UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

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

COURSE CODE: AEM 405

TITLE OF PAPER: PRODUCTION ECONOMICS

TIME ALLOWED: TWO (2): HOURS

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

DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE
CHIEF INVIGILATOR

Question 1

a) Differentiate among the following:

    i.   Iso-quant and Iso-resource curve   **6 MARKS**

    ii.   Iso-cost line and Iso-revenue line   **7 MARKS**

b) Briefly discuss four (4) goals of production economics   **12 MARKS**

Question 2

Suppose fertilizer is the only resource that is varied in producing maize. As fertilizer is increased, output of maize increase at an increasing rate, then at a decreasing rate and eventually decreases. **Show graphically plus discuss** the relationship between output (Y) of maize, and Marginal Physical Product (MPP) and Average Physical Product.   **25 MARKS**

Question 3

a) Imagine that a firm has costs given by: $C(q)=120 + 2q^2$, and revenues given by $R(q)=100q$ (i.e. q is the output):

    i.   At what market price does this firm sells its output?   **6 MARKS**

    ii.   Find the profit maximizing quantity   **6 MARKS**

b) Suppose you have 100 workers (variable input, X) to employ in order to produce product N and product M. The production function for N is given by $N = 10 + 2X - 0.01X^2$ and the production function for M is given by $M = 20 + 12X - 0.2X^2$. The market price for N is E20 per kg while the price for M is E5 per kg.

How will you allocate the 100 workers to produce the two products for the market and at the same time be able to maximize profit from each of the two products?   **13 MARKS**

Question 4

a) Fill in the missing cells. Assume the firm operates in a perfectly competitive environment in both the input and output markets.   **12 MARKS**

L = Labor

Q = quantity of output

P(L) = Labor price

L	Q	P(L)	TFC	TVC	TC	MC	ATC	AVC	AFC
2	40	5	110						
	65					.4			
	80							.375	
	90				150				

b) 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 = Px_1X_1 + $Px_2 X_2$ and the prices Px_1 = E2; Px_2 = E3:

   i.   Find the equation of the isocost line   **7 MARKS**

   ii.   What is the slope of the isocost line   **3 MARKS**

   iii.   What is the intercept on the X_1 axis   **3 MARKS**