The College Board

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Question 1

10 points \((2 + 2 + 1 + 2 + 2 + 1)\)

(a) 2 points:
- One point is earned for identifying the output as \(Q_2\).
- One point is earned for identifying the price as $7.

(b) 2 points:
- One point is earned for identifying the output as \(Q_4\).
- One point is earned for identifying the price as $0.

(c) 1 point:
- One point is earned for stating that the accounting profit is positive, because the firm earns zero economic profit. (Economic profit = Total revenue - Explicit costs - Implicit costs.)

(d) 2 points:
- One point is earned for identifying the break-even quantity as \(Q_3\).
- One point is earned for stating that the demand at \(Q_3\) is relatively inelastic.

(e) 2 points:
- One point is earned for stating that the demand curve for bridge crossings will shift down or to the left.
- One point is earned for stating that the profit-maximizing output will fall.

(f) 1 point:
- One point is earned for stating that building a second bridge would be inefficient and for explaining that, because there are economies of scale, building a second bridge would raise the average total cost.
Question 2

**6 points** \((1 + 2 + 1 + 1 + 1)\)

(a) 1 point:
- One point is earned for calculating the marginal product of the third worker: \(\frac{450}{5} \text{ per unit} = 90 \text{ units}\).

(b) 2 points:
- One point is earned for defining the law of diminishing returns: as more and more units of a variable input are added to a fixed input, the output increases at a decreasing rate.
- One point is earned for the explanation that diminishing returns occur because of the overuse of the fixed input.

(c) 1 point:
- One point is earned for stating that diminishing marginal returns first occur with the hiring of the third worker.

(d) 1 point:
- One point is earned for stating \$300.

(e) 1 point:
- One point is earned for stating that the demand for labor will increase because the increase in the product price raises the marginal revenue product of labor.
Question 3

5 points (3 + 2)

(a) 3 points:
- One point is earned for stating that the demand for good X is relatively elastic, because the elasticity coefficient > 1 OR because total revenue rises as price decreases from $30 to $20.
- One point is earned for stating that supply is perfectly inelastic, because there is no change in the quantity supplied as the price changes OR because the supply elasticity is zero.
- One point is earned for stating that all of the burden of a per-unit tax falls on sellers.

(b) 2 points:
- One point is earned for a correctly labeled graph of supply and demand.
- One point is earned for showing a leftward shift of the demand curve and a decrease in the equilibrium price.