NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

**FACULTY OF NATURAL RESOURCE AND SPATIAL SCIENCES**
DEPARTMENT OF AGRICULTURE & NATURAL RESOURCES SCIENCES

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| **QUALIFICATION:** BACHELOR OF AGRICULTURE/BACHELOR OF REGIONAL AND RURAL DEVELOPMENT | |
| **QUALIFICATION CODE:** 27BAGR/07BRRD | **LEVEL:** 5 |
| **COURSE CODE:** AEM520S | **COURSE NAME:** AGRICULTURAL ECONOMICS |
| **DATE:** November 2019 | **PAPER:** THEORY |
| **DURATION:** 3 Hours | **MARKS:** 100 |

| **FIRST OPPORTUNITY EXAMINATION QUESTION PAPER** | |
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| **EXAMINER(S)** | M. Lubinda |
| **MODERATOR:** | C. Kalumbu |

| **INSTRUCTIONS** |
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| 1. Answer ALL four (4) questions.<br>2. Read all the questions carefully before answering.<br>3. Number your answers.<br>4. Make sure your student number appears on the answering script. |

**PERMISSIBLE MATERIALS**

1. Examination paper.
2. Examination script.
3. Calculator

**THIS QUESTION PAPER CONSISTS OF 5 PAGES** (Including this front page)

**QUESTION ONE** **[MARKS]**

a. State whether the following statements are TRUE or FALSE: (4)

i. Normative economic analyses involve questions that require value judgment.
ii. The law of demand states that price and demand are negatively related.
iii. A price ceiling would improve the economic welfare of consumers.
iv. A change in price would cause a movement along the demand curve.

b. The study of Agricultural Economics involves the use of models as aids for analyzing and understanding complex relationships in the real world. One such model is the Circular Flow Diagram. With the aid of a diagram, give a concise description of the Circular Flow Diagram. (6)

c. Suppose you are the Horticulture Manager at Namibia Agronomic Board, and you have been tasked to analyze the possible impacts of the Market Share Promotion (MSP) policy on the market for imported onions. The MSP policy is designed like a quota, where government controls the quantity of imported horticultural products such as onions. Suppose you know that the following functions can represent the monthly demand and supply of imported onions.

$$P = 4000 - 0.2Q$$

$$P = 1000 + 0.8Q$$

Where P is the market price of onions (in N$ per ton), and Q is the quantity demanded and supplied of imported onions. Use this information to answer the questions below.

i. Determine the equilibrium price, equilibrium quantity, choke price, and minimum selling for imported onions. (4)

ii. Suppose the government, through the MSP policy, wants to impose a quota of 1000 tons of imported onions. Determine the quota rent and quota revenue that would result from the quota. Show all your calculations. (6)

iii. Estimate the total cost of the quota on the economic welfare of the Namibia society. (*hint: total cost of the quota is the deadweight loss*) (5)

**TOTAL MARKS** **[25]**

| QUESTION TWO | [MARKS] |
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a. The goal of tax policy is to make the tax system efficient and fair. Briefly explain the principles that policymakers can use to make a tax system fair and efficient. (6)

b. State any four impacts of a price floor on the market. (4)

d. Suppose you are the Policy Analyst at the Ministry of Agriculture, and you have been tasked to analyze and quantify the possible impacts of N$500 excise tax on each ton of imported onions. Suppose you know that the monthly demand and supply of imported onions, before the introduction of the tax, can be represented by the following functions.

$$\boldsymbol{P = 4000 - 0.2Q}$$

$$\boldsymbol{P = 1000 + 0.8Q}$$

Where P is the market price of onions (in N$ per ton), and Q is the quantity demanded and supplied of imported onions. Use this information to answer the questions below.

i. Determine the demand price, supply price, and tax quantity in the market of imported onions after the introduction of the tax. Show all your calculations. (6)

ii. Estimate the costs (deadweight loss) and benefits (revenue) of the excise tax. Show all your calculations. Show all your calculations. (4)

iii. Conduct an incidence analysis, and determine whether the burden of the excise tax will fall on consumers or sellers of imported onions. Explain your answer. (5)

| TOTAL MARKS | [25] |
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**QUESTION THREE** **[MARKS]**

a. With the aid of a diagram give a concise description of the three stages of a classical production function. (5)

b. Describe the indifference curves two goods that are perfect substitutes, perfect complements, and imperfect substitutes or complements. (3)

c. The optimum consumption bundle for a rational consumer is one where the marginal rate of substitution (MRS) is equal to the relative price (RP). Give a concise explanation of the marginal rate of substitution and the relative price. (4)

d. Consider a rational consumer, whose consumption bundle is composed of two goods, food and entertainment. One a weekly basis, the consumer has an income of N$1,500 that he spends on food and entertainment. The prevailing prices of food and entertainment are N$200 per unit and N$100 per unit, respectively. Suppose the following function represents the utility that a consumer gets from consuming different units of food and entertainment:

$$U = xy^2$$

Where U represents the total utility that the consumer gets from consuming bundles containing different units of food and entertainment; x is the units of food per week, and y is the units of entertainment per week. Based on this information answer the questions below:

i. Determine the consumer's purchasing power for food and entertainment. (2)

ii. Determine the units of food and entertainment in the consumer's optimal consumption bundle. (4)

iii. Suppose the price of entertament increased to N$200 per unit *ceteris paribus* (i.e., income and the price of food remained constant). Estimate the impact of this price change on the utility of the consumer. (*Hint*: impact is estimated as the difference in the consumer's utility before and after the price change). (6)

**TOTAL MARKS** **[25]**

| QUESTION FOUR | [MARKS] |
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a. State any four characteristics of a monopolistic competitive industry. (4)

b. Using price (P) and average total cost (ATC), state the conditions when a perfectly competitive firm would make profits, losses and zero profits in the short-run. (3)

c. Consider a mutton processing company operating in a monopolistic competitive industry. The following equation represents the company's total cost and demand:

$$TC = 4000 + 400Q + 2Q^2$$

$$P = 1000 - 8Q$$

Where TC is the total cost of processing sheep carcasses per week; P is the price of sheep carcass (in N$ per carcass), and Q is the quantity of sheep carcasses demanded and processed per week (in thousands) and. Use this information to answer the questions below.

i. Derive the mathematical expressions for the company's average total cost, marginal cost, and total revenue functions. (3)

ii. Determine the company's efficient scale, break-even price per carcass, optimum output, and price per carcass. (9)

iii. Estimate the company's total cost, total revenue, and profit, when it produces the optimum output. (6)

| **TOTAL MARKS** | **[25]** |
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**THE END**

22/10/2019