



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURE AND FOOD SCIENCES**

**SECOND YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE
DEGREE OF BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT AND
BACHELOR OF SCIENCE IN AGRICULTURAL EXTENSION AND EDUCATION**

2022/2023 ACADEMIC YEAR

COURSE CODE: AEB 9202

COURSE TITLE: Production Economics in Agriculture

EXAM VENUE:

**STREAM: (BSc. Agribusiness Management &
BSc. Agricultural Extension and Education)**

DATE:

EXAM SESSION:

TIME: 2 Hours

Instructions:

- 1. Answer ALL question in Section A (compulsory) and ANY other TWO questions in Section B.**
- 2. Candidates are advised NOT to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A **[30 MARKS]**

1. With relevant examples distinguish between the following terms:
 - i. Implicit cost and Explicit cost.
[3marks]
 - ii. Variable and fixed cost
[3marks]
 - iii. Continuous and discontinuous production function
[4marks]

2. A production function is a physical relationship between inputs and outputs. It is important to emphasize that the production function is a physical, or technical, relationship.
 - i. Describe the law of Diminishing Marginal Return. [2marks]
 - ii. The following table depicts the relationship between input (NPK fertilizer) and maize output in terms of bags. Use the following information to calculate the Average Physical Product (APP) and the Marginal Physical Produce.

[8marks]

Application of NPK Units	Output of maize units	APP	MPP
0	0		
1	10		
2	24		
3	56		
4	68		
5	79		
6	70		
7	32		
8	0		

3. Demand is a schedule that links together various product prices and the quantities of products that consumers are willing and able to purchase over a given period.
 - i. State the Law of Demand [3 marks]

- ii. Briefly explain THREE factors that affect demand. [3marks]
- iii. With relevant example differentiate between substitutes and complement goods. [4 marks]

SECTION B [40 MARKS]

4. The principle of product-product relationship helps in deciding the optimum combination of products and guides in making a decision of what to produce (Enterprise selection).

- i. Given that $P_{y1} = \text{Kshs.}320$ per unit; $P_{y2} = \text{Kshs.}480$ per unit, fill in the blank spaces and determine the optimum combination. [14 marks]

Y₁ (units)	Y₂ (units)	ΔY₁	ΔY₂	MRS_{Y₁, Y₂}	Price ratio
0	60				
20	56				
40	50				
60	41				
80	30				
100	16				
120	0				

- ii. Explain any THREE effects of technological improvement on the production process. [6marks]
- iii. Differentiate between Economies of size and Economies of scale. [2marks]

5. On day-to-day basis farmers face situations in which outcomes are uncertain. The major problem is, these farmers vary markedly in their willingness to take on, and or preference for risk and uncertainty.

- i. Differentiate between Risk and uncertainty as used in production economics. [6marks]
- ii. What risks does a farmer take when making production decisions relating to profit maximization? [8marks]
- iii. Describe any **THREE** farmer attitudes towards risk and uncertainty. [6marks]

6. The logic of decision making in regard to profit maximization is of great importance to a farmer, and this can be tied to an actual time period. The Total Cost (TC), Total Revenue (TR) approach is one of the ways a farmer can determine how much output to produce to maximize profit.

- i. Differentiate between short-term and long-term period in decision making.

[4marks]

- ii. The following is information collected from a Maize farmer in Siaya. Calculate the

Total Revenue (TR), Total Cost (TC) and Profit (+) or Loss (-).

[10marks]

Output units of maize	Price of maize, Ksh	TR, Ksh	TFC, Ksh	TVC, Ksh	TC, Ksh	Profit + Loss -, Ksh
0	3		20	0		
3	3		20	5		
7	3		20	10		
12	3		20	15		
15	3		20	20		
17	3		20	25		
18	3		20	30		

- iii. With a help of a graph, describe the best possible profit maximization output point for the farmer.

[6marks]