

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE

ECON 313: ADVANCED MICROECONOMICS

STREAMS: BSC (ECON)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 11/12/2019

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

- Answer question ONE and any other TWO questions
- Do not write anything on the question paper

QUESTION ONE (COMPULSORY)

- (a) Prove that the marginal cost curve of a perfect competitive firm cuts the average cost curve from below at its minimum point [5 marks]
- (b) Explain the properties of a profit function [10 marks]
- (c) Consider a market with Three oligopoly firms. Suppose that the market demand curve is given by $P = 120 - Q$, where $Q = q_1 + q_2 + q_3$. Assume the total cost is given as $TC = 10Q$. Calculate the equilibrium quantities (q_1, q_2, q_3 and Q), price and profits [15 marks]

QUESTION TWO

- (a) Explain the main properties of cost function [5 marks]
- (b) Consider the following C.E.S production function
- $$Q = A[0.6L^{-2} + 0.4K^{-2}]^{-\frac{1}{2}}$$
- Where Q is output, K and L are input capital and labour respectively
- (i) Calculate MP_L and MP_K [4 marks]
- (ii) Compute the elasticity of substitution for the above function [6 marks]

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- (iii) Show that under certain assumptions the above C.E.S production function can collapse to a Cob-Douglas production function. Show clearly your workings

[5 marks]

QUESTION THREE

- (a) Suppose a firm in a perfectly competitive market has cost function given as

$C = 70Q - \frac{1}{3}Q^2$. Determine the firm's supply function [5 marks]

- (b) State, derive and explain the Lerner Index of market power [8 marks]

- (c) By definition, a pareto efficient allocation makes each agent as well off as possible given the utility of the other agent. Let $U_A(X_A^1, X_A^2)$ be the utility of agent A and $U_B(X_B^1, X_B^2) = \bar{U}$ be the utility level for agent B, also assume $W^1 = w_A^1 + w_B^1$ is the total amount of good 1 available and $W^2 = w_A^2 + w_B^2$ is the total availability of good 2. Derive the first condition for social welfare maximization given that the total amount of each good used is equal to the amount available. [7 marks]

QUESTION FOUR

Consider the following direct utility function

$$U = x_1^a x_2^{1-a}$$

Required

- (i) Compute the compensated demand functions [5 marks]
- (ii) Calculate the Marshallian demand functions and the indirect utility function using identify approach [9 marks]
- (iii) Using (i) and (ii) demonstrate the Slutsky's equation [6 marks]
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