



98

(Knowledge for Development)

**KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR
FOURTH YEAR 2nd SEMESTER
END SEMESTER EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE AND
BIOTECHNOLOGY**

COURSE CODE: SAB 482

COURSE TITLE: PRODUCTION ECONOMICS

DATE: 3RD AUGUST 2018

TIME: 2 – 4 PM

INSTRUCTIONS TO CANDIDATES

Answer **Question 1** and any other two (2) Questions.

Question one

- a) Briefly explain the following concepts as used in production economics
- Marginal rate of technical substitution, (2mks)
 - Average physical product,(2mks)
 - Opportunity cost (2mks)
 - Risk and uncertainty (2mks)
 - Elasticity of production (3mks)
 - Isoquant map (4mks)
- b) Given a single –variable factor production $Y = 16X^2 - 4X^3$. determine the Marginal Physical Product (MPP) and the Average Physical Product (APP) functions (5mks)
- c) With the use of hypothetical example, explain how the concept of isoquant and isocost can be used to aid farm manager on making farm production decisions. (10mks)

Question two

- a) Using a classical production function, describe how agricultural production can be separated into three distinct stages.(10mks)
- b) By use of total physical product TPP, average physical product (APP), and marginal physical product (MPP), distinguish between the stages and advice on the rational stage to operate in.(10mks)

Question 3

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. It 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	13.0	8	
2	9.4	10	
3	7.1	12	
4	5.7	14	
5	4.7	16	
6	3.9 ³	18	
7	3.4	20	
8	2.9	22	
9	2.6	24	
10	2.3	26	

- a) Calculate the MRS X_2 for X_1 and complete the last column of the above table. (12 marks)

- b) If the price of maize is kshs 9 per kilogram and hay it 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 (8mks)

Question 4

Given the cost function $TC = 20 - 6Y^2 + 8Y^3$ and the price of output $P_Y = 50$.

- a) Determine the profit maximizing level of output(15mks)
b) Determine the maximum profit (5mks)