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1st SEM.2014/2015

UNIVERSITY OF SWAZILAND

Department of Agricultural Economics & Management

FINAL EXAMINATION PAPER

PROGRAMME: BSc. Agric. Economics and Agribusiness Management Year 4

COURSE CODE: AEM 405

TITLE OF PAPER: PRODUCTION ECONOMICS

TIME ALLOWED: TWO (2) HOURS

INSTRUCTION:
1. ANSWER ALL QUESTIONS
2. EACH QUESTION CARRIES 25 MARKS

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Question one

a) With the help of figures, show the physical (Total Physical Product-TPP, Average Physical Product-APP, and Marginal Physical Product-MPP) and the cost (Average Total Cost-ATC, Average Variable Costs-AVC, and Marginal Costs) relationship in three stages of production.

(12 Marks)

b) Consider the production function $Y = X^{1/2}$:

i) Give the exact MPP equation, and calculate its value when $X = 4$ **(5 Marks)**

ii) At how many units of X are profits of the farm maximised when the price of X is E1.00 and price of output Y is E4.00 **(4 Marks)**

c) Using calculus, prove that β is the elasticity of production, given the production function as: $Y = 0.5X^{\beta}$ **(4 Marks)**

Question Two

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

$M = 10 + 2L - 0.1L^2$
$B = 5 + 4L - 0.2L^2$

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 **(15 Marks)**

b) Assume that $TC = 100 + 6Y - 0.4Y^2 + 0.02Y^3$:

i) Derive the Average Variable Costs-AVC, Average Fixed Costs-AFC and Marginal Costs-MC equations.

ii) At what level of output is AVC at a minimum?

iii) At what level of output is the MC at a minimum?

iv) Prove that when $Y = 10$, $AVC = MC$. **(10 Marks)**

Question Three

a) Suppose the production function is given by $Y = X_1^{1/3}X_2^{1/3}$; where y is output and X_1 and X_2 are inputs. If the price of X_1 is E3, price of X_2 is E3 and output price is E18, and the money to spend on the inputs is readily available, what is the marginal product of each two inputs at the least cost combination?

(10 Marks)

b) Assume you have E1000.00 to spend on two variable inputs namely labour (L) and fertilizer (F) used in the production of Cabbage output C. If the price of labour is E20 and price of fertilizer is E 1.00, what combination of inputs will you employ in order to maximize the output of Cabbage, given the production function as: $C = L \times F$.

(5 Marks)

c) Calculate and fill the blank columns in the Table below.

X	TPP	APP	TVC (E)	MC
0	0		0.00	
1	4		5.00	
2	10		10.00	
3	15		15.00	
4	18		20.00	
5	20		25.00	

(10 marks)

Question Four

a) With the aid of diagrams, explain the following relationship among farm enterprises:
   i) Competitive products
   ii) Joint products

(10 Marks)

b) Differentiate among the following:
   i) Isoquant and Iso-Resource
   ii) Iso-cost line and Iso-Revenue,

(5 Marks)

c) What do you understand by economic efficiency with respect to production economics? Explain the conditions which must be met for economic efficiency to occur. **(6 Marks)**

d) Using a diagram, explain the economies of size and diseconomies of size

(4 Marks)