



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2018/2019
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
ECONOMICS
EET 200: MICROECONOMIC THEORY II

DATE: TUESDAY, 26TH MARCH, 2019 TIME: 8.00 A.M. - 10.00 A.M.

INSTRUCTIONS:

- (i) Answer question one and any other two question
- (ii) Do not write on the question paper
- (iii) Show your working clearly

QUESTION ONE (30 MARKS)

- a) Using well labeled diagrams, clearly distinguish between Income and Substitution Effects for Perfect substitutes and perfect compliments (6 Marks)
- b) A farmer has been using 2 employees and 1 tractor to produce 1000 bags of maize. If the farmer increases the employees to 4 and the tractors to 2, What would be the nature of returns to scale if production rose to:
 - i) 2000 bags (3 Marks)
 - ii) 1500 bags (3 Marks)
 - iii) 3000 bags (3 Marks)
- c) Given a utility function as $U(X_1, X_2) = X_1^{1/2} X_2^{1/3}$
 - i) What kind of goods does the utility function represent? (2 Marks)
 - ii) Use utility function to derive the Marshallian demand functions for X_1 and X_2 . (6 Marks)

- d) A monopolistic producer sells a product in both domestic and foreign markets. The market demand functions are as follows: $Q_1 = 49\frac{1}{3} - \frac{2}{3}P_1$ (Domestic market) and $Q_2 = 36 - \frac{1}{2}P_2$ (Foreign market). The monopolist has a cost function $C = Q_1^2 + 2Q_1Q_2 + Q_2^2 + 120$. Find the profit-maximizing Price and level of output (7 Marks)

QUESTION TWO (20 MARKS)

- a) Using the following utility function, $U(x_1, x_2) = x_1^{0.5} x_2^{0.5}$, prove that the parameters indicated are the elasticities with respect to the two goods consumed by an individual. (5 Marks)
- b) Juma can consume two goods, X_1 and X_2 , that cost P_1 and P_2 , respectively. His utility function is given by $U(X_1, X_2) = X_1 X_2^3$. Adam's income is M.
- Derive Juma's Marshallian demand functions for the two goods. (8 Marks)
 - Suppose the Juma's income is KES 1,000 and P_1 changes from KES 12 to KES 6. Compute the substitution effect (SE) and income effect (IE) due to this price change. (7 Marks)

QUESTION THREE (20 MARKS)

- a) Show mathematically that a factor is paid a price that is equal to the value of the marginal product when a firm's objective is profit maximization. (6 Marks)
- b) The production function of a product is given by $q = 100KL$. If the price of capital is KES 150 per day and the price of labour is KES 50 per day, what is the cost of producing 1000 units of the product? (8 Marks)
- c) Show that the following utility functions represent the same preferences: (6 Marks)
- $$U_1(X, Y) = X + 2Y$$
- $$U_2(X, Y) = (50X + 100Y)^{0.5}$$

QUESTION FOUR (20 MARKS)

- a) Using microeconomic tools of analysis prove that the slope of indifference curve is the ratio of marginal utilities of the two goods and also equal to the marginal rate of substitution. (8 Marks)
- b) With aid of diagrams discuss any four types of production functions (8 Marks)
- c) Given the following production function $Y = X_1^{0.45} X_2^{0.55}$ Define the term returns to scale and explain the nature of returns to scale the function exhibits. (4 Marks)

QUESTION FIVE (20 MARKS)

- a) Assume a monopoly with a constant MC and a quantity tax is imposed to it. Show the impact of the tax to the monopolists' price. (10 Marks)
- b) Consider two consumers whose utility functions from two goods are given as:

$$U_A(X_A^1 X_A^2) \text{ and } U_B(X_B^1 X_B^2)$$

Where X_A^1 and X_A^2 represents to A's consumption of good 1 and 2 respectively while X_B^1 and X_B^2 represents B's consumption of good 1 and 2 respectively. Prove mathematically that at a pareto efficient allocation the MRS between the two goods must be the same. (10 Marks)