KENYATTA UNIVERSITY EXAMINATIONS 2010/2011
OPEN, DISTANCE AND E-LEARNING
EXAMINATION FOR THE DEGREE OF BACHELOR OF ECONOMICS

EET 300: MICROECONOMICS THEORY III

DATE: FRIDAY 8TH JULY 2011 TIME: 11.00 A.M. – 1.00 P.M.

INSTRUCTIONS: Answer Question ONE and any other TWO Questions.

Question One

a) Explain the following terms, using all relevant economic tools/methodologies where necessary. (10 marks)

i. Shephards lemma
ii. Weak Essentiality
iii. Strong monotonicity
iv. Input requirement set
v. Hotellings lemma

b) Consider the following shortrun production function: $Q = 100L - L^2$, where Q is the output level and L is labour input. If the price of output in the market is K.sh 50 and labour costs K.sh 1200 per hour, how many hours would the firm use to maximize profits. What is the profit maximizing level of output? (10 marks)

c) Given indirect utility function as $V(P_1, P_2, M) = M P_1^{-a} P_2^{-(1-a)}$

i. Derive the ordinary demand functions (4 marks)
ii. Derive the associated expenditure function. (2 marks)
iii. State and check the properties of the expenditure function .(4 marks)

Question Two

a) Given that a firm faces the following Cost function; $C = X_1 + 4X_2$ and production function; $100 = X_1^{0.5} X_2^{0.5}$.

i. Find the optimal levels of the inputs X_1 and X_2 for cost minimization. (5 marks)

ii. Are the values of X_1 and X_2 above minimize cost? Show your working (5 marks)

b) Given that a consumer faces the following utility function; **U = (X+2)(Y+1)** and a budget constraint **2X + 3Y = 130**, where X and Y are two goods consumed by the consumer.

i. Find the optimal levels of goods X and Y that the consumer consumes (5 marks)

ii. Are the values of X and Y above maximize utility? Show your work (5 marks)

Question Three

a) A maize farmer produces using two inputs labour, (L), and fertilizer, (K), the farmers total cost function is given by $TC = (0.5r + \sqrt{rw} + 0.5w)q$, Where q is output of maize in bags and r and w are the unit prices of fertilizer and labour respectively. Fertilizer is measured in bags. If the farmer's objective is to produce 10,000 bags of maize, and fertilizer costs kshs 1600 per bag and labour cost kshs 100 per hour, how many bags of fertilizer will the farmer require to minimize cost? (10 marks)

b) A firm faces a production function $Y = X^{a}$. derive the following;

i. The firm's unconditional demand function (4 marks)

ii. The firm's output supply function (2 marks)

iii. The firm's profit function (4 marks)

Question Four

Consider a farmer who lives close to town and has two alternatives, i.e. to work on his own farm and to get a job in town. Assume that the technology of the farm is characterized by a production function of the form $Y = L_1^{0.5}$, where Y is the output of maize, and L_1 is the labour hours spent in the farm. He also spends L_2 hours working on the job in town. The farmer a utility function U(c,x) = CX, where C is consumption of market bought goods (other than maize), and X is maize consumed. The price of C is 1 and the price of maize is P, W is the hourly wage of the town job.

i. Derive the optimal levels of L1, X and C, (10 marks)

ii. How will the optimal levels of L1, X and C in (i) above respond to an increase in hourly wage and a fall in price of maize? Show your workings. (10 marks)

Question Five

a) Given CES production function as $Q = A(aL^{-l} + bK^{-l})^{-\frac{1}{l}}$, derive the elasticity of substitution for function. (10 marks)

b) Given Hicksian demand function as $x_1 = \sqrt{\frac{P_2 U}{P_1}}$ and $x_2 = \sqrt{\frac{P_1 U}{P_2}}$,derive the expenditure function, state and check the properties of the expenditure function. (10 marks)