



(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

SECOND YEAR 2ND SEMESTER
MAIN EXAMINATIONS

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL
ECONOMICS AND RESOURCE MANAGEMENT**

COURSE CODE: AEC 225/1AE285/AEC 224.
COURSE TITLE: PRODUCTION ECONOMICS

DATE: 15/02/2021.

TIME: 8-10 AM. ^{2 pm.}

INSTRUCTIONS TO CANDIDATES

Answer Question One and any other two (2) Questions
TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over



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Q1.

- a) Q is a Cobb-Douglas production function using two inputs, capital (K) and labor (L), expressed as follows

$$Q=90(K)^{1/3}(L)^{2/3}$$

Required

Derive the reduced formulas for

- a) MPk **(5 marks)**
- b) MPL **(5 marks)**
- c) APk **(5 marks)**
- d) APL **(5 marks)**

b) Write short notes on the following;

- i) Factor- factor relationship **(3 marks)**
- ii) Average value product (AVP) **(4 marks)**
- iii) Total cost **(3 marks)**

Q2.

According to data obtained by the West Pokot County department of Agriculture, the relationship between a cow's total output of milk and the amount of grain it is fed on as follows

Amount of grain (kgs)	Amount of milk (Litres)
1,200	5,917
1,800	7,250
2,400	8,379
3,000	9,371

(The relationship assumes that forage input is fixed at 6,500 kg of hays).

Required

- a) Calculate the average product of grain when each amount is used **(10 marks)**
- b) Estimate the marginal product of grain when grain between 1200 and 1800 kgs are fed, when between 1800 and 2400 kgs are fed, and when 2400 and 3000 kgs are fed.

(10 marks)

Q3.

The kipsowet farm's total variable cost function is

$$TVC=50Q-10Q^2+Q^3$$

Where Q=no. of units of output produced

Required

- a) What is the level of output where marginal cost is minimum? **(5 marks)**
- b) What is the level of output where average variable cost is minimum? **(5 marks)**
- c) What is the value of marginal cost at the output level specified in Q7a, above?
(5 marks)
- d) What is the value of average variable cost at the output level specified in Q7b, above?
(5 marks)

Q4.

Lucerne Hay and maize combinations necessary to produce 50 litres of milk per day by a Holstein cow at a Nakuru dairy farm, has been given in Table below. The table shows how and to what extent hay could be substituted for maize.

Combination number	Maize (X ₁) (Kg)	Hay (X ₂) (Kg)	MRS X ₂ for X ₁
1	9.4	10	
2	7.1	12	
3	5.7	14	
4	4.7	16	
5	3.9	18	
6	3.4	20	
7	2.9	22	
8	2.6	24	
9	2.3	26	
10	2.0	28	

- (a) Calculate the MRS X₂ for X₁ and complete the last column. **(10 marks)**

- (b) If the price of Maize is Ksh 9 per kilogram and for hay is Ksh 3 per kilogram, use this information to determine the least cost combination of maize and hay for use by the dairy farm. Clearly explain your answer. **[10 marks]**

Q5.

With the aid of well labelled graphs, explain the properties of isoquants **(20 marks)**