



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURE AND FOOD SCIENCES
SECOND SEMESTER THIRD YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT 2017/2018
ACADEMIC YEAR

COURSE CODE: AAE 3321

COURSE TITLE: CROP AND LIVESTOCK PRODUCTION ECONOMICS

EXAM VENUE: **STREAM: (BSc. Agribusiness Management)**

DATE: **EXAM SESSION:**

TIME:

Instructions:

Answer **ALL** the questions in section **A** and any **TWO** in section **B**

Do not write on this question paper

Each question in section **B** carries equal marks

SECTION A [30 MARKS]

1. A production function of a farm in Bondo is given as $Y = QK^{0.2}L^{0.4}$
- a) What is its degree of homogeneity? [2marks]
 - b) What kind of returns to scale is displayed by the production function? [2marks]
 - c) What are the characteristics of homogenous production functions? [4marks]
 - d) Is it possible to maximize profit under Cobb-Douglas production function? Justify your answer. [2marks]
2. An elasticity of substitution is a measure of the extent to which one input substitutes for another input along an isoquant
- a) Explain the policy application of elasticity of substitution [2marks]
 - b) How does the elasticity of substitution differ from the marginal rate of substitution? [2marks]
 - c) Suppose that the marginal rate of substitution is given by the formula $MRS_{x_1x_2} = (x_2/x_1)^b$
 - i. What is the corresponding elasticity of substitution? [2marks]
 - ii. What is known about the production function that produced such a marginal rate of substitution? [2marks]
 - d) What do you understand by the term output price elasticity? [2marks]
- 3.
- a) Show 10 possible combinations of output that could produce Shs.1000 of revenue in Y_1 sold for Shs.5 and Y_2 sold for Shs10. [4marks]
 - b) On the basis of these data alone, should the production of Y_2 be favored over the production of Y_1 ? Explain. [3marks]
 - c) Suppose the government restricts the amount of a product that a farmer might sell. Will the farmer always continue to produce at a point where $RPT_{y_1y_2} = p_1/p_2$? Explain [3marks]

SECTION B [40 MARKS]

Answer any TWO QUESTIONS in this Section

4. Given the following production function $Y = 2L^{\frac{1}{2}} + 3K^{\frac{1}{2}}$ where L is labour and K is capital, Y is the output and that the price of labor=2, the price of capital=1 and price of output=8. Supposing that the budget is limited to only Ksh. 99, such that the budget line is given by $2L+K=99$.
- a) find the optimal units of K and L and the maximum profit. [10marks]
 - b) Differentiate between economies of scale and economies size. [1mark]
 - c) Explain why costs per unit of output might decrease as output levels increase. [6marks]
 - d) What are the main features of Cobb-Douglas production function? [3marks]
5. Given the following production function $Y=3x+2x^2-0.1x^3$
- a) Calculate the point of diminishing returns [6marks]
 - b) Calculate elasticity of response when $x=10$. [6marks]
 - c) Which stage of production is this? [2marks]
 - d) In determining costs, what level of output should be chosen as the basis for making the enterprise budget? [2marks]
 - e) Given a marginal product $\delta(MPP_{X_1})/\delta x_2 > 0$, explain the technical relationship between X_1 and X_2 . [4marks]
6. Farmers face situations nearly every day in which outcomes are uncertain. The major problem is, these farmers vary markedly in their willingness to take on, and or preference for risk and uncertainty.
- a) Differentiate between Risk and Uncertainty as used in production economics. [2marks]
 - b) What risks does a producer take when making production decisions relating to profit maximization? [6marks]
 - c) Explain the major ways of reducing risk among pastoral communities in Kenya. [6marks]
 - d) Outline any three farmer attitudes towards risk

and
[6marks]

uncertainty.