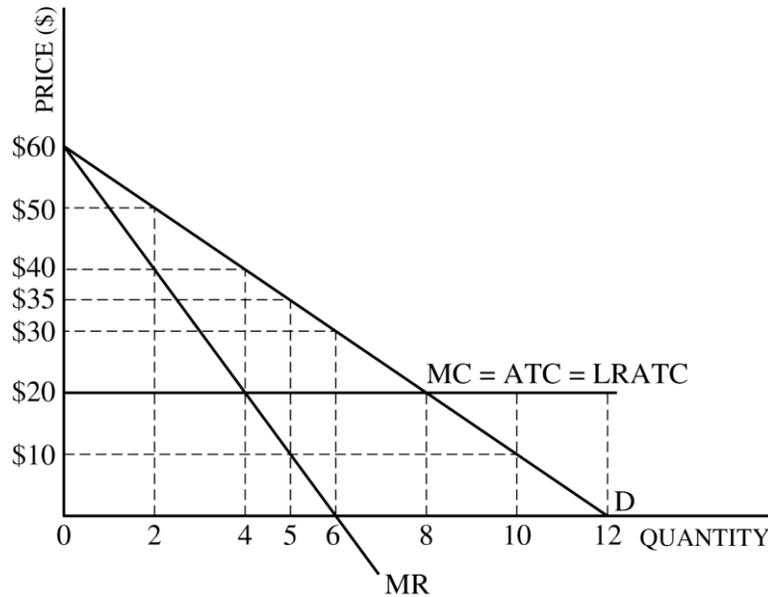


**AP<sup>®</sup> MICROECONOMICS  
2014 SCORING GUIDELINES**

**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.

$$CS = 1/2 (\$60 - \$10) \times 10 = \$250$$

Other correct calculations are acceptable.

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

$$DWL = 1/2 (\$20 - \$10) \times (10 - 8) = \$10$$

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.

## ANSWER PAGE FOR QUESTION 1

(a) (i) The quantity produced by the profit-maximizing monopolist is 4.

(ii) The price is \$40

(iii) The allocatively efficient quantity is 8, because that's where  $MC = D$

(b) No. Because the long-run total cost curve is horizontal, meaning the average total cost doesn't change as amount of output is increased.

(c) (i) The monopolist's economic profit is ~~100~~ -\$100, because at  $Q=10$ ,  $P=D=\$10$ ,  $ATC=\$20$

$$\therefore \text{Profit} = TR - TC = \$10 \times 10 - \$20 \times 10 = -\$100$$

(ii) The consumer surplus is the difference between demand curve and price at  $Q=10$  times Quantity.

$$(\$60 - \$10) \times 10 \times \frac{1}{2} = \$50 \times 5 = \$250$$

(iii) The deadweight loss is, consumer surplus - loss of producer surplus.

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

(d) The demand is unit elastic at quantity = 6

because  $MR=0$  at  $Q=6$ , when  $MR=0$ , demand is unit elastic.

(e) ~~Because~~ Because of perfectly price discrimination,  $MR=D$

(i) profit:  $(\$60 - \$20) \times 8 \times \frac{1}{2} = 4 \times \$40 = \$160$

(ii) consumer surplus: \$0

GO ON TO THE NEXT PAGE.

## ANSWER PAGE FOR QUESTION 1

- d. i) 4  
 ii) 40  
 iii) 8

b. yes. Because the ATC curve is the same as the LRATC curve at that point, economies of scale exist.

e. i)  $P = R - C = (10)(10) - (10)(20) = -\$100$

ii) CS is the triangle made by the y axis, the Demand curve, and the price.

$$CS = \frac{1}{2}(10)(50) = \$250$$

iii) Because  $D > MC$  at this point, there is no dead weight loss.

d.  $Q = 6$

e. i)  $P = R - C = 160 - 80 = \$80$

ii)  $CS = \frac{1}{2}(4)(60 - 40) = \$40$

GO ON TO THE NEXT PAGE.

## ANSWER PAGE FOR QUESTION 1

a.)

i.) 4

ii.) \$40

iii.) Where the demand curve and  $MC = ATC =$   
 $LRATC$  curve intersect.b.) ~~Yes~~ Yes, because as quantity  
gets larger price becomes smaller.

c.)

i.) ~~135~~ \$135ii.)  $20 + 30 + 35 + 40 + 50 + 60 = \$235$ iii.) Goes from quantity 4 to 8, and  
shows the triangle on the  
graph.  $40 + 35 + 30 + 20 = \$125$ 

d.) 8

e.)

i.) ~~\$135~~ \$300

ii.) \$235

GO ON TO THE NEXT PAGE.

# AP<sup>®</sup> MICROECONOMICS 2014 SCORING COMMENTARY

## Question 1

### Overview

This question assessed the student's ability to work with the monopoly model under various circumstances. Part (a) tested for an understanding of how price and quantity are determined by a profit-maximizing, unregulated monopolist. The question also examined the student's ability to determine the allocatively efficient level of output in monopoly. Part (b) of the question determined whether the monopolist is experiencing economies of scale and to explain the answer. In part (c), the student was required to calculate profit, consumer surplus, and the deadweight loss to society when the monopolist is producing a given (but not profit-maximizing) quantity of output. Part (d) of the question tested the student's understanding of the relationship between unitary elasticity and marginal revenue. In part (e), the question examined the student's ability to determine economic profit and consumer surplus under conditions of perfect price discrimination.

### Sample: 1A

**Score: 10**

The student correctly answered all questions and earned all 10 points.

### Sample: 1B

**Score: 6**

The student earned 3 points in part (a) for correctly identifying the quantity produced, the price, and the allocatively efficient quantity. The student earned 2 points in parts (c)(i) and (c)(ii) for correctly calculating the monopolist's economic profit and the consumer surplus. The student earned 1 point in part (d) for correctly identifying the quantity at unit elasticity.

### Sample: 1C

**Score: 2**

The student earned 2 points in parts (a)(i) and (a)(ii) for correctly identifying the quantity produced and the price.