CENTRAL UNIVERSITY

END OF FIRST SEMESTER EXAMINATION: 2017/2018

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF ECONOMICS

ECON 301 (3 CREDITS)

INTERMEDIATE MICROECONOMICS

LEVEL 300

JANUARY, 2018

DURATION: 2 HOURS

STUDENT ID No..

INSTRUCTIONS

ANSWER ANY THREE (3) QUESTIONS

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Instruction: Answer any three questions

Q1.

a. Differentiate between income consumption curve and price consumption curve.

[4marks]

b. Derive the income compensated demand function for an individual whose utility function is $U = xy$ and budget constraint equation is $XP_x + YP_y = M$ **[8marks]**

c. Determine the degree of homogeneity of the demand function and interpret your result. **[6marks]**

d. Outline the characteristics of indifference curve. **[2marks]**

Q2.

a. Express mathematically the condition for consumer optimum given by the ordinal approach.

[4marks]

b. From (a) or otherwise obtain the consumer's optimum consumption basket given $U = xy$, $P_x = GHc\ 2$, $P_y = GHc\ 10$, and money income = GHc 400

[12marks]

c. If a cardinal measure of utility exists obtain the total utility for the consumer at the optimum. **[4marks]**

Q3.

a. Distinguish between a production function and an isoquant. **[6marks]**

b. The Cobb-Doughlas production function $Q = AL^{\alpha}K^{\beta}$ is the most widely used production function in empirical work. If $A, \alpha\ and\ \beta$ are positive parameters determined in each case by the data on L and K.

i. Indicate the economic meaning of the parameters. **[3marks]**

ii. What does the following expressions of α *and* β say about the returns to scale of the production function? **[3marks]**

$\alpha + \beta = 1$; $\alpha + \beta < 1$ and $\alpha + \beta > 1$

iii. Determine the marginal products of the inputs. **[4marks]**

iv. Explain and find an expression for the marginal rate of technical substitution for L and K ($MRTS_{LK}$) **[4marks]**

Q4.

a. A firm faces the general production function of $Q = f(L, K)$ and given cost outlay $C^* = wL + rK$, where w is the usage of labour and r is the rental price for capital. Determine by calculus the optimum condition for output maximization. **[6marks]**

b. Given the production function $Q = 100L^{0.5}K^{0.5}$ subject to the total outlay $C^* = wL + rK$, w=GHC 30 and r=GHC 40, $C^* = GHC$ 1000, obtain

i. The values of L and K that will maximize output. **[10marks]**

ii. The total output **[4marks]**

Q5.

a. Derive with the aid of calculus the first-and-second-order conditions for output that a perfectly competitive firm must produce in order to maximize total profits. **[6marks]**

b. A perfectly competitive firm faces prices equal to GHC 4 and total cost (TC)= $Q^3 + 7Q^2 + 12Q + 5$,

i. Determine the best level of output of the firm by the marginal approach. **[11marks]**

ii. Calculate the profit **[3marks]**