

1st SEM. 2020/2021



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UNIVERSITY OF ESWATINI

RE-SIT EXAMINATION PAPER

PROGRAMME: BSc. in Agricultural Economics and Agribusiness
Management Year 4

COURSE CODE: AEM407

TITLE OF PAPER: PRODUCTION ECONOMICS

TIME ALLOWED: TWO (2): HOURS

- INSTRUCTION: 1. ANSWER ALL FOUR QUESTIONS
2. EACH QUESTION CARRIES 25 POINTS

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Question 1 (25 MARKS)

a) What do you understand by the following terms:

- i. Production function **3 MARKS**
- ii. Economic efficiency **4 MARKS**

b) Differentiate among the following:

- i. Short run and long run production functions **6 MARKS**
- ii. Short run and long run costs **6 MARKS**
- iii. Marginal rate of product substitution and Marginal rate of input substitution **6 MARKS**

Question 2 (25 MARKS)

Given the production function:

$$Y = 18X_1 - X_1^2 + 14X_2 - X_2^2;$$

and the prices: $P_{X_1} = E9$; $P_{X_2} = E7$; $P_Y = E0.65$

- i. Compute the profit maximising levels of inputs **15 MARKS**
- ii. What is the value of Y **5 MARKS**
- iii. What is the profit **5 MARKS**

Question 3 (25 MARKS)

a) Suppose a farmer: uses two inputs in his production process (i.e. inputs: X_1 and X_2); has E18 to spend on variable inputs (i.e. Total variable cost (TVC) = E18); and has a total variable cost function given by $TVC = P_{X_1}X_1 + P_{X_2}X_2$ and the prices $P_{X_1} = E2$; $P_{X_2} = E3$:

- i. Find the equation of the isocost line **3 MARKS**
- ii. What is the slope of the isocost line **3 MARKS**
- iii. What is the intercept on the X_1 axis **3 MARKS**

b) Given the product-product relationship equation: $Y_1 = 100 - 0.0065Y_2^2$ and the prices $P_{Y_1} = 5$ and $P_{Y_2} = 6$:

- i. What is the maximum amount of Y_1 and Y_2 that can be obtained? **4 MARKS**
- ii. What is the exact MRPS? **4 MARKS**
- iii. What is the slope of the isorevenue line? **4 MARKS**
- iv. Find the optimum combination of Y_1 and Y_2 that maximise revenue. **4 MARKS**

Question 4 (25 MARKS)

Consider two production functions for maize (M) and Beans (B) each employing labour (L) as the variable Input:

$$M = 10 + 2L_M - 0.1L_M^2$$

$$B = 5 + 4L_B - 0.2L_B^2$$

If the price of Maize is E2.00 per Kg and price of beans is E 1.00 per Kg. How would you allocate 10 labourers among the maize and beans enterprises? **25 MARKS**