1999

The College Board

Advanced Placement Examination

MICROECONOMICS

Planning Time – 10 minutes

Writing Time – 50 minutes

Directions: You have fifty minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include diagrams, if useful or required, in explaining your answers. All diagrams should be clearly labeled.

Question 1

In the United States, textiles are sold in two separate and perfectly competitive markets. The textiles produced in the United States are sold in market A, and imported textiles are sold in market B.

a. Explain how the supply curve for textiles produced in the United States will be affected by each of the following.

   i. A decrease in the number of firms in the United States producing textiles
   ii. An increase in the price of textiles

Assume that textiles produced in market A and market B are close substitutes.

b. Using one graph for market A and another for market B, show and explain how a substantial increase in the tariff on textiles imported into the United States will affect each of the following.

   i. Equilibrium price and quantity of textiles sold in market B (imported textiles)
   ii. Equilibrium price and quantity of textiles sold in market A (textiles produced in the United States)

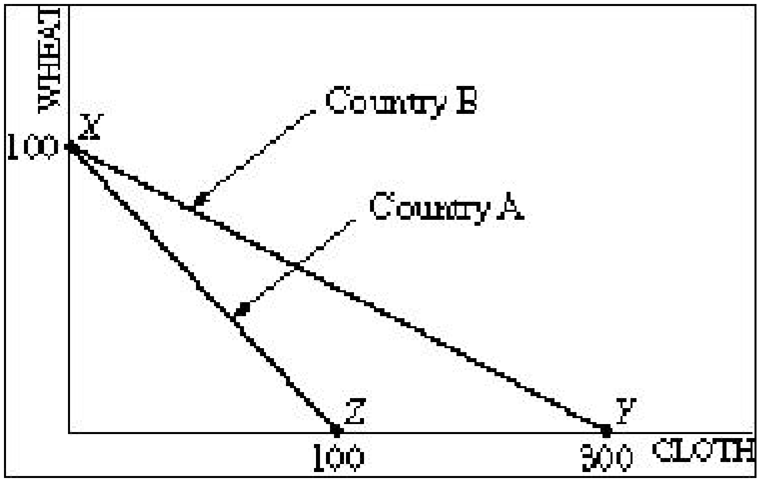
Assume that the labor market for textile workers is perfectly competitive. Following a decrease in the supply of textile workers, the wage rate of textile workers increases.

c. Using a new graph for market A, show and explain how a substantial increase in the wage rate of textile workers will affect the equilibrium price and quantity of textiles sold in market A.

d. Using a graph, show and explain how the increase in the wage rate of textile workers and the change in the equilibrium price and quantity of textiles you identified in part (c) will affect each of the following.

   i. A firm's demand for labor
   ii. A firm's supply of labor

Question 2



Assume that Countries A and B have equal amounts of resources and identical technologies. Country A can produce 100 bushels of wheat or 100 yards of cloth or any combination, as shown by the line XZ in the figure above. Country B can produce 100 bushels of wheat or 300 yards of cloth or any combination, as shown by the line XY in the figure above.

a. Which country has an absolute advantage in the production of wheat and which has an absolute advantage in the production of cloth? Explain how you determined your answer.

b. Which country has a comparative advantage in the production of wheat and which has a comparative advantage in the production of cloth? Explain how you determined your answer.

c. With specialization and trade, which country will import wheat? Explain why.

d. Assume that the two countries trade, and that one bushel of wheat is exchanged for two yards of cloth. Explain why the country that imports wheat will gain from trade.

Question 3

a. Using one graph for a monopoly firm and one for a perfectly competitive firm, draw and label the demand curve and the marginal revenue curve for each of these firms.

b. For the perfectly competitive (a price taker) firm, explain why the relationship between demand and marginal revenue exists.

c. For the monopoly firm, explain why the relationship between demand and marginal revenue exists.

Question 1

Correct Answer

Part (a) With fewer firms producing textiles, the supply of textiles is reduced; the supply curve shifts to the left (inward). With a higher price for textiles, the quantity supplied increases along an unchanged supply curve.

Part (b) The tariff raises the per unit supply price of all units of imported textiles; the supply curve in market B shifts to the left (inward), leading to a higher equilibrium price and a lower equilibrium quantity of imported textiles. Since imported and domestically produced textiles are close substitutes, the increase in the price of imported textiles leads to an increase in the demand for domestically produced textiles (market A). Both the equilibrium price and quantity increase in market A.

Part (c) A higher wage for textile workers leads to a reduced supply of domestically produced textiles. In market A, the supply curve shifts to the left (inward), and there is an increase in the equilibrium price and a reduction in the equilibrium quantity.

Part (d) The individual firm is a wage taker in the hiring of labor. Thus the firm faces a perfectly elastic (horizontal) labor supply, and the firm is able to hire all the labor it wishes at this wage rate. Given that the wage rate has increased, the firm's labor supply, while remaining perfectly elastic, shifts up to reflect the higher wage. The firm's labor demand, its marginal revenue product of labor curve, shifts out (increases) because the price of textiles increased (in part c). [While not required in the answer, the intersection of the firm's new labor supply and new labor demand should show a reduction in the quantity of labor employed by the firm. Given that all firms are collectively producing fewer textiles (part c), the representative firm will produce fewer textiles and employ fewer units of labor.]

Scoring Rubric

Part (a) = 2 points, Part (b) = 4 points, Part (c) =1 point, Part (d) = 2 points; 9 Points in Total

Part (a)

i. inward shift in supply; a decrease in supply (1 point)

ii. movement along the supply curve; an increase in the quantity supplied or supply curve does not change (1 point)

Question 1 (cont.)

Part (b)

i. Import Market B:
shift inward (decrease) supply: need correct graph (1 point) leading to increased price and reduced quantity in market B (either in a correct graph **or** a verbal explanation) (1 point)

ii. Domestic Market A:
shift out (increase) in demand: need correct graph + verbal linkage to the price increase in Import Market B in part (b-i) above (1 point) leading to increased price and increased quantity in market A (either in a correct graph **or** a verbal explanation) (1 point)

Part (c)

Supply shifts in (decreases): leading to a price increase and a decrease in quantity on a correctly labeled graph (1 point)

Part (d)

- Firm's labor hiring situation: NOT the market
- MRP_L shifts out due to an increase in the output price (1 point)
- Labor supply to the firm (must be perfectly elastic or horizontal) shifts up following the increase in the wage rate (1 point)

[Notes: 1. The firm's quantity of labor hired should fall since each firm is producing less output from Part (c). However, the two points may be awarded even if that conclusion (which is not asked for in the question) is not reached. 2. MRP may be labeled DL if the axes are properly labeled (wage on the vertical axis and employment, or quantity of labor, on the horizontal axis); the graph must clearly related to the firm's hiring of labor and not that of the labor market.]

Note: Besides counting points, the answer may be looked at as a whole and ultimately judged by its overall quality. The final total should mean something in terms of the overall quality of the answer. An 8 or 9 should reflect an excellent answer (a 9 is not necessarily a perfect answer); a 6 or 7, a good answer; a 4 or 5, an adequate answer; a 3 a seriously deficient answer, but still an answer; a 2 an answer signifying nothing except one sustained argument; and a 1, containing only a correct, relevant-to-the question statement. A 0 has no relevant economic answer to the question. A dash (-) is given for an unresponsive or blank answer.

Purpose of the Question and Commentary on Students' Responses

This long microeconomic question tests students' understanding of product markets and the firm's labor hiring decision. The first part of the question tests an understanding of the difference between a change in supply and a change in the quantity supplied. Many students failed to demonstrate their understanding of this fundamental difference. In part (b), students are asked to assess the impact of a tariff on both the market for imported textiles and for domestically produced textiles. Part (c) asks for the impact of a wage increase for labor producing textiles within the United States. In part (d), the wage increase from part (c) and the resulting increase in the price of domestically produced textiles are needed to analyze the individual firm's hiring of textile workers. Very few students made the transition from the market analysis — Parts (a),(b), and (c) — to the firm analysis, Part (d). Frequently students provided a graph and explanation for the labor market, but not for the individual firm. Even fewer students realized that the firm was a wage taker that faced a supply of labor that was perfectly elastic at the wage rate. In this question the supply of labor to the firm, — while remaining perfectly elastic — shifts up, reflecting the higher wage rate. Given that the price of textiles has increased, the marginal revenue product of labor (the firm's labor demand curve) shifts out. [Note: the individual firm, producing less output, will employ less labor; the intersection of the new labor supply and the new labor demand should result in fewer workers hired.] Students, year after year, seem to have major difficulty with questions that use the marginal revenue product of labor concept or that relate to the hiring of inputs.