AP® Microeconomics
2016 Scoring Guidelines

Question 1

10 points (3+3+4)

(a) 3 points:
- One point is earned for stating that the quantity supplied exceeds the quantity demanded at the price floor **or** the price floor would result in a surplus because the price floor is binding or effective.
- One point is earned for correctly calculating the price elasticity of supply.
  Students can use either the midpoint formula or the point elasticity formula.
 $$E = (500/1250) / (0.2/1.1) = 2.2$$
  $$E = (50\%/20\%) = 2.5$$
  $$E = (500/0.2) \times (1/1000) = 2.5$$
  $$E = [(1500-1000)/1000]/[(1.2-1)/1] = 0.5/0.2 = 2.5$$
  $$E = (500/0.2) \times (1.2/1500) = 2$$

- One point is earned for stating that the supply is elastic and for explaining that the **percentage** change in quantity supplied exceeds the **percentage** change in price or because price elasticity of supply is greater than one. (Other equivalent explanations are accepted.)
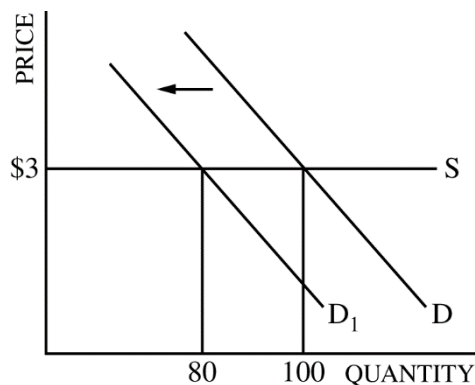
(b) 3 points:
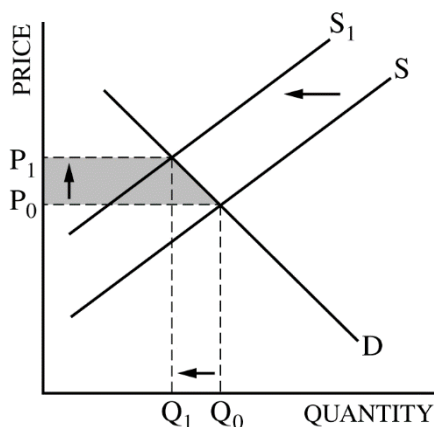
- One point is earned for drawing a correctly labeled graph and for showing the equilibrium price and quantity, labeled P_0 and Q_0, respectively.
- One point is earned for shifting the supply curve to the left and for showing the new equilibrium price and quantity, labeled P_1 and Q_1, respectively.
- One point is earned for completely shading on the graph the area representing the change in consumer surplus.

Question 1 (continued)

(c) 4 points:

- One point is earned for stating that coffee and muffins are complementary goods.

- One point is earned for drawing a correctly labeled graph for the coffee market and showing a horizontal supply curve (S) and a downward sloping demand curve (D).
- One point is earned for shifting the demand curve to the left and for showing a decrease in the equilibrium quantity and no change in the equilibrium price of coffee.
- One point is earned for correctly calculating the new equilibrium quantity and showing the work.

    $\%\Delta Q = (10\% \times -2) = -20\%$
    New Equilibrium Quantity = $100 \times (-20\%) = 80$
    OR
    New Equilibrium Quantity = $100 - (0.2 \times 100) = 80$

    (Using the midpoint formula is also acceptable.)

Question 2

7 points (1+1+1+1+3)

(a) 1 point:
- One point is earned for stating that the marginal benefit is $1.

(b) 1 point:
- One point is earned for correctly calculating the total consumer surplus from consuming 5 units of X.

    $$CS = (\$16 - \$4) + (\$12 - \$4) + (\$8 - \$4) + (\$4 - \$4) + (\$1 - \$4) = \$21$$
    OR
    $$CS = \$41 - \$20 = \$21$$

(c) 1 point:
- One point is earned for explaining that this combination of X and Y is not optimal because the marginal benefit per dollar of good X ($MB_x/P_x = \$4/\$4 = 1$) is less than the marginal benefit per dollar of good Y ($MB_y/P_y = \$8/\$2 = 4$). (This can also be stated as $MB_x/MB_y < P_x/P_y$.)

    ($MB_x/P_x = 1$) is not equal to ($MB_y/P_y = 4$) is acceptable.

    MB_x/P_x is less than MB_y/P_y is acceptable.

    MB_y/P_y is greater than MB_x/P_x is acceptable.

(d) 1 point:
- One point is earned for stating that Martha's optimal combination is 3 units of X and 4 units of Y.

(e) 3 points:
- One point is earned for stating that the optimal quantity of good Y will decrease.
- One point is earned for stating that the optimal quantity of good Y will decrease.
- One point is earned for stating that the optimal quantity of good Y will stay the same.

Question 3

6 points (4+1+1)
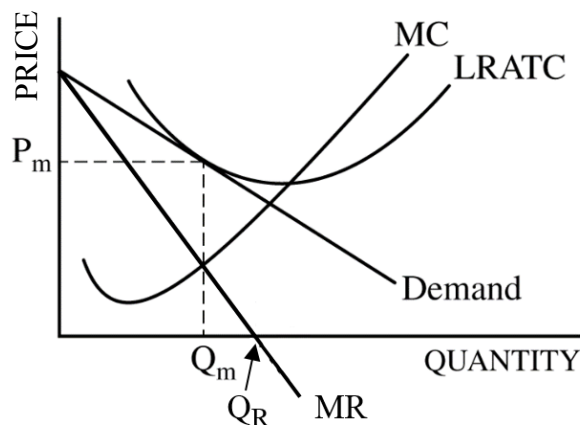
(a) 4 points:
- One point is earned for drawing a correctly labeled graph showing a downward sloping demand curve with MR curve below the demand curve.
- One point is earned for showing the quantity, Q_m, at MC=MR
- One point is earned for showing the price, P_m, on the demand curve above Q_m
- One point is earned for showing the long-run average total cost tangent to the demand curve at Q_m.

(b) 1 point:
- One point is earned for showing Q_R at MR=0.

(c) 1 point:
- One point is earned for stating that firms in this market are experiencing economies of scale in long-run equilibrium because **LRATC** is decreasing OR because Q_m is to the left of the minimum point of the LRATC.