



Strathmore
UNIVERSITY

SCHOOL OF FINANCE AND APPLIED ECONOMICS
BBS FINANCIAL ECONOMICS
END OF SEMESTER EXAMINATION

BSE 2106: MICROECONOMICS II

DATE: Wednesday, 25th July 2018

TIME: 2 Hours

INSTRUCTIONS

- 1) Answer question one and any other two questions
- 2) Question one is compulsory and carries 30 marks
- 3) All other questions carry 20 marks each

QUESTION ONE [30 Marks]

- a) Clearly but briefly explain the following concepts
 - i) Law of diminishing marginal Product (3 Marks)
 - ii) Monotonicity (3 Marks)
 - iii) Returns to scale (3 Marks)
 - iv) Ordinal utility theory (3 Marks)

- b) For the following sets of goods state their relationship and illustrate their preference using relevant diagrams
 - i) Kebab and samosa (the consumer likes both and has a diminishing marginal rate of Kebab for Samosa) (3 Marks)
 - ii) Sugar and Honey (the consumer likes both and will accept an ounce of honey or an ounce of sugar with equal satisfaction). (3 Marks)
 - iii) Ham and Bread (the consumer likes exactly two slices of bread for every Slice of Ham). (3 Marks)
 - iv) Bread served with mushroom soup (The consumer likes bread but neither dislikes or likes mushroom soup) (3 Marks)

- c) Find the profit-maximizing Price and level of output for a price discriminating monopolist who sells products in both domestic and foreign market. 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 $C = Q_1^2 + 2Q_1Q_2 + Q_2^2 + 120$ (6 Marks)

QUESTION TWO

- a) Prove that the slope of indifference curve is the ratio of marginal utilities of the goods (8 Marks)
- b) Given a utility function $U(X, Y) = (X + 2)(Y + 1)$ and a budget constraint $P_X X + P_Y Y = M$, with $P_X > 0$, $P_Y > 0$, and $M > 0$:
- Find the optimal quantities of X, Y in terms of P_X , P_Y , and M. (3 Marks)
 - Show that the utility function is indeed a maxima (3 Marks)
 - Find the λ in terms of P_X , P_Y , and M, and explain its economic meaning. (3 Marks)
 - Find the total utility U^* at the optimal choice. Make sure you express utility in terms of P_X , P_Y , and M. (3 Marks)

QUESTION THREE

- a) With the aid of a well labeled diagrams and equations, demonstrate that a firm operating in the perfectly competitive industry will pay a nominal wage that is consistent with the value of the marginal product of the worker. (10 Marks)
- b) If a consumer has utility function $U = X_1^{0.8} X_2^{0.2}$. Find the consumers optimal choice for good one and two (4 Marks)
- c) Based on Question 3b), suppose that the consumer's income is KES2000 and the price of good X_1 changes from KES40 to KES20. Compute the substitution effect (SE) and income effect (IE) due to this price change and comment on the nature of good X_1 (6 Marks)

QUESTION FOUR

- a) A profit maximizing firm has the production function $y = f(K, L) = K^2 L^{1/2}$, where K denotes capital and L denotes labor. Let r and w denote the prices of capital and labor, respectively. Derive the optimal values of labor and capital explain the relationship between the demand of inputs with respect to input prices (r and w), output price (p) and output (y) (10 Marks)
- b) Show that the following utility functions represent the same preferences. (4 Marks)
- $$U_1(x, y) = xy$$
- $$U_2(x, y) = x^3 y^3$$
- c) Using a well labelled diagram, illustrate the inefficiency of a monopoly (6 Marks)

QUESTION FIVE

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.

Let W^1 and W^2 represent the availability of the two goods 1 and 2.

Show graphically and mathematically that at a Pareto efficient allocation, the marginal rate of substitution between the two goods must be equal. **(20 Marks)**