

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

SECOND YEAR EXAMINATION FOR THE DEGREE
OF BACHELOR OF EDUCATION IN AGRICULTURAL
ECONOMICS

AGEC 241: PRODUCTION ECONOMICS

STREAM: AGED

TIME: 2 HRS

DAY: MONDAY [11.30-13.30 P.M]

DATE: 04/12/2023

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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INSTRUCTIONS:

Answer questions one and any other two questions

QUESTION ONE

- a) Briefly explain what production economics is concerned about. **(2 marks)**
- b) Explain the key issues of any production problem. **(6 marks)**
- c) (i) Distinguish between production and production function as used in economics? **(2 Mark)**
 (ii) Explain assumptions in production economics **(6Marks)**
 (iii) Distinguish between short-run and long-run production period **(4Marks)**
- d) Given the production function:

$$Y = 6X + 0.75X^2 - 0.0015X^3$$
 - i) For values of X = 0, 10, 20, 30, 40, 50, 60, 70, 80 and 90, calculate: **(6 Marks)**
 - a) Total Product (TP)
 - b) Average Product (AP)
 - c) Marginal Product (MP)
 - ii) Draw:
 - a) The graph of TP against X **(1 Mark)**
 - b) Below (a) above and on the same horizontal scale, the graph of AP and MP against X and mark the three stages of production **(3 marks)**

QUESTION TWO

- a) What are the reasons behind studying Product-Product Relationships? **(5 Marks)**
- b) Given the following information

Input X	Output Y1	Output Y2
0	0	0
1	10.5	18
2	19.5	33
3	27	45



4	33	54
5	37.5	60
6	40.5	63
7	42	64.5
8	40.5	63
9	37.5	60

- i) Compute the combination of Y1 and Y2 that can be produced if the farmer is limited to 7 units of the variable input. **(10 marks)**
- ii) If the prices of Y1 and Y2 are KES 30 and 20 respectively, compute the profit maximizing outputs. **(5 marks)**

QUESTION THREE

- a) Assume you are given the following TVC function $TVC=6Y- 0.4Y^2 + 0.02Y^3$. At what point would the farmer maximize profits if the price of that commodity is equal to KES 54? **(6 Marks)**
- b) Differentiate between substitutes and complements in terms of Marginal Rate of Technical Substitution (MRTS) **(4 Marks)**
- c) Explain the three most common sources of risks in agriculture? **(10 marks)**

QUESTION FOUR

- a) Suppose that you are given the information on the table below and that the output sells for KES 5 and the input sells for KES 4.

Input X	Output Y
0	0
10	75
20	245
30	435
40	560
50	648



60	710
70	753
80	782
90	800
100	810
110	808

Use the above information to compute the following:

- i) Value of marginal product **(4 marks)**
- ii) Average value product **(4marks)**
- iii) The most profitable level of output and input **(4 marks)**
- b) i) Giving appropriate examples differentiate between economies of scale and diseconomies of scale in agricultural economics. **(4 Marks)**
- ii) Explain the common sources of economies of scale **(4 marks)**

QUESTION FIVE

- a) Describe increasing returns to scale, constant returns to scale and diminishing returns to scale. **(6 marks)**
- b) An isoquant represents all possible combinations of two resources (X1 and X2) physically capable of producing the same quantity of output. State four main characteristics of isoquants. **(4 Marks)**
- c) Explain the following terms as used in production economics
 - i) Elasticity of production **(2marks)**
 - ii) Necessary and sufficient condition for economic efficiency **(2 marks)**
 - iii) Expansion path **(2 marks)**
 - iv) Least cost combination **(2 marks)**
 - v) Law of diminishing returns **(2marks)**

