



The University of Zambia
School of Public Health
Department of Health Policy and Management
Applied Economics (HSM 3210)
Take Home Test

1. Answer all questions
 2. Submission: 18th October, 2024
 3. Time: 08:30hrs
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Part A

- 1) Returns to scale refers to the change in output when
 - A) specialization improves.
 - B) labor increases holding all other inputs fixed.
 - C) all inputs increase proportionately.
 - D) capital equipment is doubled.
- 2) Suppose the production of gizmos can be represented by the following production function: $Q = L^{0.4}K^{0.4}$. Which of the following statements is TRUE?
 - A) The production function has constant returns to scale.
 - B) The production function has decreasing returns to scale.
 - C) The production function has increasing returns to scale.
 - D) Returns to scale vary with the level of output
- 3) When an isocost line is tangent to the isoquant, then
 - A) the firm is producing that level of output at minimum cost.

- B) the firm has achieved the right economies of scale.
- C) $MPL = MPK$.
- D) All of the above.
- 4) If a firm triples inputs and produces twice the output, then there are
- A) increasing returns to scale.
- B) constant returns to scale.
- C) diminishing marginal product.
- D) decreasing returns to scale.

Part B

Question 1

Describe the relationship between productivity and the different costs (marginal and average) of production in the short run. (Hint: graphical illustration can be used.)

Question 2

The demand and average functions of a hypothetical healthcare firm are represented by the following functions (in millions)

$$P = 50 - Q$$

$$AC = 100/Q - 16 + 2Q$$

Where:

P is the price in kwacha

Q is the quantity of output in units

AC is the average cost in kwacha

Required:

- a. The total cost function
- b. The variable cost function
- c. The total profit of the firm when $Q = 10$ units