Comprehensive Review Test

The following questions provide a wide-ranging review of the material covered in Part II (Chapters 6-12) of the textbook. Each question deals with a topic or technique important for your understanding of economic principles. If you miss a question you should return to the relevant section of the chapter in the textbook and fine-tune your understanding.

I. MULTIPLE-CHOICE QUESTIONS

Select the option that provides the single best answer.

_____ 1. Denni has a straight, downward-sloping demand curve for cookies. A decrease in the price of cookies
(a) will make Denni's budget constraint swivel inwards.
(b) will result in an increase in the absolute value of Denni's price elasticity for cookies.
(c) shift Denni's demand curve for cookies to the right.
(d) will increase Denni's consumer surplus.

_____ 2. There is an increase in the interest rate. The operation of the substitution effect will _____ current saving. The operation of the income effect will _____ current saving.
(a) increase, increase
(b) increase, decrease
(c) decrease, increase
(d) decrease, decrease

Use the following information for the next two questions. Joe's recreation budget is $120 per month which he divides between attending movies (which cost $10) and buying CDs (which cost $15). Joe finds that the satisfaction derived from the final movie of the month is 50 units while the satisfaction from the final CD is 60 units. Assume diminishing marginal utility is present.

_____ 3. How should Joe adjust his spending pattern on movies and CDs?
(a) Joe should attend more movies and buy fewer CDs because the marginal utility of movies is more than that of CDs.
(b) Joe should attend more movies and buy fewer CDs because the marginal utility per dollar of movies is more than that of CDs.
(c) Joe should attend fewer movies and buy more CDs because the marginal utility of CDs is more than that of movies.
(d) Joe should attend fewer movies and buy more CDs because the marginal utility per dollar of CDs is more than that of movies.

_____ 4. As Joe adjusts his purchases of movies and CDs to achieve maximum satisfaction, the marginal utility of movies will
(a) increase because he is attending more movies.
(b) increase because he is attending fewer movies.
(c) decrease because he is attending more movies.
(d) decrease because he is attending fewer movies.

_____ 5. There is an increase in the interest rate. The operation of the income effect will _____ current saving because _____.
(a) increase; at higher interest rates the individual earns more from previously saved income.
(b) increase; the opportunity cost of each dollar spent has increased.
(c) decrease; at higher interest rates the individual earns more from previously saved income.
(d) decrease; the opportunity cost of each dollar spent has increased.

_____ 6. *To Air is Humane* is currently producing 5,000 units of output, using 25 units of labor and 20 units of capital. The marginal product of labor is 200, while the marginal product of capital is 100. The price of labor is $2, and the price of capital is $3. Given this information, which of the following is true?
(a) The firm is currently using the optimal mix of labor and capital.
(b) The firm should increase labor and reduce capital.
(c) The firm should reduce labor and increase capital.
(d) The firm should increase labor and increase capital.

_____ 7. In perfect competition, the industry's demand curve is _____; the firm's demand curve is _____.
(a) horizontal; horizontal
(b) horizontal; downward sloping
(c) downward sloping; horizontal
(d) downward sloping; downward sloping

_____ 8. The consumption level maximizing utility from goods A and B is indicated by the formula
(a) $MR = MC$.
(b) $P = MC$.
(c) $P = ATC$ (min).
(d) $MU_A/Price_A = MU_B/Price_B$.

_____ 9. DEF, Corp. is employing 100 units of labor and 50 units of capital to produce 2,000 widgets. Labor costs $10 per unit and capital costs $30 per unit. For the quantities of inputs employed, the marginal product of labor is 3 and the marginal product of capital is 10. Given the output level, the firm
(a) is producing at the lowest possible cost.
(b) could lower production costs by using more capital and less labor.
(c) could increase its profit by using more labor and less capital.
(d) could lower production costs by using more labor and less capital.

_____ 10. The total value Paul places on one apple a day is $2.00. The total value of two apples a day is $3.10; of three apples a day, $3.70; of four apples, $4.00; and of five apples, $4.20. Apples cost 50¢ each. To maximize his consumer surplus, how many should Paul buy?
(a) At least five.
(b) Five.
(c) Four.
(d) Three.

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_____ 11. The income effect for normal Good *A* occurs when
(a) a decrease in income makes the consumer buy more of Good *A.*
(b) a decrease in income encourages consumers to buy more of substitute Good *B,* which is inferior.
(c) a decrease in the price of Good *A* makes consumers better off so that they can buy more of the Good *A.*
(d) an increase in the price of Good *A* encourages consumers to buy more of inferior Good *B.*

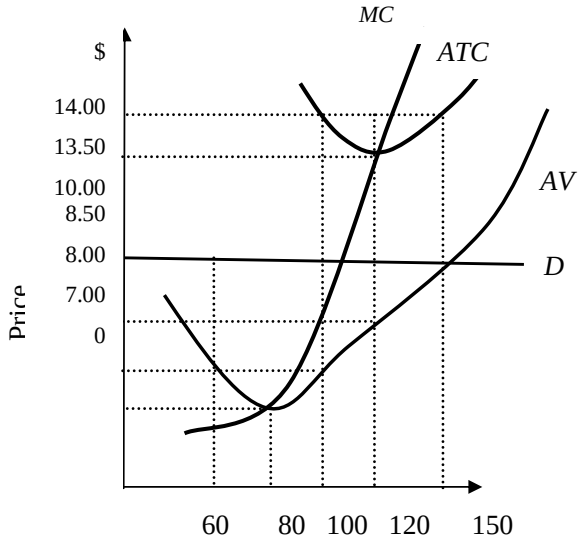
_____ 12. Labor is the variable resource in a factory that produces basketballs. At the point where diminishing returns are beginning to occur the
(a) average product of labor is maximized.
(b) average product of labor is minimized.
(c) long-run average cost curve is at its minimum.
(d) average product of labor is increasing.

_____ 13. A factory reorganizes production and finds that the marginal productivity of its variable resource (labor) has increased in the short run. We would expect that the factory's
(a) marginal cost has increased at each output level.
(b) marginal cost has decreased at each output level.
(c) average variable cost has increased at each output level.
(d) average total cost has increased at each output level.

_____ 14. Which of the following is the best explanation for the fact that the marginal revenue that perfectly competitive Farmer Gustafson receives from an additional bushel of wheat is constant and equal to its price?
(a) Gustafson supplies an insignificant fraction of the total market supply of wheat.
(b) The market demand curve for wheat is downward sloping.
(c) There are few good substitutes for wheat.
(d) In the short run no new firms can enter this industry.

_____ 15. Walt's Widgets is a profit-maximizing, perfectly competitive firm. In the long run, if Walt earns zero economic profit, he will
(a) shut down.
(b) decrease his output level but may not shut down.
(c) increase his output level to attract more business.
(d) remain at his current output level.

Use the following diagram to answer the next six questions.



_____ 16. The short-run, profit-maximizing output level is
(a) 80.
(b) 100.
(c) 120.
(d) 150.

_____ 17. The short-run, profit-maximizing price is
(a) $14.00.
(b) $13.50.
(c) $10.00.
(d) $7.00.

_____ 18. In the short run, maximum economic profit is
(a) –$420.
(b) –$400.
(c) $200.
(d) $420.

_____ 19. Total fixed cost
(a) is $600.
(b) is $800.
(c) is $1,400.
(d) cannot be calculated from the information given.

_____ 20. At 120 units of output, marginal cost is _____ than marginal revenue. Economic profit can be increased by _____ output.
(a) greater; increasing
(b) greater; decreasing
(c) less; increasing
(d) less; decreasing

_____ 21. We would expect firms to
(a) enter this industry in the short run.
(b) enter this industry in the long run.
(c) leave this industry in the short run.
(d) leave this industry in the long run.

_____ 22. A perfectly competitive firm's short-run supply curve is that part of its marginal cost that is
(a) upward sloping.
(b) above the average total cost curve.
(c) above the average variable cost curve.
(d) above the average fixed cost curve.

_____ 23. In the short run, a perfectly competitive firm can earn economic profits if the market price is greater than
(a) average total cost.
(b) average fixed cost.
(c) average variable cost.
(d) marginal cost.

_____ 24. The government requires all the firms in the perfectly competitive widget industry to adopt antipollution equipment that increases production costs. We would expect
(a) the market demand for widgets to decrease.
(b) the market supply curve for widgets to shift left in the long run.
(c) firms to leave the industry in the short run.
(d) the long-run economic profits of the typical firm to be reduced.

_____ 25. The wheat industry is perfectly competitive and is in long-run equilibrium. Which statement best describes the short-run effects of a decrease in the demand for wheat? The price of wheat will _____; quantity traded will _____; the output of the typical farmer will _____.
(a) increase; increase; increase
(b) increase; increase; decrease
(c) decrease; decrease; increase
(d) decrease; decrease; decrease

_____ 26. When a firm experiences "economies of scale" _____ as output increases.
(a) its fixed costs decrease
(b) its average costs decrease
(c) its total costs decrease
(d) the marginal productivity of its fixed inputs increase

_____ 27. Which of the following indicates that we have an economically efficient market?
(a) Wage equals marginal product of labor.
(b) Price of the product equals the marginal cost of the product.
(c) Price of the product equals the marginal revenue of the product.
(d) Marginal utility of the product is greater than the price of the product.

_____ 28. Which of the following would *not* shift a competitive firm's labor demand curve to the right?
(a) An increase in the price of the firm's output
(b) A decrease in the wage rate
(c) An increase in the productivity of labor
(d) A decrease in the cost of other inputs complementary to labor

Use the following table to answer the next three questions. Widgetland can combine capital and labor in a variety of ways to produce each widget.

Technology	Units of Capital	Units of Labor
A	2	18
B	4	12
C	6	6
D	9	3

_____ 29. Which technology is the most capital-intensive?
(a) A
(b) B
(c) C
(d) D

_____ 30. The hourly wage is $10 and the hourly price of capital is $15, which technology should Widgetland select?
(a) A
(b) B
(c) C
(d) D

_____ 31. Widgetland is considering opening a plant in a country where the hourly wage is $4. The hourly price of capital remains at $15. Which technology should Widgetland select?
(a) A
(b) B
(c) C
(d) D

II. APPLICATION QUESTIONS

Here is some production information for the Smiley-Smile Mouthwash Company.

Number of Workers	*Marginal Product*	*Total Product*	*Average Product*
0	--		--
1	12		
2	14		
3	22		
4	12		
5	10		
6	8		
7	6		
8	4		

9	2		

1. Complete the Total Product and Average Product columns.

2. With which worker do diminishing returns begin to occur?

3. When the marginal product of labor is positive and increasing, is total product rising or falling? When marginal product of labor is positive and decreasing, is total product rising or falling?

4. If marginal product of labor became negative, what would happen to total product?

Each worker costs $10 to hire. In addition, Smiley-Smile has total fixed costs of $60.

5. Use the information from the table above to help you complete the following table.

Total Product	*Total Cost*	*ATC*	*AVC*	*AFC*	*MC*
		--	--	--	--

6. Make up a rule: "When marginal cost is rising, average total cost is RISING / FALLING / CAN'T TELL."

7. Make up a rule: "When average variable cost is falling, average total cost is RISING / FALLING / CAN'T TELL."

8. How can you tell that Smiley-Smile is operating in the short run?

Smiley-Smile is a perfectly competitive profit-maximizing firm.

9. If the market price is $1.00 per unit, how many units of output (bottles of mouthwash) will the firm produce?

10. At a price of $1.00, calculate the firm's total economic profit or loss.

11. At a price of $1.00, should Smiley-Smile stay in business in the short run? Why?

12. At a price of $1.00, what will happen in the long run to the number of firms, the position of the industry supply curve, and the market price?

13. If the market price is $2.50 per unit, how many units of output (bottles of mouthwash) will the firm produce?

14. At a price of $2.50, calculate the firm's total economic profit or loss.

15. You have the information to derive Smiley-Smile's supply schedule for the prices given the following.

Price/bottle	Smiley-Smile's SupplySchedule	MarketSupply
$3.50	_____	_____
$3.00	_____	_____
$2.50	_____	_____
$2.00	_____	_____
$1.50	_____	_____
$1.00	_____	_____

16. Suppose that there are 100 identical firms in the market. Calculate total market supply. Following is the market demand schedule in the mouthwash market.

Price/bottle	MarketDemand
$3.50	4,800
$3.00	6,800
$2.50	8,800
$2.00	10,800
$1.50	12,800
$1.00	14,800

17. Determine the short-run equilibrium price and equilibrium quantity traded.

18. Confirm that, when the market price is $2.50, the marginal revenue product of the last worker hired is equal to the wage.

Review Test SOLUTIONS

I. SOLUTIONS TO MULTIPLE-CHOICE QUESTIONS

1. (d) There is an increase in the difference between how much Denni would pay and how much she does pay for cookies (the triangular area between price and the demand curve). Answer C is a serious error. A change in price does not cause a shift in the position of a demand curve. Movement down a straight-line demand curve results in a less elastic demand.

2. (b) Refer to Chapter 6 (p. 167) for a discussion of this topic.

3. (b) Compare the marginal utility per dollar values. Movies offer more utility per dollar.

4. (c) As more of a good is purchased, the marginal utility of the last item consumed decreases.

5. (c) Higher interest rates will generate more interest on existing saved funds, so now less will need to be saved to achieve a given income level in the future.

6. (b) The optimal combination of resources equalizes the marginal product per dollar of each input. In the given situation the marginal product of labor per dollar was lower than that of capital.

7. (c) The industry demand curve is a normal downward-sloping curve—competition makes the demand curve facing each firm horizontal.

8. (d) To maximize utility, one should try to equalize the satisfaction per dollar from each good.

9. (b) The optimal combination of resources equalizes the marginal product per dollar of each input. In the given situation the marginal product of capital per dollar was lower than that of labor.

10. (d) Paul should buy up to the point where price equals marginal benefit. The marginal benefit of the third apple is 60¢ while the marginal benefit of the fourth apple is 30¢.

11. (c) The income effect occurs when, as price changes, spending power (income) changes, and the consumer's purchasing level is influenced.

12. (d) Marginal product of labor is at a maximum when diminishing returns are just beginning to emerge, so the average product of labor is still rising. Refer to Figure 7.4 on page 187.

13. (b) With one variable resource, when marginal product increases, marginal cost decreases—the denominator of the marginal cost formula has increased.

14. (a) Gustafson has no control over price.

15. (d) Although economic profit is zero, a normal rate of return is included in costs. In addition, in long-run equilibrium, economic profits *must* be zero.

16. (b) This is the output level at which marginal revenue equals marginal cost.

17. (c) $10.00 is the market price, based on the demand curve.

18. (b) At the profit-maximizing output level, average total cost is $14, while the price is $10. There is a $4 loss on each of the 100 units produced.

19. (a) When output is 100 units, average fixed cost is $6 (*ATC – AVC*).

20. (b) Output should be reduced to 100 units, where marginal revenue equals marginal cost.

21. (d) Firms cannot enter or leave in the short run. If this is a typical firm and it is making an economic loss, firms will leave the industry in the long run.

22. (c) Refer to page 216 to see how this conclusion is reached.

23. (a) Refer to page 212 for more on how to maximize profits.

24. (b) Profitability has been reduced, resulting in some firms leaving the industry in the long run.

25. (d) Draw a demand and supply diagram to verify this.

26. (b) There are no fixed inputs in the long run! Economies of scale yield decreasing average costs.

27. (b) Price represents the marginal benefit of the product. Economic inefficiency occurs if production is at any level other than where marginal benefit equals marginal cost.

28. (b) A change in the wage rate will cause a movement along the labor demand curve.

29. (d) Technology D has the greatest amount of capital per unit of output.

30. (c) Total cost of production per hour is the least ($150) when Technology C is used.

31. (a) Total cost of production per hour is the least ($102) when Technology A is used.

II. Solutions to Application Questions

1. Refer to the following table.

Number of Workers	*Marginal Product*	*Total Product*	*Average Product*
0	--	0	--
1	12	12	12
2	14	26	13
3	22	48	16
4	12	60	15
5	10	70	14
6	8	78	13
7	6	84	12
8	4	88	11
9	2	90	10

2. Diminishing returns begin with the fourth worker.

3. When marginal product is positive, total product will always increase.

4. If marginal product of labor became negative, total product would decrease.

5. Refer to the following table.

Total Product	*Total Cost*	*ATC*	*AVC*	*AFC*	*MC*
0	$ 60.00	--	--	--	--
12	$ 70.00	$5.83	$0.83	$5.00	$0.83
26	$ 80.00	$3.08	$0.77	$2.31	$0.71
48	$ 90.00	$1.88	$0.63	$1.25	$0.45
60	$100.00	$1.67	$0.67	$1.00	$0.83
70	$110.00	$1.57	$0.71	$0.86	$1.00
78	$120.00	$1.54	$0.77	$0.77	$1.25
84	$130.00	$1.55	$0.83	$0.71	$1.67
88	$140.00	$1.59	$0.91	$0.68	$2.50
90	$150.00	$1.67	$1.00	$0.67	$5.00

6. When marginal cost is rising, average total cost could be either rising or falling. “Can’t tell” is the best answer.

7. “When average variable cost is falling, average total cost is falling.”

8. Smiley-Smile has some fixed resources, which cannot occur in the long run when all resources are variable.

9. If the market price is $1.00 per unit, then marginal revenue is $1.00 per unit. To maximize profit the firm should produce where MR = MC, i.e., at an output level of 70.

10. At a price of $1.00, total revenue is $70 while total cost is $110. Smiley-Smile will make an economic loss of $40.

11. Smiley-Smile should stay in business in the short run, making a loss of $40 because, if it shut down it would make a loss of $60 (its fixed costs).

12. In the long run, firms will leave this industry, industry supply will decrease, and market price will increase.

13. If the market price is $2.50 per unit, then marginal revenue is $2.50 per unit. To maximize profit the firm should produce where MR = MC, i.e., at an output level of 88.

14. At a price of $2.50, total revenue is $220 while total cost is $140. Smiley-Smile will make an economic profit of $80.

15. Refer to the following table.

Price/bottle	Smiley-Smile's SupplySchedule	MarketSupply
$5.00	90	9,000
$2.50	88	8,800
$1.67	84	8,400
$1.25	78	7,800
$1.00	70	7,000

16. Refer to the preceding table.

17. The equilibrium price is $2.50 and equilibrium quantity traded is 8,800 bottles.

18. When the market price is $2.50, the marginal revenue product of the last worker hired (the eighth) is $2.50 × 4. This equals the wage, which is given as $10.00.