2021

AP CollegeBoard

AP® Microeconomics

Sample Student Responses and Scoring Commentary Set 2

Inside:

Free Response Question 3

- ☑ **Scoring Guideline**
- ☑ **Student Samples**
- ☑ **Scoring Commentary**

Question 3: Short — 5 points

(a)	Calculate the total net benefit of placing three advertisements as $2,200 and show your work: Total net benefit = $3,000 – $800 = $2,200	**1 point**
(b)	Calculate the marginal net benefit of the third advertisement as $500 and show your work: Marginal net benefit = ($3,000 – $2,200) – ($800 – $500) = $800 – $300 = $500	**1 point**
(c)	Identify the optimal number of advertisements as 4 and explain that the marginal net benefit of the 4th advertisement is positive ($600 – $500 = $100), but the marginal net benefit of the 5th advertisement is negative ($400 – $800 = –$400).	**1 point**
(d)	Identify the optimal number of advertisements as 4.	**1 point**
(e)	State that AZY Foods is operating in a monopolistically competitive market structure.	**1 point**
	Total for question 3	**5 points**

Question 1 ○ Question 2 ○ Question 3 ●

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

a) Total net benefit = Total benefit at 3 − Total cost at 3 = $3000 − $800 = **$2200**

b) Total net benefit at 3 advertisements = $2200, as determined from part a.
Total net benefit at 2 advertisements = $2200 − $500 = $1700.
Marginal net benefit of 3rd advertisement = Total net benefits at 3 advertisements − total net benefit at 2 advertisements = $2200 − $1700 = **$500**

c) The optimal number that AZY foods should place is where MC = MB, which is 4 advertisements because at 4 advertisements the marginal cost is $1300 − $800 = $500 and the marginal benefit is $3600 − $3000 = $600. At 5 advertisements, the marginal cost is $2400 − $1300 = $800 and the marginal benefit is $4000 − $3600 = $400, so at 5 advertisements, MC > MB so the firm should not place 5 advertisements, so the firm should place 4 advertisements.

d) 4 advertisements

e) Monopolistic competition

Question 1 ○ Question 2 ○ Question 3 ●

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

a) 3000 - 800 = 2200 dollars
b) (3000 - 800) - (2200 - 500) = 2200 - 1700 = 500 dollars
c) 4, a further increase would raise the price by 800, but only increase the benefit by 400.
d) 4
e) Oligopoly

Question 1 Question 2 Question 3

○ ○ ●

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

A) Total net benefit of 3 advertisements = 3,000 - 800 = $2,200

b) Marginal net benefit = 3,000 - 2,200 = $800 $800

C) The optimal number of advertisements placed by A2y foods is 2. The total benefit from 1 to 2 advertisements is 1000. while added a 3rd advertisement it's benefit is only $800, thus the optimal number is 2.

d) The optimal number of 2 would stay the same because every advertisement increases by $200, thus not changing the optimal output of advertisements.

e) A2Y Foods is operating in an Oligopoly where each industry is competing against one another.

Question 3

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

Overview

The question assessed students' understanding of marginal analysis using total costs and total benefits. Additionally, the question examined students' knowledge of the characteristics of market structures.

The question began with a table showing the total cost and total benefit of advertisements placed by AZY Foods, a firm in the retail food market. In part (a) students were asked to calculate the total net benefit of placing three advertisements, showing their work. Students were expected to show the subtraction of the total cost from the total benefit ($3,000 − $800) to get the total net benefit of $2,200. In part (b) students were asked to calculate the marginal net benefit of placing three advertisements, showing their work. Students were expected to show the marginal cost, the total cost of the third advertisement less the total cost of the second advertisement ($800 − $300), from the marginal benefit, the total benefit of the third advertisement less the total benefit of the second advertisement ($3,000 − $2,200), to get the marginal net benefit ($800 − $500) of the third advertisement as $500. Both parts are designed to assess whether students know the concept of net values and whether they can distinguish marginal net benefits from total net benefits.

Part (c) asked students for the optimal number of advertisements placed by AZY Foods and an explanation of their answer using marginal analysis. Students needed to identify four advertisements as optimal and explain that the marginal benefit of the fourth advertisement was greater than the marginal cost of the fourth advertisement ($600 > $500), but the marginal net benefit of the fifth advertisement was less than the marginal cost of the fifth advertisement ($400 < $800). This could also be demonstrated by showing the marginal net benefit of the fourth advertisement to be positive ($600 − $500 = $100) and the marginal net benefit of the fifth advertisement to be negative ($400 − $800 = −$400). The idea that four advertisements would be optimal because the fourth advertisement increases the total net benefit to its maximum while the fifth advertisement would cause the total net benefit to decrease.

Part (d) asked students to identify the optimal number of advertisements if the marginal benefit AZY Foods receives from each advertisement increases by $300. The optimal number was still four advertisements. Students would have needed to recognize that the increase in marginal benefit for the fifth advertisement (from $400 to $700) was not sufficient to make the marginal net benefit of the fifth advertisement positive and increase the total net benefit.

Part (e) states that the retail food market has many firms, and each firm places its own firm-specific advertisements without considering the actions of its competitors. The question asked students to identify the market structure. Students needed to identify that AZY Foods was operating in a monopolistically competitive market.

Sample: 3A
Score: 5

Part (a): 1 point

- The response earned the point because the response shows a correct calculation of total net benefit and shows work.

Part (b): 1 point

- The response earned the point because the response shows a correct calculation of marginal net benefit and shows work.

Question 3 (continued)

Part (c): 1 point

- The response earned the point because the response states the optimal number of advertisements is four and explains using marginal analysis.

Part (d): 1 point

- The response earned the point because the response states that the optimal number of advertisements is four.

Part (e): 1 point

- The response earned the point because the response correctly states the market structure is monopolistic competition.

Sample: 3B
Score: 3

Part (a): 1 point

- The response earned the point because the response shows a correct calculation of total net benefit and shows work.

Part (b): 1 point

- The response earned the point because the response shows a correct calculation of marginal net benefit and shows work.

Part (c): 1 point

- The response did not earn the point because the response identifies the optimal number of four advertisements but does not explain using marginal analysis.

Part (d): 1 point

- The response earned the point because the response states that the optimal number of advertisements is four.

Part (e): 1 point

- The response did not earn the point because the response incorrectly states that the market structure is oligopoly.

Sample: 3C
Score: 1

Part (a): 1 point

- The response earned the point because the response shows the correct calculation of total net benefit and shows work.

Part (b): 1 point

- The response did not earn the point because the response shows an incorrect calculation of marginal net benefit.

Part (c): 1 point

- The response did not earn the point because the response identifies that the optimal number of advertisements is two.

Question 3 (continued)

Part (d): 1 point

- The response did not earn the point because the response states that the optimal number of advertisements is two.

Part (e): 1 point

- The response did not earn the point because the response incorrectly states that the market structure is oligopoly.