Multiple Choice (3 points each)

1. The most desired goods and services that are given up in order to get more of another good is the:
   A) Average total cost.
   B) Variable cost.
   C) Marginal cost.
   D) Opportunity cost.

2. The period in which at least one input is fixed in quantity is the:
   A) Long run.
   B) Production run.
   C) Short run.
   D) Investment decision.

3. Explicit costs:
   A) Include only payments to entrepreneurship.
   B) Are the sum of actual monetary payments made for resources used to produce a good.
   C) Include the market value of all resources used to produce a good.
   D) Are the total opportunity costs of resources used to produce a good.

4. Implicit costs:
   A) Include only payments to entrepreneurship.
   B) Represent actual monetary payments made for resources used to produce a good.
   C) Are the costs to produce a good for which not direct payment is made.
   D) Are the total opportunity costs of resources used to produce a good.

5. Economic profit:
   A) Is greater than accounting profit by the amount of implicit cost.
   B) Is greater than accounting profit by the amount of explicit cost.
   C) Is less than accounting profit by the amount of implicit cost.
   D) Is less than accounting profit by the amount of explicit cost.

6. Normal profits are:
   A) The profits reported by accountants on a firm's annual financial statement.
   B) Identical to economic profits.
   C) Determined by subtracting total costs from total revenues.
   D) Considered an implicit cost by economists.

7. The change in total output associated with one additional unit of input is the:
   A) Opportunity cost of the output.
   B) Average productivity.
   C) Marginal physical product.
   D) Marginal cost.
8. The law of diminishing returns states that beyond some point, *ceteris paribus*:
A) The returns on stocks and bonds diminish with higher security prices.
B) The addition to total utility diminishes as more units of a good are consumed.
C) The marginal physical product of a factor of production diminishes as more of that factor is used.
D) The output of any good increases as more of a variable input is used.

9. In the short run, the law of diminishing returns:
A) Occurs for only a few economies.
B) Can be observed in every production process.
C) Does not occur in command economies.
D) Can be overcome by using more variable inputs.

10. Diminishing returns occur because of:
A) Inefficiency in the production process.
B) The use of inferior factors of production.
C) A rising ratio of variable input to fixed input.
D) Lower opportunity costs of the factors of production.

11. The shape of the marginal cost curve reflects:
A) The law of diminishing returns.
B) The competitiveness of the firm.
C) The law of diminishing marginal utility.
D) The law of demand.

12. The increase in total cost associated with a 1-unit increase in production is:
A) Marginal physical product.
B) Marginal cost.
C) Marginal revenue.
D) Profit.

13. Marginal cost:
A) Increases as a direct result of diminishing returns.
B) Rises whenever marginal physical product decreases.
C) Rises in the short run because some resources are fixed.
D) All of the above.

14. The sum of fixed cost and variable cost at any rate of output is:
A) Total variable cost.
B) Total cost.
C) Average total cost.
D) Average marginal cost.

15. In the short run, when a firm produces zero output, total cost equals:
A) Zero.
B) Variable costs.
C) Fixed costs.
D) Marginal costs.
16. Costs of production that change with the rate of output are:
   A) Sunk costs.
   B) Variable costs.
   C) Opportunity costs.
   D) Fixed costs.

17. Changes in short-run total costs result from changes in only:
   A) Variable costs.
   B) Fixed costs.
   C) Profit.
   D) The price elasticity of demand.

18. In the long run, which of the following is likely to be a variable cost?
   A) Factory rental.
   B) Wage costs.
   C) Interest payments on borrowed funds.
   D) All of the above are variable costs.

19. Which of the following contributes to the typical U-shape of the ATC curve?
   A) The initial dominance of diminishing returns.
   B) The eventual dominance of the rising MC curve.
   C) The steady impact of a rising AFC curve.
   D) All of the above.

20. Which of the following must always be downward-sloping?
   A) The marginal cost curve when it is below the average total cost curve.
   B) The marginal cost curve when it is above the average total cost curve.
   C) The average total cost curve when it is below the marginal cost curve.
   D) The average total cost curve when it is above the marginal cost curve.

21. The average fixed cost curve:
   A) Is U-shaped as a result of diminishing returns.
   B) Declines as long as output increases.
   C) Is intersected at its minimum point by marginal cost.
   D) Intersects the marginal cost curve at its minimum point.

22. The average variable cost curve slopes upward with a higher rate of output in the short run because of:
   A) The effect of diminishing returns.
   B) The shape of the average fixed cost curve.
   C) Diseconomies of scale.
   D) All of the above.

23. In economics, the long run is considered to be:
   A) A variable time depending on the nature of business.
   B) Six to nine months.
   C) One year.
   D) More than two years.
24. The period in which there are no fixed costs is the:
   A) Production run.
   B) Long run.
   C) Short run.
   D) Implicit run.

25. The long-run average total cost curve is constructed from the:
   A) Minimum points of the short-run marginal cost curves.
   B) Minimum points of the short-run average variable cost curves.
   C) Lowest average total cost for producing each level of output.
   D) Minimum points of the long-run marginal cost curves.

26. Economies of scale are reductions in average:
   A) Total cost that result from declining average fixed costs.
   B) Fixed cost that result from reducing the firm's scale of operations.
   C) Total cost that result from using operations of larger size.
   D) Fixed cost resulting from improved technology and production efficiency.

27. If a given amount of output can be produced by several small plants or one much larger plant
    with identical minimum per-unit costs, this long-run situation reflects the existence of:
   A) Economies of scale.
   B) Diseconomies of scale.
   C) Constant returns to scale.
   D) Diminishing returns.

28. Diseconomies of scale are reflected in:
   A) The downward-sloping segment of the long-run average total cost curve.
   B) The downward-sloping segment of the long-run marginal cost curve.
   C) A downward shift of the long-run average total cost curve.
   D) The upward-sloping segment of the long-run average total cost curve.
29. The marginal physical product of the third unit of labor in Figure 6.1 is:
   A) 2.0.
   B) 6.0.
   C) 6.67.
   D) 20.0.
30. What is the marginal cost of the 120th unit of output in Figure 6.4?
   A) $25.
   B) $100.
   C) $104.
   D) $144.
31. Refer to Figure 6.6. The vertical difference between the total cost curve and the total fixed cost curve represents:
   A) Total variable costs.
   B) Total marginal costs.
   C) Average fixed costs.
   D) Average variable costs.

32. Refer to Figure 6.8. Economies of scale occur in the following range of factory sizes:
   A) #1 to #2.
   B) #1 to #3.
   C) #3 only.
   D) All of the factories exhibit economies of scale.
33. Refer to Figure 6.8. Diseconomies of scale begin:
   A) At the minimum points on all five ATC curves.
   B) After the third factory.
   C) After the fifth factory.
   D) None of the factories exhibit diseconomies of scale.

**True/False (3 points each)**

1. ___ Short-run choices imply that at least one factor of production is fixed.
2. ___ Total output may continue to rise even though marginal physical product is declining.
3. ___ Total output may continue to rise even though marginal physical product is negative.
4. ___ The law of diminishing returns indicates that the marginal physical product of a variable input declines as more of it is employed, *ceteris paribus*.
5. ___ The law of diminishing returns is reflected in the downward sloping portion of the short-run marginal cost curve.
6. ___ If $MPP$ declines with greater output, then $MC$ must increase.
7. ___ Total cost refers to the market value of all resources used in producing a good or service.
8. ___ The total cost at a zero level of output is always equal to the variable cost.
9. ___ When the marginal cost curve is below the average total cost curve, the average total cost curve must be falling.
10. ___ Accounting costs and economic costs differ by the amount of explicit costs.
11. ___ There are still some fixed costs in the long run, such as rent.
12. ___ Diseconomies of scale imply that the average total cost curve is downward-sloping in the long run.