More Examples from Chapter 7

EX16. Suppose the production function is given by \( Q = 3K + 4L \). What is the average product of capital when 10 units of capital and 10 units of labor are employed?

A. 3  
B. 4  
C. 7  
D. 45

EX17. The Cobb-Douglas production function is:

A. \( Q = aK + bL \).  
B. \( Q = \min\{bK, cL\} \).  
C. \( Q = \max\{bK, cL\} \).  
D. \( Q = K^aL^b \).

EX18. Suppose the long-run average cost curve is U-shaped. When LRAC is in the increasing stage, there exist:

A. economies of scope.  
B. diseconomies of scope.  
C. economies of scale.  
D. diseconomies of scale.

EX19. Suppose the production function is \( Q = \min\{K, 2L\} \). How much output is produced when 4 units of labor and 9 units of capital are employed?

A. 2  
B. 4  
C. 8  
D. 9

EX20. For the cost function \( C(Q) = 100 + 2Q + 3Q^2 \), the average fixed cost of producing 2 units of output is:

A. 100.  
B. 50.  
C. 3.  
D. 2

Chapter 8 Market Structure

EX1: The cost function for a firm is \( C(Q) = 5 + Q^2 \). If the firm sells output in a perfectly competitive market and other firms in the industry sell output at a price of $20,

- What price should the manager of this firm charge?  
- What level of output should be produced to maximize profits?  
- How much profit will be earned?
EX2: Suppose the inverse demand function for a monopolist’s product is given by \( P=10-2Q \).

- What is the maximum price per unit a monopolist can charge to be able to sell 3 units?
- What is marginal revenue when \( Q=3 \)?

EX3: Suppose the inverse demand function for a monopolist’s product is given by \( P=100-2Q \) and the cost function is \( (Q)=10+2Q \). Determine the profit-maximizing price, quantity and maximum profits.

EX4: There is a market supply curve in a:
A. perfectly competitive market.
B. monopolistically competitive market.
C. monopolistic market.
D. perfectly competitive market and monopolistically competitive market.

EX5: In the long run, monopolistically competitive firms produce a level of output such that:
A. \( P > MC \).
B. \( P = ATC \).
C. \( ATC > \text{minimum of average costs} \).
D. All of the statements associated with this question are correct.

EX6: Which of the following features is common to both perfectly competitive markets and monopolistically competitive markets?
A. Firms produce homogeneous goods.
B. There is free entry.
C. Long-run profits are zero.
D. There is free entry and long-run profits are zero.

EX7: Which of the following is true under monopoly?
A. Profits are always positive.
B. \( P > MC \).
C. \( P = MR \).
D. All of the choices are true for monopoly.
EX8: Beta Industries manufactures USB flash drives that consumers perceive as identical to those produced by numerous other manufacturers. Recently, Beta hired an econometrician to estimate its cost function for producing USB flash drives. The estimated cost function is \( C = 20 + 2Q^2 \).

a. What are the firm’s fixed costs?
b. What is the firm’s marginal cost?

Now suppose other firms in the market sell the product at a price of $10.
c. How much should this firm charge for the product?
d. What is the optimal level of output to maximize profits?
e. How much profit will be earned?
f. In the short run, should this firm continue to operate or shut down? Why?
g. In the long run, should this firm continue to operate or shut down? Why?

EX9: The figure below summarizes the demand and cost for a perfectly competitive firm. Based on it, answer questions a-h.

![Graph](https://via.placeholder.com/150)

h. What is the firm’s optimal level of output in the short run?
i. What price should this firm charge in the short run?
j. What is the firm total revenue at this level of output?
k. What are the firm’s total, variable and fixed costs at this level of output?
l. What is the firm’s profit if it produces this level of output?
m. What is the firm’s profit if it shuts down?
n. In the short run, should this firm continue to operate or shut down?
o. In the long run, should this firm continue to operate or shut down?
EX10: Which of the following is NOT a basic feature of a monopolistically competitive industry?
A. There are many buyers and sellers in the industry.
B. Each firm in the industry produces a differentiated product.
C. There is free entry and exit into the industry.
D. Each firm owns a patent on its product.

EX11: In the long run, monopolistically competitive firms:
A. charge prices equal to marginal cost.
B. have excess capacity.
C. produce at the minimum of average total cost.
D. have excess capacity and produce at the minimum of average total cost.

EX12: A monopoly has produced a product with a patent for the last few years. The patent is going to expire. What will happen after the patent expires?
A. The incumbent will leave the market.
B. The incumbent will retain its status as a monopoly but produce at a lower price.
C. Some firms will enter the industry.
D. None of the answers is correct.

Ex13: The source(s) of monopoly power for a monopoly may be:
A. economies of scale.
B. economies of scope.
C. patents.
D. All of the statements associated with this question are correct.