"Investing in Africa's Future"

COLLEGE OF BUSINESS, PEACE, LEADERSHIP & GOVERNANCE

COURSE CODE AND TITLE: MEC 201- Intermediate Microeconomics

END OF FIRST SEMESTER EXAMINATION

NOVEMBER 2019

LECTURER: Mr L. NGENDAKUMANA

DURATION: 3 HOURS

INSTRUCTIONS

Answer **any Five [5]questions.**
Total possible mark is 100

Start **each** question on a new page in your answer booklet.

The marks allocated to **each** question are shown at the end of the section.

Show all your workings.

Credit will be awarded for logical, systematic and neat presentations.

Question One

a. State and explain the four scarce resources that nations use in the production of goods and services and provide their respective rewards. [8]

b. Explain and illustrate these concepts
  (i) Capital intensive [2]
  (ii) Isocost [2]
  (iii) Lagrange multiplier [2]
  (v) Marginal product of labor [2]
  (vi) Isoquant [2]
  (vii) Marginal revenue product of capital [2]

Question Two

Alice has 1000 dollars to spend on two commodities Y and Z. The prices per unit of Y and Z are $ 2 and $4 respectively. The utility he enjoys by consuming X and Y units is given by $u(y,z) = 100\ yz + y + 2z$:
  a. Formulate the budget constraint using the above information. [2]
  b. Find the optimal values of y, z and λ that solve the maximization problem. [8]
  c. Suppose the government charges a 25 % advalorem tax on both commodities. How would this policy affect Alice's consumption bundle in part (a)? [6]
  d. What is the income equivalent reduction in income linked to the above advalorem tax in this problem? [4]

Question Three

Based on a consulting economist's report, the total cost and the demand functions Bhila Electronics are $TC = 200 + 5Q - 0.04Q^2 + 0.001Q^3$
  a. Determine the marginal and average revenue functions [2]

The president of the company determines that knowing only the above equations is Inadequate for decision making. You have been directed to do the following:

  b. Determine the level of fixed cost (if any) and equations for average total cost, average variable cost, and average fixed cost. [4]

  c. Determine the level of output that minimizes the average variable cost using 2 methods. [8]

  d. Use a well labelled diagram of the marginal cost, average variable cost and total variable cost to explain the various intersection points of the three variables. [6]

Question Four

(i) The following table shows the profit streams for three firms (Karori Eses, Mu & Eva Eses and Mhaka Ltd for the period 1 to 5. Profits are in hundred thousand.

(a) Using the concept objective of the firm and a discount rate of 20% per annum, compute the profit of each firm. [9]

Year	Karori Eses	Mu & Eva Eses	Mhaka Ltd
1	97	103	110
2	112	139	124
3	239	214	223
4	196	175	188
5	202	210	238

Source: Fictitious data, for illustration purposes only

(b) Answer part (a) using a discount rate of 25 % per annum. Comment on the answers in (b) using your results in (a). [6]

(c) The demand for an IBM server machine in the U.S is given by

$Q = 350\ 000 - 200P$

The book is initially priced at $750

(1) Compute the point elasticity of demand at P = $750.Interpret your result [3]

(2) Assess the probable impact of the server price increase on the total revenue. Explain your answer. [2]

Question Five

(i) Consider a Cobb-Douglas production function that shows a production of mosquito blankets in Sudan:

$$Q = K^{05} L^{0.5}$$

Where Q is output, K is capital input and L is labour input.

a. Assuming that the capital the stock is fixed at 9 units (i.e. K=9), if the price of output (P) is $ 6 per unit, and the wage rate (w) is $ 3 per unit, determine the optimal or profit maximizing rate of labour to be hired. What labour rate is optimal if the wage rate increases to $ 2 per unit? [3]

b. For this production system above, are returns to scale decreasing, constant or increasing ? Explain [1]

c. Is the labour demand curve downward or upward sloping? (Hint: Use the answers in (b) in your explanations!) [2]

(ii) After defining the concept of short- run production:

    a. Describe the three stages of production and how they relate to the concept of diminishing marginal returns. You should use total product of labor, marginal and average product of labor graphs in your explanations. **[3]**

    b. Derive any five key relationships among the total, marginal and average product functions. [Use diagrammatical tools as illustrations] **[5]**

    c. Explain and illustrate the concept of **"Returns to scale"**, with reference to the Cobb- Douglas production function and use a clear demonstration on how the verify types of returns to scale can be derived. **[4]**

    d. Distinguish between the concepts of capital intensive and labour intensive productions **[2]**

Question Six

Three firms in the same industry all sell their product at $20 per unit. Their total fixed cost and average cost per unit are shown below:

	A	B	C
Total Fixed Cost ($)	200	500	1 000
Average variable cost	15	10	5

a. What is the breakeven output rate for each firm? **[6]**

c. Each firm has a minimum profit target of $10 000 on each new program it develops. Determine the unit and dollars volume sales required to meet this goal. **[6]**

c. If the market price for the product increases by 25 percent due to the significant increase in number of programs being supplied to the market. Determine the new break-even unit and dollar volumes for each firm and comment on these new levels. **[8]**

End of Paper