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FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

FIRST SEMESTER EXAMINATION, 2018/2019 SESSION

Course Code: ECO 401 **Time Allowed: 2:30Hours**

Course Title: Advanced Microeconomics

Instruction: Attempt all questions in Section A and One question Each from Section B and C.

Section A: Attempt All Questions

Question One: For each of the following statements, state whether it is ***True, False or Ambiguous.***

Justify your choice:

a. Production function $Q = Ak^{\alpha}l^{\beta}$ exhibits an increasing return to scale when the output elasticities of capital and labour decline irrespective of change in output.

b. The condition $p^2\begin{vmatrix} f_{11} & f_{12} \\ f_{21} & f_{22} \end{vmatrix} \prec 0$ ensures that profit is increasing with increase in inputs.

c. In a segregated market of a monopoly; the lower the price elasticity of demand, the lower the price charged vice versa.

d. For indifference curve to be convex to the origin, it must express q_2 as a strictly concave function of q_1 in the utility function $U = f(q_1 q_2)$.

e. For an inferior good, the substitution effect will be positive and the income effect will also be positive.

f. If the production function is strictly quasi-concave, every point of tangency between an isoquant and an Isocost line is the solution of both a constrained maximization and a constrained minimization problem.

g. The total revenue in a perfectly competitive market is graphically linear and emanate from the origin.

h. A monopolist can maximize profit with respect to variation in both output and prices.

i. Pareto Optimality condition is a state in which improving the condition of a group would lead to no change in the condition of another group.

j. If the consumer's wage rate increases, equal cost curve pivot towards change in capital and labour.

15marks

Question Two: Fill in the Blank Space(s)

a. Given two commodity bundies X and $\hat{X}$, write out the consumption space using the principle of symmetry method.....

b. ..... is the problem of choosing a commodity bundles from the budget set.

c. The preferred subset of the budget set is Non-Set when .....

d. A unique solution to the utility maximization problem and the optimum consumption hold when .....

e. Given the objective function $(U = q_1 q_2)$ and the budget constraint $(p_i q_i \leq Y)$, what is the expression for composite function? .....

f. The determinant of the utility function is strictly positive if and only if the preference relation is .....

g. If $U^0 = f(q_1^0 q_2^0) = f(q_1^{(1)} q_2^{(2)})$ are two points in a given indifference curve, thus, the shape of indifference curve is .....

h. Production function is assumed to be a regular strictly quasi-concave function when output and cost are ..... and ..... respectively.

i. The value of elasticity of substitution in a linear production function is. .....

j. ..... is an isoquant that exhibits no presence of substitutability.

k. When prices of goods and services are held constant, firm can increase its profit by .....

l. The line joining the exchange between two groups involved in consumption or production to attain Pareto Optimality condition is referred to as.....

m. Using isoquants as a guide, the lines joining the boundary within which production can take place optimally are called. .....

n. The production function which permits the use of two inputs in fixed proportion is .....

o. The second order condition for a constrained maximization requires that the relevant bordered Hessian determinant be **15marks**

Section B: Attempt Any One Question

Question Three

With the use of both graphical illustration and mathematical expressions, briefly explain the following terms:

a. Producer's Equilibrium

b. Consumer's Equilibrium

c. Income and Substitution Effects

d. Pareto Efficiency in Production **20marks**

Question Four

a. What is a market? State its elements.

b. What are the conditions that classified market to either pure competition or perfect competition?

c. With mathematical illustration, explain the basic criteria of a market to be classified as a monopoly. Hence, state the sources of a monopoly market. **20marks**

Section C: Attempt Any One Question

Question Five

a. If $P_1 = 80 - 5q_1$, $P_2 = 180 - 20q_2$ and $C = 50 + 20(q_1 + q_2)$; calculate P_1, P_2, q_1, q_2 at maximum profit level. Hence, find total profit and elasticity of demand. Which of the firm charges higher profit? Justify your reason theoretically.

b. Using Revealed Preference Theory, prove that the effect of change in price over demand is negative for normal goods. Thus, state the conclusion that can be drawn from your answer.

c. Explain the contributions of Kelvin Lancaster (1966) to Consumer Behaviour Theory with the aids of a diagram. **20marks**

Question Six

a. Compare and contrast theory of firm and theory of consumer behaviour.

b. Assume that an entrepreneur's short run total cost function is $C = q^3 - 10q^2 + 17q + 66$. Determine the output level at which he maximizes profit if P = ₦5. Compute the output elasticity of cost at this output.

c. If a firm produces $q = x_1^{\alpha} x_2^{\beta}$ with the cost function $C = r_1 x_1 + r_2 x_2$, find the firm's input demand function and derive profit optimizing function.

20marks

Good Luck!

$C = q^3 - 10q^2 + 17q + 66$

$5q - q^3 - 10q^2 + 17q + 66$

$5 - 3q^2 - 2$

$-12q - 3q^2 - 20q^2$

$q^3 - 5q - [q^3 - 10q^2 + 17q + 66]$

$5q - q^3 + 10q^2 + 17q + 66$

$-q^3 - 12q$

$- 10q_1 + 160 - 40$

$q_1 = 6$

$q_2 = 4$