



**UNIVERSITY EXAMINATIONS
MAIN CAMPUS/ NTC**

SECOND SEMESTER, 2016/2017 ACADEMIC YEAR

**EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
ECONOMICS AND MATHEMATICS**

ECON 210: INTERMEDIATE MICROECONOMICS

STREAM: Y2S1

TIME: 11.00-1.00 P.M

EXAMINATION SESSION: APRIL

DATE: 20/04/ 2017

INSTRUCTIONS:

- (i) Answer Question **ONE** and **ANY** other **TWO** questions
- (ii) Do not write on the question paper
- (iii) Show your working clearly

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

QUESTION ONE**(30 MARKS)**

(a) The table below gives the total and marginal utilities for good X and good Y for a representative consumer.

Q_X	MU_X	MU_X/P_X ($P_X=4$)	Q_Y	MU_Y	MU_Y/P_Y ($P_Y=2$)
1	100		1	80	40
2	80		2	60	30
3	60		3	40	20
4	40		4	20	10
5	20		5	10	5

- (i) Fill in the MU_X/P_X column when $P_X=4$ (i.e., column 3) **(1 mark)**
- (ii) How many units of good X and good Y will this utility maximizing consumer buy if the level of income is Shs 14 **(2 marks)**
- (iii) How much total utility will this consumer enjoy at this level of consumption of X and Y **(2 marks)**
- (iv) Is this consumer maximizing utility? Explain. **(2 marks)**

(b) Show that in cobb-douglas production function elasticity of factor substitution is equal to unity. **(4 marks)**

(c) Explain the difference between Price consumption curve and income consumption curve. **(2 marks)**

(d) The short run production function of XYZ company is represented by the following equation: $Q = 6L^2 - 0.2L^3$. Where L denotes the number of workers.

- i) Determine the size of the workforce which maximizes output **(5 marks)**
- ii) Determine the size of the workforce, which maximizes the average product of labour. Compute MP_L and AP_L at this value of workforce. **(6 marks)**

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

(e). A firm operating under perfect competitive market has a Profit function given by $\pi = -Q^3 - 6Q^2 + 1440Q - 545$ where Q is the level of output and π is the total profit.

- i. Calculate the profit maximizing output level. **(3marks)**
- ii. Calculate the profits of the firm. **(3 marks)**

QUESTION TWO

(20 MARKS)

(a) Suppose that Intel has a monopoly in the market for computer chips. In order to produce X computer chips, it costs Intel $C(X) = 2X^2$.

- i) Find the marginal cost of producing a computer chip for intel **(3 marks)**
- ii) The demand for computer chips is $X_D = 12 - 0.25P$. Find the level of output that maximizes Intel's profits. What price is Intel charging? **(3marks)**

(b) A firm has the following production function:

$$Q = 100K^{\beta_0}L^{\beta_1} \text{ Where } \beta_0 = \beta_1 = 0.5, \text{ and the cost function is } C = 1000$$

Wage rate (w) = 60, Interest rate (r) = 80

- (i) Determine the number of capital and labour that the firm can hire in order to maximize output. **(3 marks)**
- (ii) What is the maximum output the firm can produce at equilibrium? **(3marks)**

(b) There are two commodities x_1 and x_2 on which a consumer spends his entire income in a day. He has utility function $U = X_1^{0.5} X_2^{0.5}$. Find out the optimal quantities of x_1 and x_2 if prices of x_1 and x_2 are shs. 5 and shs. 2 respectively and his daily income equals shs. 500 **(5 marks)**

(c) A monopolist has the following total cost function

$$TC = 10 + 5Q$$

If the price elasticity of demand for his product is -2, find out what price he will fix for his product **(3 marks)**

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

QUESTION THREE**(20 MARKS)**

(a). A discriminating monopolist has a total demand function $Q = 50 - 0.5P$. Suppose the demand functions of the segmented markets are:

$$Q_1 = 32 - 0.4P_1 \text{ (Market A)}$$

$$Q_2 = 18 - 0.1P_2 \text{ (Market B)}$$

If the cost function is $TC = 50 + 40Q$, calculate the:

(i) Price which the discriminating monopolist will charge in each market. **(6 marks)**

(ii) Profits of the discriminating monopolist. **(3 marks)**

(b). With the help of illustrations distinguish between increasing returns to scale, constant returns to scale and decreasing returns to scale **(6 marks)**

(c) With the help of indifference curve analysis, explain the substitution effects and income effects for a normal good in case of a price increase. **(5 marks)**

QUESTION FOUR**(20 MARKS)**

(a) The total cost function facing a firm is given by $TC = Q^3 - 21Q^2 + 500Q$.

Calculate:

i. The average cost (AC) **(1 mark)**

ii. The marginal cost **(1 marks)**

iii. The output that minimizes average cost. **(4 marks)**

iv. The minimum average cost **(2 marks)**

v. The minimum marginal cost **(4 marks)**

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

(b) A firm operating in perfectly competitive market has a demand curve $Q = 50 - \frac{1}{2}P$ and the cost function $C = 50 + 40Q$. Calculate the profit maximizing output and the profits of the firm.

(4 marks)

(c) Consider the following utility function: $U(X, Y) = XY$.

Required:

Find the demand curve for good X

(4marks)

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)