# MACHAKOS UNIVERSITY

**University Examinations for 2016/2017**

**SCHOOL OF AGRICULTURE AND NATURAL RESOURCES MANAGEMENT**

**DEPARTMENT OF AGRIBUSINESS MANAGEMENT**

**FIRST YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF EDUCATION**

**KBT 203: AGRICULTURAL PRODUCTION ECONOMICS**

**Date: SCHOOLBASED** **Time:**

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**INSTRUCTIONS**

**Answer Question One and Any other Two Questions**

**QUESTION ONE (30 MARKS)**

a) Define the following economic concepts

i) Law of diminishing returns (2 marks)

ii) Least cost combination (2 marks)

iii) Elasticity of production (2 marks)

b) Describe four contexts of the production environment that influence the production process. (4 marks)

c) Explain the dual relationship between production function and cost function. (6 marks)

d) Describe three types of isoquants as applied in production economics (6 marks)

e) Explain four impacts of technology on the production function. (8 marks)

**QUESTION TWO (20 MARKS)**

a) Explain three types of farmer's attitudes toward risks in agricultural production. (3 marks)

b) Suppose a farmer in Rift Valley region is faced with three production alternatives, 1) Grow maize 2) Grow vegetables 3) Keep dairy. Suppose that the farmer is faced with two states of nature, one producing high yields (high rainfall) and the other producing low yields (low rainfall). Further, suppose that the probability and returns from interaction of these states of nature is given as follows.

| **Farmers' production decision** | **High yields P=0.6** | **Low yields P=0.4** |
|---|---|---|
| Maize | Ksh 40,000 | Ksh 9,000 |
| Vegetables | Ksh 31,000 | Ksh 18,000 |
| Dairy | Ksh 42,000 | Ksh 15,000 |

As an agricultural advisor, advice the farmer on which decision he should take and why? (5 marks)

c) Agricultural sector is faced with many risk that affect crop and livestock productivity

i) Explain six types of risks that farmers are likely to face in livestock and crop production in your county. (6 marks)

ii) As a policy advisor, outline six policy interventions that the county and national governments could opt in to order to reduce vulnerability to above mentioned risks. (6 marks)

**QUESTION THREE (20 MARKS)**

a) Explain the concept of production possibility frontier. (2 marks)

b) Explain THREE types of returns to scale in production. (6 marks)

c) Explain FOUR types of enterprises in relation to the shape of production function that underlie the product transformation functions. (12 marks)

**QUESTION FOUR (20 MARKS)**

a) Explain the difference between total cost and total factor cost. (4 marks)

b) Explain necessary and sufficient conditions in terms of a farmer seeking to maximize profits in agricultural production. (6 marks)

c) Suppose that the price of input X is Ksh 6, while Total Fixed costs is Ksh 400. Given the quantity of input (X) and output (Y) as below

| Input (X) | Output (Y) |
|---|---|
| 0 | 0 |
| 20 | 100 |
| 50 | 150 |
| 80 | 160 |
| 100 | 168 |

**Evaluate**

i) Total variable cost (2 marks)
ii) Total cost (2 marks)
iii) Marginal cost (2 marks)
iv) Average variable cost (2 marks)
v) Average cost (2 marks)

**QUESTION FIVE (20 MARKS)**

a) Explain the concept of expansion path. (2 marks)

b) Explain 4 factors that influence adoption of new technology by farmers. (4 marks)

c) Given the tabular form of the production function, input and output as follows

| Input (Number of Laborers) | Total Physical Product ($TPP_L$) |
|---|---|
| 0 | 0 |
| 1 | 8 |
| 2 | 24 |
| 3 | 46 |
| 4 | 72 |
| 5 | 100 |
| 6 | 128 |
| 7 | 154 |
| 8 | 176 |
| 9 | 192 |
| 10 | 200 |
| 11 | 198 |
| 12 | 184 |

**Evaluate:**

i) Average physical product (3 marks)
ii) Marginal physical product (3 marks)
iii) Elasticity of production (3 marks)
iv) Identify and explain the three stages of production (3 marks)
v) What is the rational stage of production and why? (2 marks)

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