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2022

AP CollegeBoard

AP® Microeconomics

Sample Student Responses and Scoring Commentary Set 1

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Free-Response Question 3

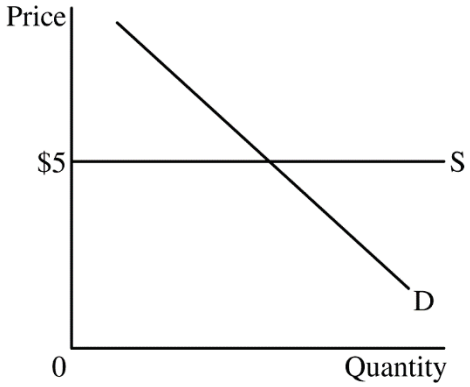
- ☑ **Scoring Guidelines**
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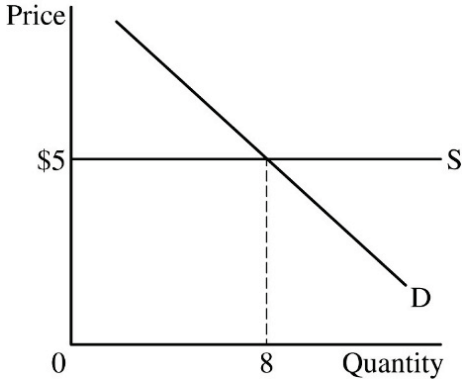
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Question 3: Short — 5 points

(a) Draw a correctly labeled graph of the market with a downward-sloping demand (D) curve and a perfectly elastic supply (S) curve at a price of $5. **1 point**



For the second point, the graph must show the equilibrium quantity as 8 units. **1 point**



Total for part (a) 2 points

(b) (i) Calculate the magnitude of the price elasticity of demand as 1.25 and show your work. **1 point**

$$\text{Price Elasticity of Demand} = \frac{\text{Percentage Change in Quantity Demanded}}{\text{Percentage Change in Price}}$$

$$= \frac{\left|\left(\frac{4-8}{8}\right)\times 100\right|}{\left|\left(\frac{7-5}{5}\right)\times 100\right|} = \frac{50\%}{40\%} = 1.25$$

OR

$$= \frac{\left(\frac{4-8}{8}\right)\times 100}{\left(\frac{7-5}{5}\right)\times 100} = \frac{-50\%}{40\%} = -1.25$$

(ii) State that demand is elastic. **1 point**

Total for part (b) 2 points

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(c)	State no and explain that Emily's marginal benefit should be greater than or equal to the price she is willing to pay ($7) for the second unit.	**1 point**
	Total for question 3	**5 points**

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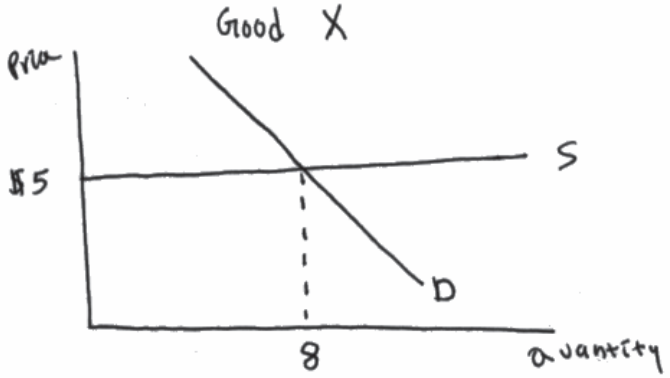
Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ Question 2 ○ Question 3 ●

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

3.

a)



b)

i) $\Delta Q\% \ \frac{4-8}{8} = -\frac{1}{2} = -50\%$

$\Delta P\% \ \frac{7-5}{5} = \frac{2}{5} = 40\%$

$\frac{-50\%}{40\%} = -\frac{5}{4}$

ii) Good X is elastic in that range of prices.

c) No, because Emily will stop buying the second unit of Good X when marginal cost exceeds marginal benefit, however Emily continues to buy Good X, even when the Marginal Cost of buying the second unit of Good X is $7, meaning that the Marginal Benefit that Emily receives from buying a second unit of Good X must equal or exceed $7.

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

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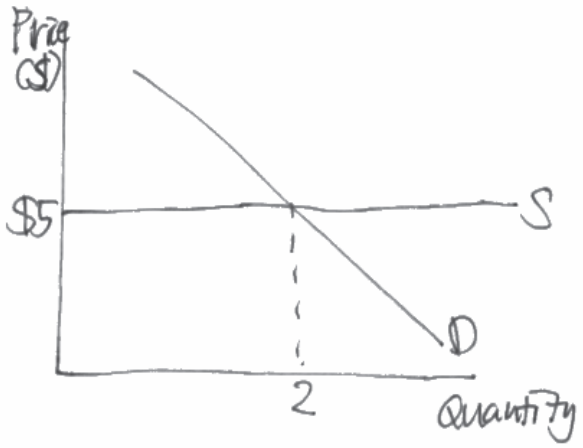
Q5320/05

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Question 1 ○ Question 2 ○ Question 3 ●

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

3) a)



b) i) $\frac{\%\Delta QP}{\%\Delta P} = \frac{-50\%}{+40\%} = |-\frac{5}{4}|$

$\therefore \frac{5}{4} > 1$

ii) Elastic as $\frac{5}{4} > 1$

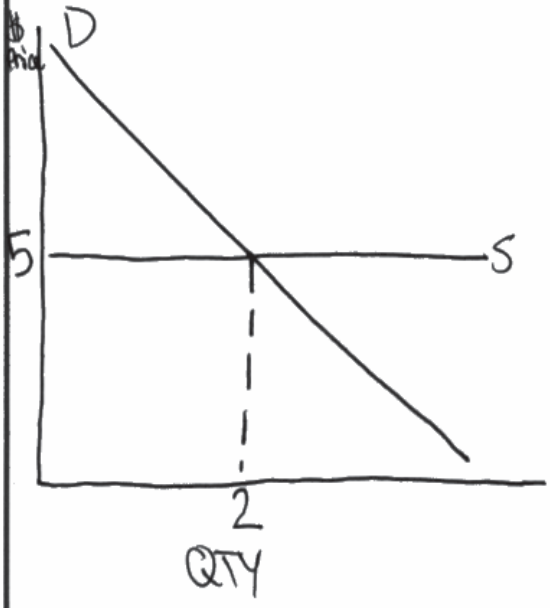
c) Yes because $8 - \frac{7}{2} = 4.5$ as Marginal benefit is Change in Average total cost from Change in quantity.

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

● **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.



(b)(i) - .9

(b)(ii) - Demand is unit elastic

(c) - No, as the perfectly elastic supply makes it so the marginal benefit for the 2nd unit of Good X cant be $4.50

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

0121354

Question 3

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

Overview

The question assessed students' understanding of the market demand curve's relationship to individual demand schedules, market equilibrium, price elasticity of demand, and how the demand curve reflects key assumptions underpinning buying decisions using marginal analysis.

The question stated that there are four individual buyers in the market for Good X. Students were provided with a table of prices and individual quantities demanded at each price for each buyer. In part (a) students were asked to draw a correctly labeled graph for the market where market supply (S) is perfectly elastic. This part of the question tested students' ability to draw a horizontal S curve at a given price and a downward-sloping demand (D) curve. Students were asked to label the market equilibrium for Good X at a price and quantity combination based on the given equilibrium price and the quantity at which the market demand intersects the market supply. This task tested students' understanding of how, at a given price, the quantity demanded by the market is the summation of the quantities demanded by all individual buyers.

Part (b) of this question asked students to calculate a measure of elasticity and to reach a conclusion based on the value of the calculation. Part (b) stated that the price of Good X increased from $5 to $7. Part (b)(i) required students to first calculate the market quantity demanded at each price, and to then calculate the price elasticity of demand by calculating the absolute value of the percentage change in quantity demanded divided by the percentage change in price. Students successfully demonstrated understanding of this concept by writing an equation with the correct percentage changes in price and quantity and a correct result. Part (b)(ii) asked students to identify whether the value calculated in (b)(i) was elastic, inelastic, or unit elastic over the range of prices. This tested students' knowledge of categorizing the responsiveness of buyers to a change in price by comparing the absolute value of the price elasticity of demand calculated to the value of 1. Students demonstrated understanding by identifying the value of the measure of elasticity as elastic when it exceeded 1.

Part (c) of this question asked students whether or not a particular marginal benefit and quantity combination was consistent with an individual's marginal benefit. This tested students' understanding of marginal analysis in buying decisions by recognizing that an individual's willingness to pay a given price for a specific unit of the good indicates that their marginal benefit for that unit is at least as great as the price. Students were expected to assert the marginal benefit and quantity combination could not be the buyer's marginal benefit and to explain how the marginal benefit of the quantity specified could not be less than the price the individual was willing to pay for that particular unit of Good X.

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Question 3 (continued)

Sample: 3A
Score: 5

Part (a): 2 points

The response earned the first point in part (a) because the response shows a correctly labeled graph of the market with a downward-sloping demand (D) curve and a perfectly elastic supply (S) curve at a price of $5. The response earned the second point in part (a) because the graph shows the equilibrium quantity as 8 units and the equilibrium price as $5.

Part (b): 2 points

The response earned the point in part b(i) because the response correctly calculates the magnitude of the price elasticity of demand as 1.25 and shows the work. The response earned the point in part b(ii) because the response states that demand is elastic.

Part (c): 1 point

The response earned the point in part (c) because the response states no and explains that Emily's marginal benefit will be greater than or equal to the price she is willing to pay ($7) for the second unit.

Sample: 3B
Score: 3

Part (a): 2 points

The response earned the first point in part (a) because the response shows a correctly labeled graph of the market with a downward-sloping demand (D) curve and a perfectly elastic supply (S) curve at a price of $5. The response did not earn the second point in part (a) because the response does not show the equilibrium quantity as 8 units.

Part (b): 2 points

The response earned the point in part (b)(i) because the response correctly calculates the magnitude of the price elasticity of demand as 1.25 and shows the work. The response earned the point in part (b)(ii) because the response correctly states that demand is elastic.

Part (c): 1 point

The response did not earn the point in part (c) because the response incorrectly states "yes" and provides an incorrect explanation/calculation for finding MB.

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Question 3 (continued)

Sample: 3C
Score: 1

Part (a): 2 points

The response earned the first point in part (a) because the response shows a correctly labeled graph of the market with a downward-sloping demand (D) curve and a perfectly elastic supply (S) curve at a price of $5. The response did not earn the second point in part (a) because the response does not show the equilibrium quantity as 8 units.

Part (b): 2 points

The response did not earn the point in part b(i) because the response does not correctly calculate the magnitude of the price elasticity of demand as 1.25. The response did not earn the point in part b(ii) because the response incorrectly states that demand is unit elastic.

Part (c): 1 point

The response did not earn the point in part (c) because the response does not explain that Emily's marginal benefit should be greater than or equal to the price she is willing to pay ($7) for the second unit.

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