for the monopolist's economic profit.

$$\pi = (P - ATC) \times Q = (\$10 - \$20) \times 10 = -\$100$$

Or loss of \$100

Other correct calculations are acceptable.

- One point is earned for correctly showing the calculation of consumer surplus.

$$CS = \frac{1}{2} (\$60 - \$10) \times 10 = \$250$$

Other correct calculations are acceptable.

- One point is earned for correctly showing the calculation of the deadweight loss.

$$DWL = \frac{1}{2} (\$20 - \$10) \times (10 - 8) = \$10$$

Other correct calculations are acceptable.

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**Question 1 continued**

(d) 1 point:

- One point is earned for identifying the quantity at which demand is unit elastic, 6.

(e) 2 points:

- One point is earned for correctly determining the monopolist's profit.  
$$1/2[(\$60 - \$20) \times 8] = \$160$$
- One point is earned for correctly determining the consumer surplus as zero.