JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURE AND FOOD SCENCES

SECOND SEMESTER THIRD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT 2018/2019 ACADEMIC YEAR

COURSE CODE: AAE 3321

COURSE TITLE: Crop and Livestock Production Economics

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

DATE: **EXAM SESSION:**

TIME: 2HOURS

Instructions:
1. **Answer ALL questions in Section A (compulsory) and ANY TWO questions in Section B**
2. **Candidates are advised not to write on the question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

Answer ALL questions from this section

1. The goals and objectives of a farmer are closely intertwined with a person's unique and diverse psychological makeup.
    a) Explain some of the goals of a farmer.   **[4marks]**
    b) What is the significance of a marginal cost (MC) of Shs. 8 to a farmer who intends to increase output?   **[2marks]**
    c) What is the significance of the slope of the isoquant to an agricultural production economist.   **[2marks]**
    d) Differentiate between short-run production period and long-run production period.   **[2marks]**

2. The following production function is from a wheat farm in Narok county. The farm manager must decide on the best combination of Nitrogen(X_1) and Phosphorous(X_2) to use in producing wheat. The production function is given as;
    $$Y = 18X_1 - X_1^2 + 14X_2 - X_2^2$$
    a) What level of inputs X_1 and X_2 maximize output?   **[6marks]**
    b) Calculate the level of maximum output.
        [2marks]
    c) What is the significance of point of inflection in the production function?
        [2marks]

3. Partial budget is best adopted in analyzing relatively small change in the whole farm plan.
    a) What are the circumstances calling for a partial budget in an agribusiness firm?   **[3marks]**
    b) Why must Average Product (AP) be positive always?
        [2marks]
    c) Specify the purpose of production function in production economics.**[3marks]**
    d) Differentiate between Economies of size and Economies of scale.   **[2marks]**

Answer any TWO QUESTIONS in this Section.

4. A maize farm in Kitale has the following production function, $Y=f (X_1 | X_2, X_3 \ldots\ldots X_n)$ where the variable input represents fertilizer. Fixed costs are approximated at Shs.75 while a Kilogramme (Kg) of maize sell at Shs.4.

Output (Y)	TVC	FC	TC	AVC	AFC	AC	MC	MR
40	89							
50	110							
60	130							
70	140							
80	155							
90	175							
100	200							
110	230							
120	270							
130	320							
140	380							

Required:

a) Calculate the value of Fixed cost (FC), Total cost (TC), Average variable cost (AVC), Average fixed cost (AFC), Average cost (AC), Marginal cost (MC), and Marginal revenue   (MR).
   [12marks]

b) Determine the level of input use that maximizes profit. **[2marks]**

c) Explain why costs per unit might decrease with increase in output. **[6marks]**

5. Economies of scale is a long run concept and refers to reductions in unit cost as the size of a facility and the usage levels of other inputs increases.

   a) Briefly, explain some of the sources of economies of scale in a farm. **[5marks]**

   b) Returns to scale describe the relationship between inputs and outputs in a long-run production function. Illustrate and briefly explain three types of returns to scale in agricultural production. **[9marks]**

   c) Outline any three farmer attitudes towards risk and uncertainty. **[6marks]**

6. Product-product relationship is an important concept in agricultural production.

   a) Explain the importance of this concept in agricultural industry. **[6marks]**

   b) What is the significance of a negative elasticity of production (E_p) to an agricultural production economist? **[2marks]**

   c) Giving examples, explain the behaviour of marginal rate of technical substitution (MRTS) in the following enterprises:

   i. Supplementary enterprises **[3marks]**

   ii. Competitive enterprises **[3marks]**

   d) Suppose a production function of a farm is given as: $Y = 2.5X_1^{0.5}1.5X_2^{0.2}$.
   Find;

   i. MPP of X_1 **[3marks]**

   ii. MPP of X_2 **[3marks]**