

2024



AP[®] Microeconomics

Sample Student Responses and Scoring Commentary Set 1

Inside:

Free-Response Question 3

- Scoring Guidelines**
- Student Samples**
- Scoring Commentary**

Question 3: Short**5 points**

(a)	State that Field Cruiser’s most profitable strategy is to improve Power.	1 point
(b)	State no, Nice Ride does not have a dominant strategy and explain that if Field Cruiser chooses Reliability, then Nice Ride will choose Comfort since \$30 million is greater than \$10 million, and if Field Cruiser chooses Power, then Nice Ride will choose Safety since \$32 million is greater than \$25 million.	1 point
(c)	State yes, the combination of strategies is a Nash Equilibrium and explain that if Field Cruiser unilaterally chooses Reliability, its profits will decrease from \$35 million to \$28 million and if Nice Ride unilaterally chooses Comfort, its profits will decrease from \$32 million to \$25 million.	1 point
(d)	State that the new firm’s total profit will be \$70 million.	1 point
(e)	State that Nice Ride’s profit will be \$30 million and Field Cruiser’s profit will be \$40 million at the Nash equilibrium.	1 point

Total for question 3 5 points

Question 3 Sample A Page 1 of 1

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.

- 3a) If Nice Ride chooses to improve safety, then Field Cruiser's most profitable strategy is choosing to improve power, because the profit of \$35 million is greater than the profit of \$28 million from choosing Reliability.
- 3b) No, because if Field Cruiser chooses Reliability then Nice Ride's most profitable strategy is choosing Comfort but if Field Cruiser chooses Power then Nice Ride's most profitable strategy is choosing Safety, because if Field Cruiser chose Reliability then Nice Ride would have a choice between \$10 million profit (Safety) or \$30 million profit (Comfort), and \$30 million is greater, but if Field Cruiser chose Power then Nice Ride would have a choice between \$32 million profit (Safety) and \$25 million profit (Comfort) and \$32 million is greater, which is Safety.
- 3c) Yes, because when Nice Ride chooses Safety and Field Cruiser chooses Power, neither company can improve their profit unilaterally. For example, if Nice Ride wanted to switch from Safety to Comfort, they would decrease profits from \$32 million to \$25 million, and if Field Cruiser wanted to switch from Power to Reliability, their profits would decrease from \$35 million to \$28 million.
- 3d) \$70 million is the new firm's total profit ($30 + 40 = 70$)
- 3e) At Nash equilibrium, Nice Ride's profit is \$30 million and Field Cruiser's profit is \$40 million.

Page 4

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



Question 3 Sample B Page 1 of 1

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. to improve power
- b. No, Nice Ride does not have a dominant strategy.
If Field Cruiser decides to improve Reliability, Nice Ride will improve Comfort because $\$30 \text{ million} > \10 million . But if ~~the~~ Field Cruiser improves Power, Nice Ride will improve Safety because $\$32 \text{ million} > \25 million
- c. No, Field Cruiser would want to choose Reliability because $\$40 \text{ million} > \35 million
- d. \$70 million
- e. Nice Ride - \$30 million
Field Cruiser - \$40 million

Page 4

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

Question 3 Sample C Page 1 of 1

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) Field Cruiser's most profitable strategy would be to improve power.
- (b) Nice Ride does not have a dominant strategy because Nice ride chooses to improve comfort when Field cruiser improves reliability ($\$30m > \$10m$). Nice ride would choose to improve safety if Field Cruiser improves power ($\$32m > \$25m$).
- (c) There is no Nash equilibrium because there is no dominant strategy for any of the two products.
- (d) $\$25m$
- (e) Nice Ride: $\$10m$
Field Cruiser: $\$28m$

Page 4

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

Question 3

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

Overview

The question assessed students' ability to analyze the behavior of two firms, Nice Ride and Field Cruiser, using a payoff matrix. The concepts in the question included identifying an action to maximize a firm's profit, identifying, and explaining the conditions for a dominant strategy, determining the existence of a Nash equilibrium, calculating and identifying a combined profit, and interpreting the effect of a change in a market condition on profits at the Nash equilibrium.

The question provided a matrix with two players, who each have two strategies, and the payoffs for each combination of strategies.

In part (a) students were expected to use the payoff matrix to identify the most profitable strategy for a player (Field Cruiser) if the other player (Nice Ride) chose to improve safety. Students were required to state that "Power" is the most profitable strategy for Field Cruiser.

In part (b) students were required to determine if Nice Ride had a dominant strategy and then explain using numbers from the payoff matrix. Students needed to state that Nice Ride does not have a dominant strategy and to explain that if Field Cruiser chooses Reliability, then Nice Ride will choose Comfort, since \$30 million is greater than \$10 million. However, if Field Cruiser chooses Power, then Nice Ride will choose Safety, since \$32 million is greater than \$25 million.

In part (c) students were expected to analyze a given set of strategies and to state that the combination of Nice Ride choosing to improve Safety and Field Cruiser choosing to improve Power is a Nash equilibrium. Students then needed to explain that if Field Cruiser unilaterally chooses Reliability, its profits decrease from \$35 million to \$28 million, and if Nice Ride unilaterally chooses Comfort, its profits will decrease from \$32 million to \$25 million.

In part (d) students were required to calculate the profits of the merged firms and identify the maximum profit possible. Students needed to state that the new firm's total profit will be \$70 million.

In part (e) the students needed to interpret how a change in fuel prices, reducing the profitability of choosing to improve Power by \$10 million for Field Cruiser, would affect the profits of each of the firms at the Nash equilibrium. Students needed to identify each firm's profit as Nice Ride's profit will be \$30 million and Field Cruiser's profit will be \$40 million at the Nash equilibrium.

Question 3 (continued)

Sample: 3A

Score: 5

Part (a): 1 point

The response earned the point in part (a) because the response states that Field Cruiser's most profitable strategy is to improve Power.

Part (b): 1 point

The response earned the point in part (b) because the response asserts no, Nice Ride does not have a dominant strategy, and explains that if Field Cruiser chooses Reliability, then Nice Ride will choose Comfort since \$30 million is greater than \$10 million, and if Field Cruiser chooses Power, then Nice Ride will choose Safety because \$32 million is greater than \$25 million.

Part (c): 1 point

The response earned the point in part (c) because the response asserts yes, the combination of strategies is a Nash equilibrium, and explains that if Field Cruiser unilaterally chooses Reliability, its profits will decrease from \$35 million to \$28 million, and that if Nice Ride unilaterally chooses Comfort, its profits will decrease from \$32 million to \$25 million.

Part (d): 1 point

The response earned the point in part (d) because the response states that the new firm's total profit will be \$70 million.

Part (e): 1 point

The response earned the point in part (e) because the response states that Nice Ride's profit will be \$30 million and Field Cruiser's profit will be \$40 million at the Nash equilibrium.

Sample: 3B

Score: 4

Part (a): 1 point

The response earned the point in part (a) because the response states that Field Cruiser's most profitable strategy is to improve Power.

Part (b): 1 point

The response earned the point in part (b) because the response asserts no, Nice Ride does not have a dominant strategy, and explains that if Field Cruiser chooses Reliability, then Nice Ride will choose Comfort since \$30 million is greater than \$10 million, and if Field Cruiser chooses Power, then Nice Ride will choose Safety because \$32 million is greater than \$25 million.

Question 3 (continued)

Part (c): 1 point

The response did not earn the point in part (c) because the response does not assert yes.

Part (d): 1 point

The response earned the point in part (d) because the response states that the new firm's total profit will be \$70 million.

Part (e): 1 point

The response earned the point in part (e) because the response states that Nice Ride's profit will be \$30 million and Field Cruiser's profit will be \$40 million at the Nash equilibrium.

Sample: 3C

Score: 2

Part (a): 1 point

The response earned the point in part (a) because the response states that Field Cruiser's most profitable strategy is to improve Power.

Part (b): 1 point

The response earned the point in part (b) because the response asserts no, Nice Ride does not have a dominant strategy, and explains that if Field Cruiser chooses Reliability, then Nice Ride will choose Comfort since \$30 million is greater than \$10 million, and if Field Cruiser chooses Power, then Nice Ride will choose Safety because \$32 million is greater than \$25 million.

Part (c): 1 point

The response did not earn the point in part (c) because the response incorrectly asserts no.

Part (d): 1 point

The response did not earn the point in part (d) because the response does not state that the new firm's total profit will be \$70 million.

Part (e): 1 point

The response did not earn the point in part (e) because the response does not state that Nice Ride's profit will be \$30 million and Field Cruiser's profit will be \$40 million at the Nash equilibrium.