**Instructions:**

1. **Answer all questions and show work**
2. **Do not change the question format.**

1. **The own-price elasticity of demand for apples is -1.2. If the price of apples falls by 5%, what will happen to the quantity of apples demanded?**A. It will increase 5%. B. It will fall 4.3%.
C. It will increase 4.2%. D. It will increase 6%.

2. **If a price increase from $5 to $7 causes quantity demanded to fall from 150 to 100, what is the absolute value of the own-price elasticity at a price of $7?**A. 0.57. B. 1.75.
C. 0.02. D. 1.24.

**SHOW WORK**

3. **What is the maximum amount of good Y that can be purchased if X and Y are the only two goods available for purchase and Px = $5, Py = $10, X = 20, and M = 500?**A. 40. B. 25.
C. 50. D. 75

**SHOW WORK!**

4. **The total earnings of a worker are represented by E = 100 + $10(24 - L), where E is earnings and L is the number of hours of leisure. How much will the worker earn if he takes 14 hours of leisure per day?**A. $150. B. $240.
C. $100. D. $200.

SHOW WORK!

5. **Over the past decade medical costs have increased more rapidly than other prices. In order to illustrate how rising medical costs have affected consumer alternatives, let X represent the quantity of medical services, and let Y represent the quantity of other goods. Furthermore, let income (*M*) be measured in hundreds of dollars, the price of medical services and other goods in terms of dollars per minute, with M = 100 ; Px = 4 and Py = 5  .**

a. Graph the budget line, and determine the market rate of substitution.
b. Illustrate the budget set.
c. Show in your graph what happens to the budget constraint if   increases to $10.
d. What is the meaning of the slope of the two budget constraints?

6**. Draw the opportunity set of a consumer with an income of $200 who faces prices of  Px = 5 and  Py = 10 . What is the market rate of substitution between the two goods?**

7**.  Suppose the marginal product of labor is 8 and the marginal product of capital is 2. If the wage rate is $4 and the price of capital is $2, then in order to minimize costs the firm should use**A. more capital and less labor.
B. more labor and less capital.
C. three times more capital than labor.
D. none of the statements associated with this question are correct.

Show Work

8. **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.

Show WORK!

9. **For the cost function C(Q) = 100 + 2Q + 3Q2, the average fixed cost of producing 2 units of output is**
A. 100. B. 50.
C. 3. D. 2.

Show Work

10**. If shoes and socks are complements and both are normal goods, show graphically what would happen to the consumption of shoes and socks if**a. the price of shoes decreased.
b. consumer incomes increased

SHOW work

11. **Given the following table, how many workers should be hired to maximize profits?**
 
A. 1. B. 2.
C. 3. D. 4.

SHOW WORK!

12. **Suppose you are a manager of a factory. You purchase five (5) new machines at one million dollars each. If you can resell two of the machines for $500,000 and three of the machines for $200,000, what are the sunk costs of purchasing the machines?**A. $5 million. B. $500,000.
C. $3.4 million. D. $1.6 million

SHOW

13. **Congress is considering legislation that will provide additional investment tax credits to businesses. Effectively, an investment tax credit reduces the cost to firms of using capital in production. a)** Would you expect labor unions to lobby for or against such a bill? (Hint: What impact would such a plan have on the capital-to-labor ratio at the typical firm?)

 14. **The following table summarizes the short-run production function for your firm. Your product sells for $5 per unit, labor costs $5 per unit, and the rental price of capital is $20 per unit. Complete the following table, and then answer the accompanying questions.**
 
 a. Which inputs are fixed inputs? Which are the variable inputs?

b. How much are your fixed costs?

c. What is the variable cost of producing 20 units of output?

d. How many units of the variable input should be used to maximize profits?

e. What are your maximum profits?

f. Over what range of variable input usage do increasing marginal returns exist?

g. Over what range of variable input usage do decreasing marginal returns exist?

h. Over what range of variable input usage do negative marginal returns exist?