
AP Microeconomics

Sample Student Responses and Scoring Commentary

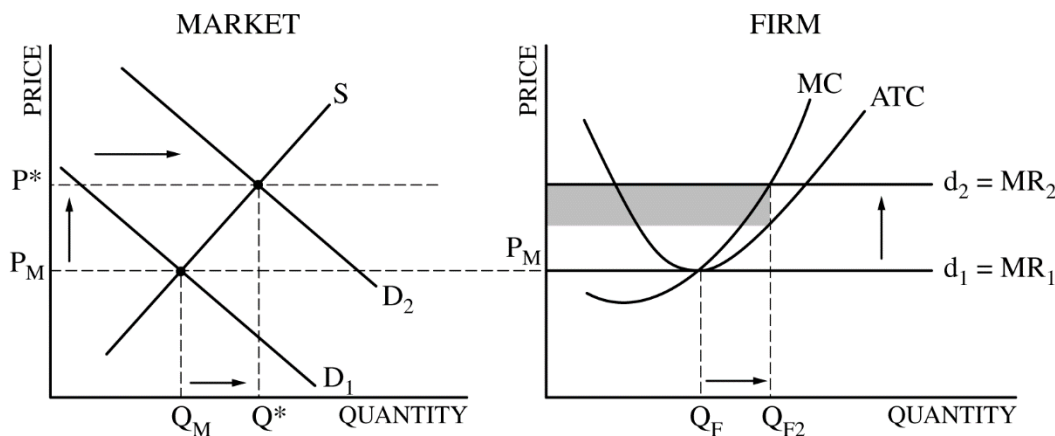
Inside:

- ✓ Free Response Question 1
- ✓ Scoring Guideline
- ✓ Student Samples
- ✓ Scoring Commentary

AP[®] MICROECONOMICS 2017 SCORING GUIDELINES

Question 1

10 points (4 + 2 + 1 + 1 + 2)



(a) 4 points:

- One point is earned for drawing a correctly labeled graph of the corn market with P_M and Q_M . The market demand curve must be downward sloping and the market supply curve must be upward sloping.
- One point is earned for showing a horizontal demand curve on the firm's graph extended from the market equilibrium price, P_M .
- One point is earned for identifying the firm's profit-maximizing quantity, Q_F , at marginal cost equal to marginal revenue ($MC=MR_1$).
- One point is earned for showing the firm's average total cost (ATC) curve and marginal cost (MC) passing through the minimum point of ATC, and $P = ATC = MC$ at Q_F .

Note: All quantities and prices should be labeled on the axes and connected to the intersection points by dashed lines.

(b) 2 points:

- One point is earned for showing a rightward shift of the market demand curve and a higher price and quantity, P^* and Q^* .
- One point is earned for completely shading the area representing the profit for a representative corn farmer.

(c) 1 point:

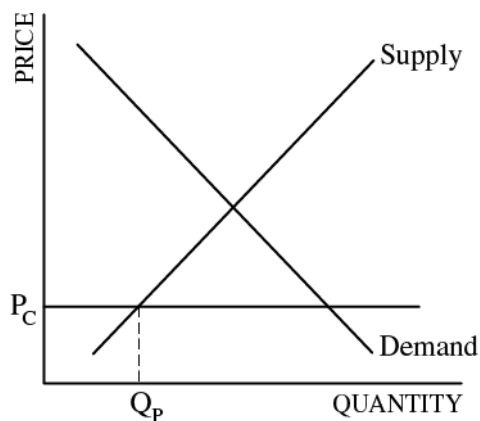
- One point is earned for stating that the market quantity will increase and the market's price will decrease in the long run, and for explaining that new corn farmers will enter the market, which will increase the market supply curve.

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Question 1 (continued)

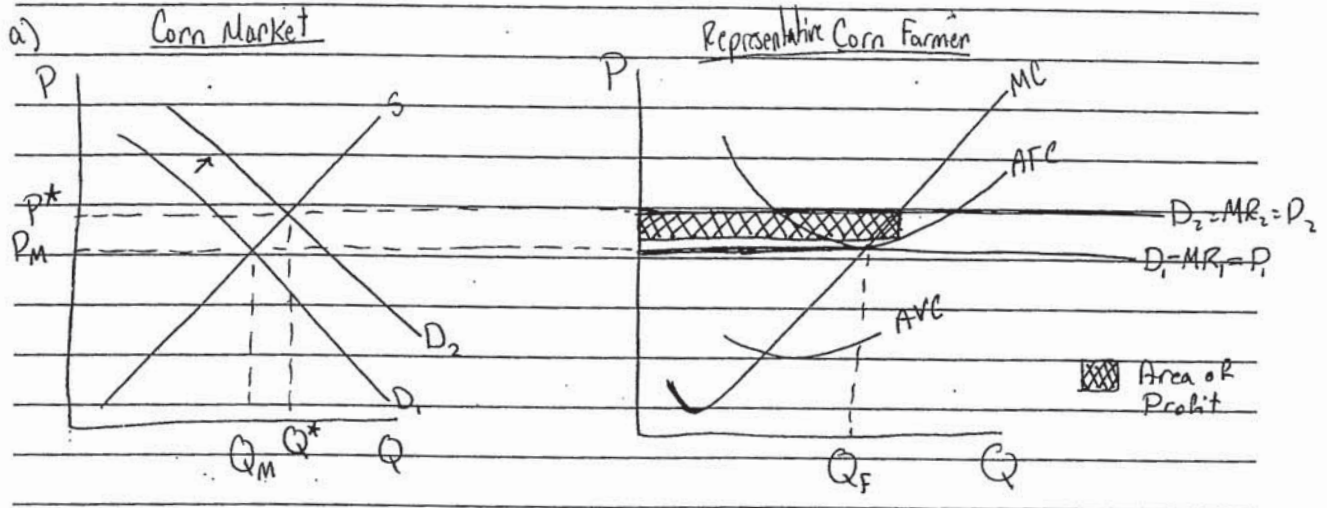
(d) 1 point:

- One point is earned for stating that the price of soybeans in the next planting season will increase, and for explaining that the supply of soybeans will decrease because the higher price of corn encourages farmers to substitute corn for soybeans in production.



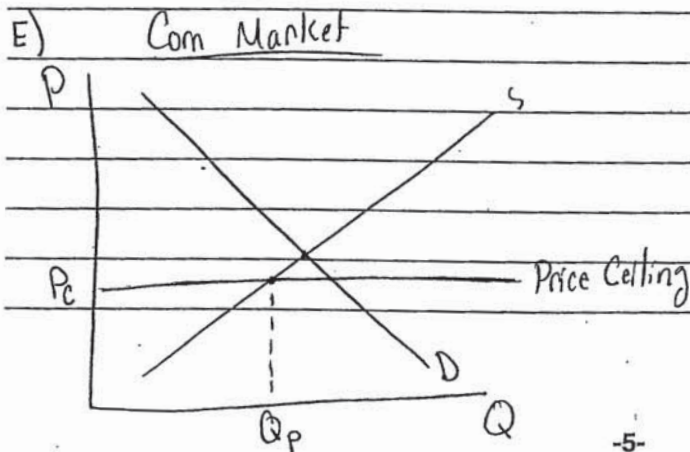
(e) 2 points:

- One point is earned for showing a correctly labeled graph of the corn market, with the price ceiling, P_C , below the equilibrium price of corn.
- One point is earned for showing the quantity purchased by consumers in the corn market labeled as Q_P where P_C intersects the supply curve.



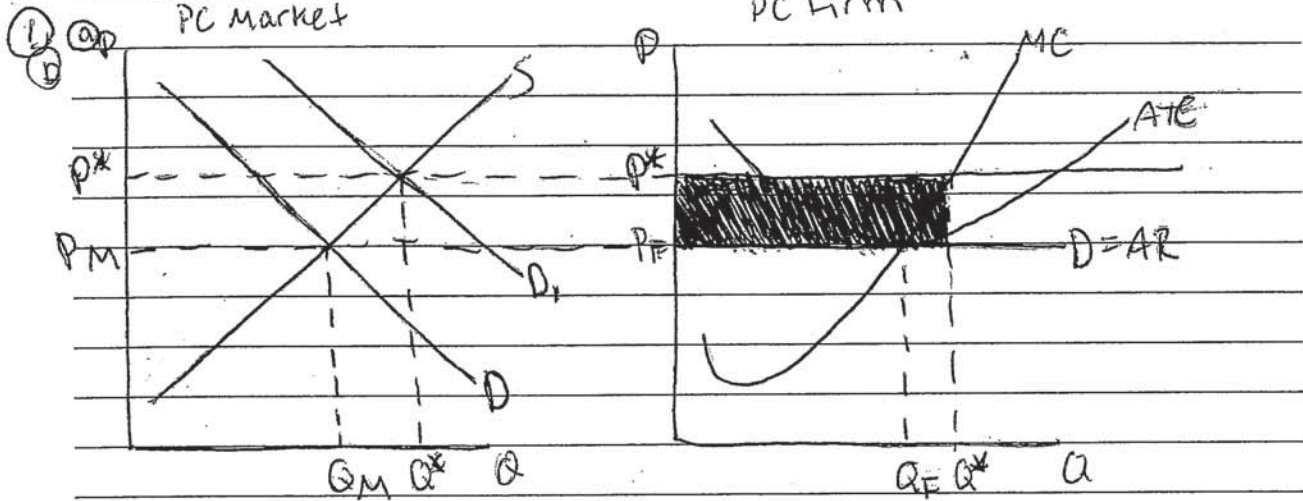
c) Since the corn is produced in a perfectly competitive market, the profit earned in the short run scenario in part (b) will incentivize new suppliers to join the market and they can do so because there are no barriers to entry. This will result in a shift of the Market Supply curve to the right which would increase the market equilibrium quantity of corn in the long run. As per the market equilibrium price, it would decrease.

d) If the price of corn increases, then in the next planting season the price of soybeans will rise. An increase in the price of corn would incentivize more suppliers of corn to join the market and thus ~~more~~ less farmers would be producing soybeans and thus ^{corn} increasing the price of the soybeans (supply of soybeans in soybean market would shift to the left).



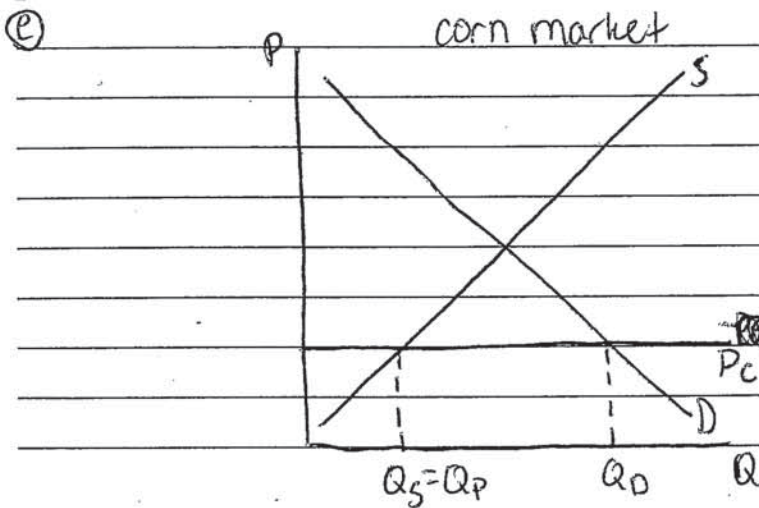
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ANSWER PAGE FOR QUESTION 1

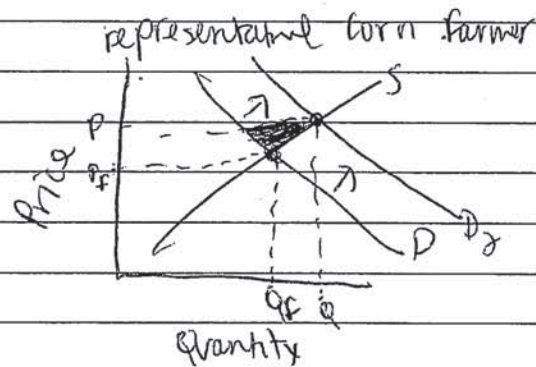
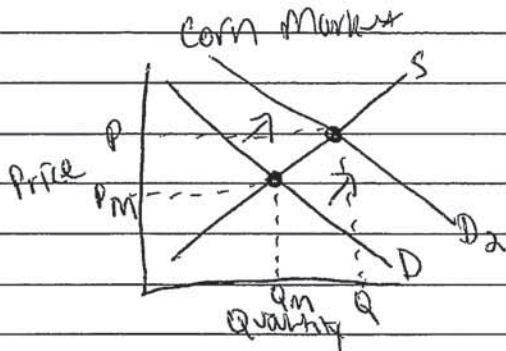


(1) (b) The market equilibrium price and quantity will both increase in the long run, because the demand for ethanol (a product of corn) increased. Since the demand increased, ~~more~~ more people want it, so the price and quantity must increase.

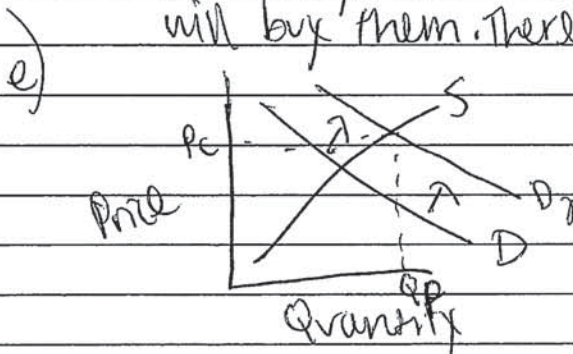
(a) If the price of corn increases, the price of soybeans will decrease because they are substitute goods.



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- c) The market equilibrium price will increase because the demand increased so the producers are able to charge more because there is less of a supply. The quantity of corn will have to increase in order to keep up with the increasing demand.
- d) The price of soybeans will remain constant because the producers are making money and if the soybeans are cheaper than more people will buy them. There would be no need to decrease the price.



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2017 SCORING COMMENTARY

Question 1

Overview

The question assessed students' understanding of the characteristics of a perfectly competitive market, how a perfectly competitive market operates, how market participants adjust to changing market conditions, how changes in one market may impact other markets, and how price controls affect a competitive market. Students were expected to draw and label graphs for both the market and the individual firm in perfect competition and, given changes in market conditions, be able to show the corresponding changes on graphs. Students were expected to analyze and explain these changes.

The question states that corn, produced in a perfectly competitive market, can be used for food or ethanol production. In part (a)(i) students were asked to draw a correctly labeled graph for both the corn market and a representative firm. Part (a)(ii) asked students to show the profit-maximizing output for a firm earning zero economic profits. This part of the question tested students' knowledge of the assumptions of a competitive market and their ability to illustrate these concepts using graphs. This task includes showing that the demand curve for the firm is a horizontal line at the price determined by the market, that the profit-maximizing output of the firm is determined by equating marginal revenue and marginal cost, and that the price must equal average total cost to show zero economic profit. This part of the question also tested students' understanding of the relationship between average and marginal costs, requiring students to show that the marginal cost (MC) curve intersects the average total cost (ATC) curve at the ATC curve's minimum point.

Part (b) states that the demand for ethanol has increased and asked students to show this change on the graphs drawn in part (a) which tested students' understanding of how profits for the firm are determined. Specifically part (b)(i) tested whether or not students recognize that an increase in the demand for ethanol will increase the demand for corn, shifting the demand curve for corn to the right, thereby increasing the equilibrium price and quantity of corn in the short run. In part (b)(ii) students were also asked to show whether the firm now earns profits or losses and to show this area on the firm's graph. Students are expected to show on the graph that the higher market price shifts the firm's demand curve upward, making the firm's price greater than ATC at the new profit-maximizing quantity, creating economic profits.

Part (c) asked students to explain what would happen to the market equilibrium price and quantity of corn in the long run. This tested students' understanding of how a perfectly competitive market responds to short-run economic profits — new firms enter the market, increasing market supply, causing the market price to decrease and the market quantity to increase.

Part (d) states that soybeans and corn can be grown on the same land. Students were asked to explain what would happen to the price of soybeans in the next growing season, assuming that the price of corn has increased. This part tested students' ability to recognize substitutability in production and how the related market of soybeans would respond — the higher price for corn increases the opportunity cost of growing soybeans, farmers would substitute corn for soybeans, the supply of soybeans would decrease (leftward shift of the supply curve), and the price of soybeans would increase.

Part (e) states that the government imposes a price ceiling in the corn market and asked students to draw a binding price ceiling and to indicate the quantity of corn that would be purchased by consumers. This part of the question tested students' knowledge that a binding price ceiling is below the equilibrium price, and the amount purchased would be less than the equilibrium quantity because suppliers would reduce the quantity supplied.

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Question 1 (continued)

Sample: 1A

Score: 10

The student answers all parts of the question correctly and earned all 10 points.

Sample: 1B

Score: 7

The student did not earn 1 point in part (b)(ii) because the area representing the firm's profit should end at the ATC curve and not on the original demand curve. The student did not earn 1 point in part (c) because the response incorrectly states the market equilibrium price will increase. The student did not earn 1 point in part (d) because the response incorrectly states the price of soybeans will decrease.

Sample: 1C

Score: 2

The student earned 1 point in part (a)(i) for correctly showing a downward-sloping demand curve and an upward-sloping supply curve and for correctly labelling the market equilibrium price and quantity. The student earned 1 point in part (b)(i) for correctly shifting the market demand curve to the right and for showing the new market equilibrium price and quantity.