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**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**SECOND YEAR 1ST SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATIONS**

FOR THE DEGREE OF BACHELOR OF SCIENCE AGRICULTURE
EDUCATION AND EXTENSION

COURSE CODE: AEC 225

COURSE TITLE: PRODUCTION ECONOMICS

DATE: 2ND AUGUST 2023

TIME: 8 – 10 AM

INSTRUCTIONS TO CANDIDATES

Answer Question ONE and any other TWO Questions.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over



QUESTION ONE**30 MARKS**

- a) Define the following terms **(10 Marks)**
- (i) Production economics
 - (ii) Price mechanism
 - (iii) Production possibility curve
 - (iv) Scarcity
 - (v) productive efficiency
- b) With the aid of diagrams, explain the following relationships among farm enterprises **(10 Marks)**
- (i) Complimentary products
 - (ii) Joint products
- c) Given that the Total physical product is expressed as $Y = 3X + 2X^2 - 0.01X^3$
- (i) Derive the expression for the Average physical product and the Marginal Physical product **(4 Marks)**
 - (ii) Calculate the value of input at which output is maximized and compute the maximum output **(6 Marks)**

QUESTION TWO**20 MARKS**

Suppose fertilizer is the only resource used in the production of Maize, as fertilizer application is increased, the output of maize increases at an increasing rate, then a decreasing rate and eventually decline. Show this graphically and discuss the relationship between output (Y) of maize and the Marginal Physical product and the Average Physical product.

QUESTION THREE**20 MARKS**

- a) Outline five ways of expressing the production function **(10 Marks)**
- b) With your knowledge on Market systems
- (i) Define a monopoly market? **(2 Marks)**
 - (ii) Monopolies derive their market power from barriers to entry, describe four economic barriers to entry. **(8 Marks)**

QUESTION FOUR**20 MARKS**

- a) The factor-factor relationships deal with resource combinations and resource substitutions. In this regard, briefly describe substitutes and complements **(5 Marks)**
- b) What is the meaning of the abbreviation MRTS; briefly outline how it is used to estimate the least cost combination **(5 Marks)**
- c) With the aid of diagrams distinguish between an Isocline; and expansion path and a ridge lines **(10 Marks)**

QUESTION FIVE

20 MARKS

- a) Briefly outline the risks that characterize farm business **(10 Marks)**
- b) Given the total cost function: $C = 1000 + 100Q - 15Q^2 + Q^3$ **(10 Marks)**
- (i) calculate the total and average costs at the output level of 5 tons
 - (ii) What is the marginal cost of the 12th ton?