

Take home test Factor Markets-Modules 69-73**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. The largest component of the factor distribution of income in the United States is:
- interest.
 - taxes.
 - corporate profits.
 - rents.
 - compensation of employees.
- _____ 2. Factor demand is said to be derived demand because it:
- requires the use of other factors.
 - depends on product demand.
 - has a downward-sloping demand curve.
 - has a constant marginal factor cost.
 - depends on the cost of hiring the factor.

Quantity of Labor (workers)	Total Product of Labor (cakes per worker)
0	0
1	3
2	10
3	16
4	21
5	25
6	28

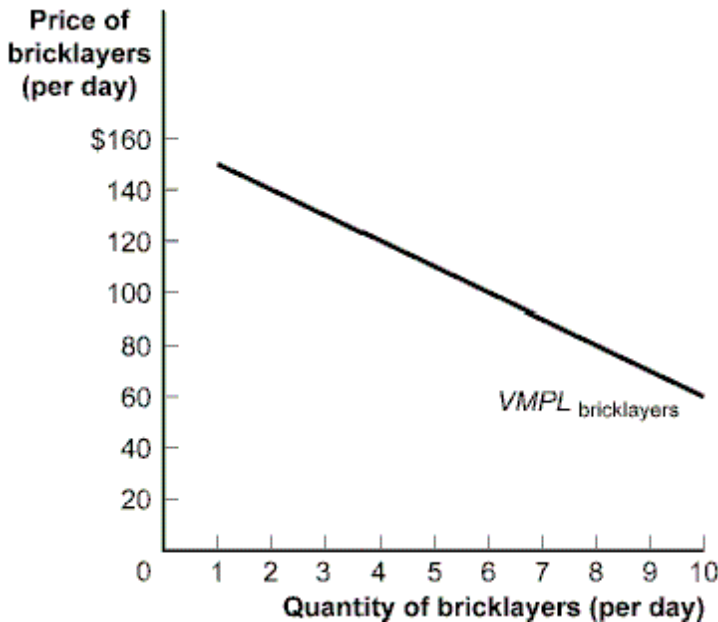
Table 69-1: Total Product of Labor at Debbie's Bakery

- _____ 3. **(Table 69-1: Total Product of Labor at Debbie's Bakery)** Debbie owns a bakery and can hire workers to produce cakes selling in a competitive output market at \$10 each. The table shows the relationship between the number of workers and the number of cakes produced. Debbie must pay each worker a competitive market wage of \$30 per day. Now suppose that the government imposes a minimum wage law that states that all bakeries must pay no less than \$50 per day. How will this affect her profit-maximizing hiring decision?
- She reduces employment from six workers to one worker.
 - She reduces employment from six workers to five workers.
 - She reduces employment from six workers to four workers.
 - She increases employment from one worker to four workers.
 - She reduces employment from five workers to four workers.
- _____ 4. An increase in the market demand for electricians might occur if:
- the market price of electrical repair and installation services increases.
 - the demand for new houses falls.
 - the price of copper electrical wiring increases.
 - the wage for electricians falls.
 - the wage for electricians rises.

- _____ 5. Suppose Billy Bud's Bucking Broncos employs 20 workers at a daily wage rate of \$60 each. The average product of labor is 30 bucking broncos per day; the marginal product of the last worker is 12 bucking broncos per day; and total fixed cost is \$3,600 for equipment. What is the marginal cost of the last bucking bronco produced?
- \$0.20
 - \$60
 - \$240
 - \$720
 - \$5
- _____ 6. To maximize profits a firm will employ workers up to the point at which for the last worker employed:
- marginal product is equal to the nominal wage rate.
 - the marginal revenue product is equal to the wage rate.
 - the marginal revenue product is equal to the price per unit of output.
 - the marginal revenue product is as high as possible.
 - the marginal product is equal to the price per unit of output.
- _____ 7. Maria operates a persimmon orchard in southeastern Oklahoma. She pays her workers \$248 per week to pick and process persimmons, and she sells her persimmons for \$6 per bushel. If she adds one more worker and that worker can pick and process 44 bushels per week, what will be the profit for Maria from hiring that worker?
- \$0
 - \$16
 - \$264
 - \$544
 - \$6
- _____ 8. For a perfectly competitive employer, the marginal revenue product curve is the firm's labor _____ curve. This means the marginal product curve has a _____ slope.
- demand; positive
 - supply; positive
 - demand; negative
 - supply; negative
 - demand; horizontal
- _____ 9. Mr. Cobb, a corn farmer, pays his workers \$8 an hour. At his current level of labor use, the marginal product of an additional hour of labor is three bushels of corn. The market price of corn is \$2.75. In order to maximize his profits, Mr. Cobb should:
- hire more labor because the marginal revenue product is below the wage.
 - not hire more labor because the marginal revenue product exceeds the wage.
 - raise the price of the corn that he sells.
 - not hire more labor because the marginal revenue product is below the wage.
 - hire more labor because the marginal revenue product exceeds the wage.
- _____ 10. Mary is considering hiring another worker in an assembly line for stereo speakers. Mary knows the average product of labor is 15 speakers per day. She also believes that the next worker hired will produce an extra 12 speakers per day. A speaker sells for \$10 each. Mary should hire another worker:
- only if the new worker's marginal product is 12 or more.
 - only if the new worker's daily wage is \$150 or less.
 - only if the new worker's daily wage is \$120 or less.
 - since the marginal product is below the average product.
 - only if the value of the marginal product is less than the market wage.

- _____ 11. Labor with a particular skill level and training is used in only two industries: grape cultivation and cranberry cultivation. Which of the following is likely to cause an increase in the demand for this type of labor?
- improved technology that leads to more efficient machines for grape picking
 - publication of a report that asserts that drinking two glasses of grape or cranberry juice every day improves digestion and heart health
 - a report by the USDA that an increasing proportion of grapes are contaminated with unacceptable pesticides
 - a decrease in the amount of land used for growing cranberries
 - a decrease in the market price of grapes.
- _____ 12. The Bountiful Bakery is considering hiring another pastry chef. The bakery knows the average product of its chefs is 15 dozen croissants per day. It also believes that the next chef hired will produce an extra 12 dozen croissants per day. A dozen croissants sell for \$30. The bakery should hire another worker:
- only if the new chef's marginal product is 12 dozen or more.
 - only if the new chef's daily wage is \$450 or less.
 - only if the new chef's daily wage is \$360 or less.
 - because the marginal product is below the average product.
 - only if the new chef's daily wage is \$600 or less.

Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market



- _____ 13. **(Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market)** If the equilibrium wage in the market for bricklayers is \$100 a day, but a minimum wage for bricklayers of \$130 a day is set by the government:
- six workers will now be hired by the firm.
 - two workers who otherwise would have been employed are now unemployed.
 - all bricklayers are better off.
 - the firm will shut down.
 - three workers who otherwise would have been employed are now unemployed.

- _____ 14. **(Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market)** If the price for “bricks laid in the wall” by a bricklayer is \$0.10 a brick, the total production of bricks by the first three bricklayers is _____ bricks.
- 1,500
 - 2,900
 - 4,200
 - 5,400
 - 5,000
- _____ 15. **(Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market)** If the market wage rate for bricklayers falls from \$110 to \$100, the _____ bricklayers will _____.
- demand for; rise
 - quantity demanded of; rise
 - demand for; fall
 - quantity demanded of; fall
 - quantity demanded of; not change
- _____ 16. **(Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market)** If there is an increase in technology that increases the productivity of bricklayers, then the value of the sixth marginal product of the worker will be _____ the current value of _____.
- less than; \$80
 - greater than; \$100
 - greater than; \$80
 - equal to; \$100
 - less than; \$100
- _____ 17. **(Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market)** If there is a decrease in another factor of production that bricklayers use, then the value of the eighth worker will be _____ the current value of _____.
- less than; \$80
 - greater than; \$100
 - less than; \$60
 - greater than; \$80
 - equal to; \$80
- _____ 18. **(Figure 69-2: Demand for Bricklayers in a Perfectly Competitive Labor Market)** Based on the figure, if the price, or wage, of bricklayers is \$80 per day, then:
- four bricklayers will be hired.
 - six bricklayers will be hired.
 - five bricklayers will be hired.
 - three bricklayers will be hired.
 - eight bricklayers will be hired.
- _____ 19. A factor demand curve will shift to the left because of:
- an increase in the price of the factor.
 - an increase in the price of the good the factor produces.
 - a decrease in the price of the factor.
 - decrease in the elasticity of demand for the final product.
 - a decrease in the price of the good the factor produces.

- _____ 20. A change in demand for a given factor of production will *not* occur if:
- the price of that factor falls.
 - the productivity of that factor increases.
 - the productivity of that factor decreases.
 - there is a decrease in the price of a substitute factor.
 - the price of a complementary factor changes.
- _____ 21. The amount by which an additional unit of a factor increases the firm's _____ during a period is _____.
- total revenue; marginal revenue product
 - total revenue; marginal factor cost
 - total cost; marginal revenue product
 - total cost; marginal product
 - total revenue; marginal physical product
- _____ 22. The amount that an additional unit of a factor adds to a firm's total revenue is called:
- marginal revenue.
 - marginal cost.
 - additional revenue product.
 - marginal revenue product.
 - marginal product.
- _____ 23. Marginal product times product price is:
- marginal revenue.
 - marginal revenue product.
 - additional revenue product.
 - marginal cost.
 - total product.
- _____ 24. Which of the following statements is true?
- If the price of labor is increased, holding everything else constant, the demand for labor will increase.
 - If the wage is increased, holding everything else constant, the marginal product of labor will decrease.
 - If the quantity of labor is increased, holding everything else constant, the marginal product of labor will rise.
 - If the quantity of labor is increased, holding everything else constant, the value of the marginal product of labor will rise.
 - If the quantity of labor is increased, holding everything else constant, the marginal product of labor will fall.
- _____ 25. If marginal product is _____, marginal revenue product must be _____.
- rising; falling
 - falling; falling
 - falling; rising
 - rising; zero
 - zero; rising
- _____ 26. A profit-maximizing firm will hire workers up to the quantity of labor where _____.
- $MRPL > W$
 - $MRPL = W$
 - $MRPL < W$
 - $MP \times MR = MRPL$
 - $MPL = W$

- _____ 27. If a perfectly competitive firm is hiring labor such that $W < MRPL$, then profit:
- is maximized.
 - can be increased by hiring less labor.
 - can be increased by hiring more labor.
 - can be increased by increasing the wage.
 - can be increased by decreasing the price of the output.
- _____ 28. Which of the following statements is true?
- If $W < MRPL$, the firm should hire more labor.
 - If $W > MRPL$, the firm should hire more labor.
 - If $W = MRPL$, the firm should hire more labor.
 - If $W > 0$, the firm should shut down.
 - If $W < P$, the firm should hire more labor.
- _____ 29. A firm's demand curve for labor will shift because of:
- a decrease in the wage rate.
 - an increase in the wage rate.
 - changes in preferences and the cultural norms that define how much we work.
 - a change in the product's price.
 - a change in the supply of labor.
- _____ 30. When a person becomes more educated and is able to produce a better product, the person's education is referred to as:
- human capital.
 - physical capital.
 - land.
 - labor.
 - natural resources.
- _____ 31. Suppose a firm sells a good at a perfectly competitive price of \$5. The equilibrium wage rate is \$10. The first worker it hires produces five units. Two workers produce a total of nine units. Three workers produce a total of 12 units. Given this information, the firm will:
- hire the first worker only.
 - hire both the first and second workers.
 - not hire any workers.
 - hire only the second worker.
 - hire all three workers.
- _____ 32. Suppose a firm sells a good at a perfectly competitive price of \$5. The equilibrium wage rate is \$10. The first worker it hires produces five units. Two workers produce a total of nine units. Three workers produce a total of 12 units. Given this information, the firm will:
- hire only the first worker because the MRPL of the second worker is less than the wage.
 - hire only two workers because the MRPL of the third worker is less than the wage.
 - hire all three workers because the MRPL of the third worker exceeds the wage.
 - hire three workers because the MRPL of the third worker is less than the wage.
 - hire zero workers because the MRPL of the first worker is less than the wage.
- _____ 33. If the competitive price (wage) of bricklayers is \$100 per day, that price was determined by:
- the firm hiring the bricklayers.
 - demand and supply in the market for bricklayers.
 - the government.
 - where $MRPL_{\text{bricklayers}} = MP_{\text{bricklayers}} \times P$ of output.
 - the union representing the bricklayers.

- _____ 34. Davey works _____ hours when the wage rises only if the
- fewer; substitution effect outweighs the income effect.
 - more; income effect outweighs the substitution effect.
 - the same amount of; substitution effect outweighs the income effect.
 - more; substitution effect equals the income effect.
 - more; substitution effect outweighs the income effect.
- _____ 35. When the competitive labor market is in equilibrium, we know that:
- the quantity of labor demanded is greater than the quantity of labor supplied.
 - the quantity of labor demanded is less than the quantity of labor supplied.
 - the wage is less than the marginal revenue product of the last worker employed.
 - the wage is determined by a monopsonist.
 - the quantity of labor demanded is equal to the quantity of labor supplied.
- _____ 36. Assume a firm employs two inputs, A and B. The optimal hiring of inputs occurs when which of the following is true?
- $TP_A/P_A = TP_B/P_B$
 - $MP_A/P_A = MP_B/P_B$
 - $TC_A = TC_B$
 - $MP_A = MP_B$
 - $(MP_A)(P_A) = (MP_B)(P_B)$
- _____ 37. A firm can dig a well using three combinations of labor and capital. The table below summarizes the three combinations of labor and capital. Which of the following statements is true?

Combination	Labor	Capital
X	One skilled operator = \$250	Rented backhoe = \$1250
Y	Ten unskilled workers = \$100 each	Ten shovels = \$50 each
Z	Five unskilled workers = \$100 each One supervisor = \$1000	Five shovels = \$50 each

- The firm will choose combination X to minimize the cost of digging the well.
 - The firm will choose combination Y to minimize the cost of digging the well.
 - The firm will choose combination Z to minimize the cost of digging the well.
 - The firm is indifferent between combinations X and Y to minimize the cost of digging the well.
 - The firm is indifferent between combinations Y and Z to minimize the cost of digging the well.
- _____ 38. According to the _____, in a perfectly competitive economy each factor of production is paid its equilibrium marginal revenue product.
- theory of labor supply
 - efficiency-wage model
 - theory of compensating differentials
 - marginal productivity theory of income distribution
 - theory of factor management
- _____ 39. Employers may be able to discriminate on the basis of race or gender because:
- of market competition that makes it profitable to engage in discrimination.
 - of the existence of higher than equilibrium wages due to market power or market failure.
 - it is justified by the marginal productivity theory of income distribution.
 - it is justified by the structure of competitive markets.
 - there are no laws prohibiting such discrimination.

- _____ 40. A small college employs two economists. Rob has been employed by the college for 15 years and Nasrin has been employed for one year. Rob's salary is significantly higher than Nasrin's, despite the fact that they both have doctoral degrees in economics. Each professor averages one publication per year and both are excellent teachers. Given this information, the wage difference is best explained by:
- compensating differentials.
 - efficiency wages.
 - discrimination.
 - differences in talent.
 - differences in human capital.
- _____ 41. Barbara owns a manufacturing plant with four facilities (North, South, East, and West) in the state of Indiana. The workers at one of those facilities, North, have just decided to join a union. The union negotiates with Barbara and receives average wages that are 5% higher than the workers at the South, East, and West facilities. This wage differential is a likely example of:
- equilibrium wages.
 - compensating differentials.
 - efficiency wages.
 - discrimination.
 - union power.
- _____ 42. Max and Eli both graduated from the police academy. Max chose to work in a large city with high crime rates, while Eli chose a job in a small rural town with low crime rates. Although both have the same credentials, and both are members of the union, Max is paid a higher salary than Eli. This wage differential is a likely example of:
- discrimination.
 - compensating differentials.
 - efficiency wages.
 - productivity differences.
 - differences in human capital.

Essay

1. (Module 69) Eliza hires labor to produce her gourmet dog biscuits. She can sell the biscuits for \$2 each in the competitive output market.

Quantity of labor employed (L)	Quantity of output produced (Q)
0	0
1	20
2	38
3	54
4	68
5	80
6	90
7	98
8	104

- Using the data from the table above, what is the marginal revenue product of labor (MRPL) of the fifth worker? Show your work.
- Describe the shape of the MRPL curve. Explain why it is shaped this way.
- If the market price of dog biscuits fell to \$1, how would this affect the firm's MRP curve? (4 points)

2. (Module 70) The perfectly competitive market for land has a fixed supply of 5000 units and the equilibrium rental rate for land is \$100 per unit.
- a. Draw a correctly labeled graph of the market for land. In your graph identify:
 - i. The equilibrium rental rate for land.
 - ii. The equilibrium quantity of land.
 - iii. The area that represents economic rent.
 - b. Calculate the total amount of economic rent at market equilibrium. Show your work.
 - c. Suppose the economy improves and the demand for land increases. Will the improving economy increase, decrease, or remain unchanged:
 - i. The equilibrium rental rate for land.
 - ii. The equilibrium quantity of land.
 - iii. The area that represents economic rent.
- (9 points)

3. (Module 71) Melanie's Bells produces cowbells in a perfectly competitive output market and employs skilled bell-makers in a perfectly competitive labor market. Both markets are free of government policy. The market price of a cowbell is \$20 and the market price of labor is \$60. Use the data in the table below.
- What shape does the supply of labor facing Melanie's Bells take? Explain.
 - Compute the marginal revenue product (MRPL) of the third worker.

Quantity of Bell-makers Employed (L)	Quantity of Cowbells Produced (Q)
0	0
1	10
2	19
3	27
4	34
5	40
6	45
7	49
8	52
9	54

- If Melanie hires bell-makers to maximize her profits, how many will she hire? Explain your reasoning.
- Assuming both input and output markets remain competitive and free of government policy, what would have to occur for Melanie to employ fewer bell-makers than the quantity you found in part (c)?
(6 points)

4. (Module 73) Each of the situations below involve people receiving different wages in similar occupations. For each, identify the most likely explanation for the wage differences and explain why that reason applies.
- a. Davey and Jennifer both work as realtors in Florida, but Jennifer earns 25% more than Davey because she sells more homes each month.
 - b. Fekru and Huanwei are both statisticians in New Jersey, but Fekru earns a higher salary because he has 25 years of work experience and Huanwei only has 10 years of work experience.
 - c. Eric and Melanie are both coal miners in Kentucky, but Melanie joined the union and her union wage is greater than Eric's nonunion wage.
 - d. Pam and Margaret are both truck drivers in Washington, DC. Pam typically drives trucks full of hazardous waste so she earns a higher wage than Margaret who typically drives trucks full of textbooks.
- (8 points)