



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRIBUSINESS MANAGEMENT AND TRADE

SECOND YEAR SPECIAL/ SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE AGRIBUSINESS MANAGEMENT AND TRADE

AGB 203/KBT203: AGRICULTURAL PRODUCTION ECONOMICS

DATE: 22/03/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS:

Answer **Question one** and **ANY TWO** other questions.

QUESTION ONE (30 MARKS)

- a) Differentiate between the following and illustrate the following economic terms:
 - i. Isoquant and production possibility curve (4 marks)
 - ii. Economies of scale and diseconomies of scale (4 marks)
- b) Explain six factors that influence farmer's decision to adopt new agricultural technology (6 marks)
- c) With necessary illustration, explain the concept of Least Cost Combination as used in agricultural production economics (6 marks)
- d) With necessary illustration, explain three stages of production highlighting the rational stage of production (6 marks)
- e) Describe four contexts of the production environment that a farmer may operate within (8 marks)

QUESTION TWO (20 MARKS)

- a) Differentiate between the marginal rate of input substitution and elasticity of production (4 marks)
- b) Explain the dual relationship between production function and cost function (6 marks)

- c) Given hypothetical cost data for wheat production in the table below and further given that the price for wheat is Ksh 6 and corresponding fixed cost is given as Ksh. 80.

Yield – Wheat/Kg	Variable costs
40	89
50	110
60	130
70	140
90	175
100	200
110	230
130	320
140	380

In a tabular form, calculate and interpret the following

- i. AVC (2 marks)
- ii. AFC (2 marks)
- iii. MC (2 marks)
- iv. MR (2 marks)
- v. Profit (2 marks)

QUESTION THREE (20 MARKS)

- a) Differentiate between risk and uncertainty as used in agricultural production economics (4 marks)
- b)
 - (i) Explain five risks affecting agricultural sector in Kenya (5 marks)
 - (ii) Explain policy interventions that can be implemented to reduce vulnerability of mentioned risks b(i) (5 marks)
- c) Suppose that the farmer has Ksh 4000 available for the purchase of the two inputs x_1 and x_2 to produce corn. Suppose also that x_1 costs Ksh 100 per unit and x_2 costs Ksh 60 per unit. Find the following
 - i. At least four possible combinations of x_1 and x_2 (3 marks)
 - ii. Illustrate the data in a well labeled graph (3 marks)

QUESTION FOUR (20 MARKS)

- a) Describe and illustrate four types of enterprises that are in line with product transformation functions (8 marks)
- b) Illustrate and describe main types of iso-quant and their possible application in agriculture (12 marks)

QUESTION FIVE (20 MARKS)

- a) Using relevant illustrations and examples, describe four impacts of adoption of technology in agriculture on the production functions under competitive conditions (10 marks)
- b) Suppose a farmer is faced with FOUR production decisions: 1) Grow maize 2) Grow wheat 3) Keep dairy 4) Grow vegetables. We assume that nature has two states, one producing high yields (high rainfall) and the other producing low yields (low rainfall) and interactions of probability and returns as shown in the table below

Farmers' production decision	High yields P=0.7	Low yields P=0.3
a. Grow maize	Ksh 4,000	Ksh 900
b. Grow wheat	Ksh 3,100	Ksh 1,800
c. Keep dairy	Ksh 4,200	Ksh 1,500
d. Grow vegetables	Ksh 3,500	Ksh 1,200

Showing step by step, examine which enterprise should the farmer take, citing economic reasons (10 marks)