

UGANDA MARTYRS UNIVERSITY

NKOZI

UNIVERSITY EXAMINATIONS

FACULTY OF BUSINESS ADMINISTRATION

DEPARTMENT OF ECONOMICS

Intermediate / Advanced Microeconomic Analysis

ECO 3101

BSC III ECON, BSC III GEN & EDUC III

DATE: Tuesday 12 December 2023

TIME: 09:30AM – 12:30PM

Instructions:

1. Attempt any **FOUR (04)** questions
 2. All questions carry equal points
 3. Do not write anything on the questions paper.
 4. Carefully read through ALL the questions before attempting.
 5. No **names** should be written anywhere on the examination booklet.
 6. Ensure your work is **clear** and **readable**. Untidy work shall be penalized.
 7. Any type of examination Malpractice will lead to automatic disqualification.
 8. Ensure that your **ID number** is indicated on all pages of the examination answer booklet.
-

Question One

Using illustrations where necessary, write brief notes on the following

- a) Engel Curve (05marks)
- b) Slutsky Equation (05marks)
- c) Expansion Path (05marks)
- d) Elasticity of Substitution (05marks)
- e) Learner's Index (05marks)

Question Two

- a) Explain the factors determining price elasticity of demand (06marks)
- b) The Ministry of Education and Sports estimated the demand for university education (number of students) in Uganda as $Q_d = 360 - 4P$ and $Q_s = 12P - 120$ respectively, where P is the tuition fee per semester (in U.S dollars).
 - i) Determine the tuition fee per semester and the number of students when the market for university education in an economy is said to be in equilibrium (06marks)
 - ii) If the government increased tuition fee per semester to $P = \$50$, determine the size and nature of the imbalance in the market for university education. What sort of policy has the government applied in this case? (06marks)
 - iii) Using the information in (i) and (ii) above, compute the changes in consumer's and producer's surpluses. (07marks)

Question Three

A consumer is assumed to derive utility from three energy services consumed, i.e. solar (X), biogas (Y) and electricity (Z). If the objective of this consumer, whose utility function is given by $U(X, Y, Z) = 3 - (1/X) - (1/Y) - (1/Z)$, is to maximize his/her utility:

- (a) Determine the Marshallian demand functions for these energy services that would enable the consumer realize his/her objective. (12marks)
- (b) If initially his/her income (B) is 100 units while $P_x = 1$, $P_y = 4$ and $P_z = 1$ are prices of X , Y and Z respectively, what would be the indirect utility value for this consumer. (07marks)
- (c) If the prices of Y and Z were to rise proportionally to $P_y = 16$ and $P_z = 4$ while P_x remains at $P_x = 1$, what would be the effects on amounts of energy services demanded? (06marks)

Question Four

- a) Distinguish between compensating variation and equivalent variation. Which of the two is more relevant for policy and why? (06marks)
- b) Suppose the consumer is faced with two commodities X and Y and the consumer's utility function is given by $U(X, Y) = \overline{XY}$. If the consumer's budget is given by $E = P_x X + P_y Y$ and the consumer seeks to minimize his expenditure subject to a given level of utility
- i) Derive the Hicksian demand function for commodities X and Y (07marks)
- ii) Obtain the expression for the indirect expenditure function (06marks)
- iii) Use the Hotellings Lemma to obtain the Hicksian demand functions (06marks)

Question Five

The demand and cost functions of two firms under oligopoly are given by; $P = 75 - 2.5(Q_1 + Q_2)$;

$$C_1 = 25Q_1 \quad \text{and} \quad C_2 = 2.5Q_2^2$$

Determine the optimal values of P , Q_1 , Q_2 , π_1 and π_2 under;

- (a) Cournot model (07marks)
- (b) Collusive model (07marks)
- (c) Quasi competitive model (07marks)
- (d) Give expert advice to the two firms on the best model to adopt. (04marks)

Question Six

- (a) Clearly state the first and second theorems of welfare economics (04marks)
- (b) What important messages does each welfare theorem in (a) above carry about the ways we can allocate resources in society (12marks)
- (c) Explain any three (03) social welfare functions as put forward by different scholars. (09marks)

END