



2nd SEM. 2009/2010

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: BSc. in Agricultural and Applied Economics

COURSE CODE: AEM 411

TITLE OF PAPER: PRODUCTION ECONOMICS

TIME ALLOWED: TWO HOURS

INSTRUCTION: 1. ANSWER ALL QUESTIONS
2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS

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Question One

- (i) Suppose you are planning to produce a given amount of maize using the following four inputs: X1, X2, X3 and X4. Explain how you will combine the four inputs in order to produce the give output of maize at minimum cost **6 MARKS**
- (ii) Explain how you can maximize profit from maize production using the four inputs mentioned in (i) above. **10 MARKS**
- (iii) Now suppose you are producing maize and sugarcane using the inputs given in (i) above. How will you combine the four inputs in the production of the two crops? **4 MARKS**
- (iv) Suppose that you can produce different combinations of two products A and B using a given amount of variable input. Explain with reasons the criteria you will use to allocate the input in the production of A and B. **5 MARKS**

Question Two

- (a) Write short notes on: expansion path, isoquants, ridge lines, isocost lines and iso-revenue lines **10 MARKS**
- (b) Differentiate among the following: elasticity of substitution, marginal rate of input substitution and elasticity of production. **6 MARKS**
- (c) Briefly discuss the general profit maximization for a factor-product model with respect to necessary and sufficient conditions. **9 MARKS**

Question Three

- (a) Given the following production function: $Y = X_1^{0.3}X_2^{0.7}$
Find the expansion path function when the prices are E1.00 and E2.00 for X₁ and X₂ respectively. **6 MARKS**
- (b) Suppose the production function is $Y = X_1X_2$ and you have E200 to spend on the two inputs. If the price of X₁ is E1.00 and the price of X₂ is E2.00, how can you combine the two inputs in the production of Y? **6 MARKS**

(c) Consider the two production functions:

$$M = 669 + 3X_M - 0.003X_M^2$$

$$C = 777 + 4.5X_C - 0.0005X_C^2$$

Where: M = Maize output per hectare in kgs, C = Cowpeas output per hectare in kgs,
 X_M = Kgs of fertilizer applied on the maize crop, X_C = Kgs of fertilizer applied on the cowpeas crop.
 Assume X_M + X_C = 100 kgs and price of maize is equal to E3.00 per kg and price of cowpeas is equal to E2.00 per kg.

How much amount of fertilizer would you allocate to each of the two crops in order to maximize profit from their sale?
13 MARKS

Question Four

(a) Discuss with examples the different types of production possibility curves that illustrate the relationships among farm enterprises.
12 MARKS

(b) Assume you are growing goods K and L partly for use in the manufacture of good Z and suppose the amount of goods K and L produced is not the same as the amount of good K and good L needed to optimize the production of good Z. With help of a diagram describe your situation and state what objective you would be trying to achieve.
13 MARKS