BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

DEPARTMENT OF ECONOMICS

BACHELOR OF SCIENCE HONOURS DEGREE IN ECONOMICS

AGRICULTURAL PRODUCTION ECONOMICS (EC 403)

EXAMINATION   **DURATION: 3 HOURS**

INSTRUCTIONS TO CANDIDATES

1. **Answer four (4) questions**
2. **The paper carries six questions**
3. **All questions carry equal marks of 25 each**

JUN 2023

Question 1

(a) Distinguish between risk and uncertainty in agricultural production.

[5 marks]

(b) Suggest the strategies that a farmer might use to deal with risk and uncertainty.

[20 marks]

Question 2

(a) Discuss the technological specific characteristics that differentiate agricultural production from any other form of production.   **[10 marks]**

(b) Examine the special problems that arise as a result of the technological specific characteristics highlighted in part (a) of this question above.   **[15 marks]**

Question 3

Discuss and illustrate the concept of economic efficiency as it is related to factor-product, factor-factor, and product-product relationships.   **[25 marks]**

Question 4

Consider a farmer who can grow two crops Y_1 and Y_2 which use one fertilizer, X, and face the following Cobb-Douglas production functions:

$$Y_1 = 0.25X_1^{0.2}$$
$$Y_2 = X_2^{0.8}$$

If $P_1 = 2$ and $P_2 = 1$ and 49 units of input are available such that $X_1 + X_2 = 49$ if the farmer uses all the available inputs

    (a) Derive the farmer's production possibility function.   **[10 marks]**

    (b) Find the revenue maximizing combination of Y_1 and Y_2.   **[5 marks]**

    (c) Find the total revenue resultant from the above combination of output.

                                                      [5 marks]

    (d) Find the division of input amongst the products.   **[5 marks]**

Question 5

The following are states of nature and income that might obtain for a farmer who can either grow tobacco or cotton.

Table 1: Income and probability for a tobacco/cotton farmer

		Probability	Income (USD)	
			Tobacco	Cotton
	Bad	0.3	5,000	10,000
State of weather:	Fair	0.2	20,000	30,000
	Good	0.5	100,000	80,000

    (a) Determine the expected incomes for cotton and tobacco.   **[9 marks]**

    (b) If the farmer's utility function is logarithmic in income, such that U=ln(income), calculate the expected utility for each crop.   **[9 marks]**

    (c) Give possible reasons why farmers do not always choose to pursue the strategy with the greatest expected income.   **[7 marks]**

Question 6

(a) Draw the classical production function, APP and MPP, and delineate the three stages of production. **[10 marks]**

(b) Define the elasticity of production. **[3 marks]**

(c) Assuming the classical production function, what can be said about the elasticity of production at the output at which:

(i)	MPP =1	(ii)	APP is at maximum	(iii) MPP is zero
(iv)	MPP=APP	(v)	MPP is positive	(vi) MPP>APP

[12 marks]

END OF PAPER