KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2012/2013

INSTITUTE OF OPEN, DISTANCE AND E-LEARNING

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT AND TRADE

KBT 203: AGRIBUSINESS PRODUCTION ECONOMICS

DATE: Wednesday 10th July, 2013 **TIME:** 8.00 a.m. – 10.00 a.m.

INSTRUCTIONS

Answer Question One and any other two questions

Question 1 {40 marks}

a. Using relevant examples in agriculture/agribusiness define the following terms
   (i) Opportunity cost **[2 Marks]**
   (ii) Production possibility frontier **[2 Marks]**
   (iii) Elasticity of production **[2 Marks]**
   (iv) Marginal physical product **[2 Marks]**
   (v) The law of diminishing returns **[2 Marks]**
   (vi) Marginal rate of technical substitution **[2 Marks]**

b. With the aid of diagrams explain fully the three stages of production and state the reasons why stage two is the most efficient state for a farm-firm. **[6 Marks]**

c. With relevant agribusiness examples critically discuss the goals of production economics **[6 Marks]**

d. Discuss factors that cause a shift in;
   (i) Demand curve **[4 Marks]**
   (ii) Supply curve **[4 Marks]**

e. Discuss the sources of technological change in agriculture **[4 Marks]**

f. Describe four types of production functions **[4 Marks]**

Question 2 **{15 Marks}**

Given the following factor-product relationships:

Nitrogen Fertilizer (Kg Ha^{-1})	Maize output (Kg Ha^{-1})
22	860
44	1,850
66	2,470
88	3,090
110	3,460
132	3,710
154	3,830
176	3,880
198	3,750

(i) Does the maize response to nitrogen fertilizers obey the law of diminishing returns? Explain **[3 marks]**

(ii) If the price of maize is Kshs.35 per Kg and the unit cost of nitrogen is Kshs. 40 per Kg what is the profit maximizing level of Nitrogen to apply per hectare **[5 marks]**

(iii) If a farmer was to buy hybrid maize seeds that would increase yield per hectare by an average of 50 Kg at each level of nitrogen use, what would happen to profit maximizing level of nitrogen. **[3 marks]**

(iv) Using the data in the table graphically (NOT to Scale) show the three stages of production **[4 marks]**

Question 3 **{15 marks}**

The following is a production function: $Y=5 + 6x+0.06x^2-0.007x^3$

Answer the following questions based on the function

a. For the values of x=0, 13, 23, 33, 43, 53, 63, 73 and 83, calculate:
   i. Total product (y) **[4 Marks]**
   ii. Average product (AP) **[4 Marks]**
   iii. Marginal product (MP) **[4 Marks]**

b. at what value of x is
   i. y maximum? **[2 Marks]**
   ii. AP maximum? **[1 Marks]**

Question 4 {15 Marks}

Given the following output (Y)/cost relations:

Output (Y)	Total Fixed cost (FC)	Total Variable cost (VC)
0	120	0
10	120	5
20	120	15
30	120	25
40	120	50
50	120	90
70	120	180
80	120	300

a. Calculate:
   i. Total Cost (TC) **[2 Marks]**
   ii. Average Total Cost (ATC) **[2 Marks]**
   iii. Average Fixed Cost (AFC) **[2 Marks]**
   iv. Average Variable Cost (AVC) **[2 Marks]**
   v. Marginal Cost (MC) **[2 Marks]**

b. Draw the graphs of ATC, AFC, AVC and MC against Y. **[3 Marks]**

c. Determine the cost minimizing level of output. **[2 Marks]**