

TECHNICAL UNIVERSITY OF MOMBASA

**UNIVERSITY EXAMINATION FOR THE DOCTOR OF PHILOSOPHY IN
ENTREPRENEURSHIP**

BMS 6102: ECONOMIC ANALYSIS

Main paper

INSTRUCTIONS

Answer question one and any other three questions

Time: Three hours

Question one

- i) Suppose that a project manager is trying to estimate demand for his two services to the community by finding out how the services provide utility to his clients. He has established that his clients are facing a Cobb-Douglas utility function taking the form:

$U(X, Y) = X^\alpha Y^\beta$. Letting $\alpha + \beta = 1$; p_x = the price of X; p_y the price of Y; and B the income of the consumer,

- a) Form the Lagrangian expression for the individual's utility maximization problem 4mks
b) Derive the first order conditions for this problem 3mks
c) Solve for the optimal values of X and Y which would yield a maximum utility for the individual
d) 8mks
- ii) a) Distinguish between economic growth and economic development 3mks
b) Discuss the macroeconomic goals of Kenya's economy 12mks

Question two

Given the function $Q = 10 + 12L - L^2$, where Q is the total output and L is the labour input in terms of hours:

- a) Give an algebraic expression for
i) Average product 2mks
ii) Marginal product 2mks
b) How many hours of labour should be employed to maximize total output? 3mks

- c) What is the value of total output, marginal product and average product at this point?
3mks

Question three

As an entrepreneur, you would like to know the elasticity of demand for the goods you are dealing in since this will help you in your price setting. If your economist has given you the demand functions as shown below, calculate the relevant price elasticities of demand for each function.

- a) $Q = 100 - 2P + \frac{100}{P}$, Calculate the P_{ed} when $P = 10$. 3mks
- b) If the demand function is given by $0.1Q - 10 + 0.2P + 0.02P^2 = 0$, what will be the elasticity when $P = 10$? 3mks
- c) If the demand function takes the form $Q = \frac{1}{P}$, show that the point elasticity of demand will always be unitary 4mks

Question four

- a) Suppose the macroeconomic model is

$$C = 130 + 0.5Y_d$$

$$I = 200 - 600i$$

$$G = 112$$

$$T = 20 + 0.2Y$$

$$M_s / P = 300$$

$$M_d / P = 50 + 0.5Y - 600i$$

Determine the equilibrium value of each of the variables in the model 6mks

- b) Discuss the suitability of GDP as a measure of economic performance within a country
4mks

Question five

Discuss the contribution of Life Cycle and Permanent Income Hypotheses to the understanding of consumer behavior 10mks

Question six

Suppose preferences are represented by the Cobb-Douglas utility function,

$u(x_1, x_2) = Ax_1^\alpha x_2^{1-\alpha}$, $0 < \alpha < 1$ and $A > 0$. Assuming an interior solution, solve for the Marshallian demand functions. 10mks