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2022

AP CollegeBoard

AP® Microeconomics

Sample Student Responses and Scoring Commentary Set 1

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Free-Response Question 2

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Question 2: Short — 5 points

(a)		State that there is a positive consumption externality.	**1 point**
(b)		State that the marginal external benefit is $3.	**1 point**
(c)	**(i)**	State that the change in profit per hour for Bueno is $10 and show your work. $\text{Change in Profit per Hour} = \text{Marginal Revenue Product (MRP)} - \text{Marginal Factor Cost (MFC)} = (\$5 \times 6) - \$20 = \$30 - \$20 = \$10$	**1 point**
	(ii)	State that Bueno's MRP curve would shift up (or to the right) and explain that the subsidy would increase the demand for guava and increase the price paid by buyers, which would increase MRP for each worker and shift the curve to the right.	**1 point**
		Total for part (c)	**2 points**
(d)		State that the number of workers hired will decrease as the quantity of labor hired will occur at a lower quantity of labor where MFC=MRP and explain with **ONE** of the following: • The MFC for a monopsony is greater than the MFC for a perfectly competitive labor market. • The MFC increases as the monopsony pays higher wages for every worker as it hires more workers whereas the MFC (or wage) is constant for a firm in a perfectly competitive labor market.	**1 point**
		Total for question 2	**5 points**

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Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ Question 2 ● Question 3 ○

Begin your response to each question at the top of a new page.

2a) There is a positive externality to consumption.

2b) 8 - 5 = 3, $3

2ci) $5 per unit, $5 · 6 = 30, 30 - 20 = 10, $10

2cii) The per-unit subsidy will increase demand for guavas, causing price to rise. Because of this, Bueno's marginal revenue product curve will increase, as marginal revenue product = price · marginal product, and price rises.

2d) Decrease, as the marginal factor cost of each worker will increase due to Bueno being a monopsony. This is because hiring an extra worker at a higher wage will cause all previous worker's wages to increase as well. If marginal factor cost increases, the quantity of labor where MFC = MRP decreases, and Bueno hires less.

Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

0068855

Q5320/03

● **Important:** Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ **Question 2** ● **Question 3** ○

Begin your response to each question at the top of a new page.

a) Positive Externality of Consumption

b) $3 of additional social benefit per unit

c) 6 units · $5 − $20 wage = $10 per hour

Bueno's MRP curve would shift to the right. w/ the subsidy, Bueno would be able to charge more.

d) decrease, ~~the~~ the MRP curve would shift left meaning ~~he hires~~ the firm hires less workers

Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

0129369

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ Question 2 ● Question 3 ○

Begin your response to each question at the top of a new page.

2a) The market failure in the graph is a consumption positive externality.

2b) The marginal external benefit is $3

2c) i) $6 \cdot 5 = 30 + (6 \cdot -3) = \$12$ per hour

ii) The per unit subsidy would raise Bueno's marginal revenue product curve, because more people would buy guava.

2d) The number of workers hired would increase because he can pay the workers lower wages.

Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

Q5320/02

Question 2

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

The question assessed students' understanding of a graph of a market with a positive consumption externality. The question also assessed students' understanding of the hiring decisions of a firm.

The question stated that Bueno is a firm that produces and sells guava and that the market for guava is perfectly competitive. The question included a graph illustrating the marginal private benefit (MPB), marginal private cost (MPC), marginal social benefit (MSB), and marginal social cost (MSC).

In part (a) students were asked to identify the kind of market failure represented in the graph as a positive externality from consumption. In part (b) students were asked to identify the marginal external benefit as $3 using numbers from the graph. The task required students to know that the marginal external benefit is represented by the vertical difference between the MSB and MPB curves at any given quantity.

Part (c) of this question informed students that Bueno hired workers in a perfectly competitive labor market. The question stated that the guava market is in short-run equilibrium, that Bueno hires workers at a wage of $20 per hour, and that the marginal product of the last worker hired was 6 units of guava per hour. In part (c)(i) students were expected to calculate the change in Bueno's profit per hour from the last worker hired and were directed to show their work. The task required students to first recognize that the marginal factor cost is equal to the wage ($20) in a perfectly competitive labor market, identify the equilibrium price of guava to use in determining the marginal revenue product of the last worker hired ($5×6=$30), and then use those values to correctly calculate the change in profit per hour as $10 by showing it to be the difference between the marginal revenue product and the marginal factor cost (= ($5×6) - $20 or = $30 - $20).

In part (c)(ii) students were expected to explain how a per-unit subsidy to consumers who buy guava would affect Bueno's marginal revenue product curve. The task required students to demonstrate understanding of how a per-unit subsidy affects the market price and its effect on the marginal revenue product. Students needed to explain that the per-unit subsidy to consumers would increase the demand for guava and increase the price of guava, causing the marginal product curve to shift up (or to the right).

Part (d) of this question introduced a change to the labor market such that Bueno would now hire workers in a monopsony labor market. Students were asked to explain if the number of workers would increase, decrease, or stay the same. Students needed to explain that a monopsony experiences an increasing marginal factor cost (MFC) as the number of workers increases so that MFC is greater than wage, whereas a perfectly competitive firm has a constant MFC that is equal to wage, in order to conclude that the MFC would increase to give Bueno an incentive to decrease the number of workers hired.

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Question 2 (continued)

Sample: 2A
Score: 5

Part (a): 1 point

The response earned the point in part (a) because the response specifies a positive consumption externality.

Part (b): 1 point

The response earned the point in part (b) because the response identifies the marginal external benefit as $3.

Part (c): 2 points

The response earned the point in part (c)(i) because the response correctly calculates the change in profit per hour to be $10. The response earned the point in part (c)(ii) because the response correctly explains the shift in MRP due to an increase of demand for guava that increases the price of guava.

Part (d): 1 point

The response earned the point in part (d) because the response correctly states that the number of workers will decrease and describes why marginal factor cost rises for the monopsony and identifies the intersection with MRP to be at a lower quantity.

Sample: 2B
Score: 3

Part (a): 1 point

The response earned the point in part (a) because the response correctly specifies a positive consumption externality.

Part (b): 1 point

The response earned the point in part (b) because the response identifies the marginal external benefit as $3.

Part (c): 2 points

The response earned the point in part (c)(i) because the response correctly calculates the change in profit per hour as $10. The response did not earn the point in part (c)(ii) because the response does not explain that the shift in MRP is due to an increase of demand for guava that increases the price of guava.

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Question 2 (continued)

Part (d): 1 point

The response did not earn the point in part (d) because the response does not explicitly compare the marginal factor cost for a monopsony to the marginal factor cost of a perfectly competitive firm.

Sample: 2C
Score: 2

Part (a): 1 point

The response earned the point in part (a) because the response specifies a positive consumption externality.

Part (b): 1 point

The response earned the point in part (b) because the response identifies the marginal external benefit as $3.

Part (c): 2 points

The response did not earn the point in part (c)(i) because the response incorrectly calculates the change in profit per hour. The response did not earn the point in part (c)(ii) because the response does not include that the price of guava will increase.

Part (d): 1 point

The response did not earn the point in part (d) because the response does not state that the number of workers hired will decrease.

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