UNIVERSITY OF SWAZILAND

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF ECONOMICS

MAIN EXAMINATION PAPER: DECEMBER 2015

TITLE OF PAPER   :   INTERMEDIATE MICROECONOMICS

COURSE CODE   :   ECON 302

TIME ALLOWED   :   THREE (3) HOURS

INSTRUCTIONS   :

1. ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS OF YOUR CHOICE.
2. QUESTION ONE (1) CARRY FORTY (40) MARKS AND THE OTHER QUESTIONS CARRY THIRTY (30) MARKS EACH.
3. NON PROGRAMMABLE CALCULATORS ARE ALLOWED.
4. WHERE NECESSARY, FIGURES ARE TO BE ROUNDED TO TWO (2) DECIMAL FIGURES.

THIS QUESTION PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

Question 1 - (Compulsory)   (Total Marks = 40)

a) State and explain two properties of a **Cost Function**.   [8 Marks]

b) Using the following Cobb-Douglas production function $Q = AK^\alpha L^\beta$, explain the concept of Returns to scale. A, α, β are positive constants. K and L are capital and labour respectively.   [8 Marks]

c) State and explain two (2) properties of an **Expenditure Function**.   [8 Marks]

d) For the following indirect utility function $V(P, M) = \frac{1}{2} \cdot \frac{M}{(P_x P_y)^{1/2}}$, use Roy's identity, derive the Marshallian demand functions for Goods X and Y.   [8 Marks]

e) For the following expenditure function $E(P, U) = 2U(P_x P_y)^{1/2}$, use Shephard's lemma to derive Hicksian or Compensated demand functions for Goods X and Y.

                                                    [8 Marks]

(Note for (c) and (d): P_x, P_y are prices of goods X and Y respectively. M is income, and U is utility)

ANSWER ANY TWO (2) QUESTIONS FROM THE FOLLOWING:

Question 2   (30 Marks)

Suppose that there are two (2) dairy firms in the production of cheese in a country (Parmalat and Clover). These firms source their milk (raw materials) from the same dairy farmers, hence their cheese tastes the same. Parmalat has a constant marginal cost of $E2$ per unit of cheese, while Clover has a constant marginal cost of $E4$ per unit of cheese. Fixed costs are zero (0) for both firms. The inverse demand function for cheese in the country is $P = 6 - 0.01Q$, where Q is the total number of cheese units sold per day.

i)   What will be the Cournot reaction functions for these firms?   [10 Marks]

ii)   Determine the equilibrium quantities for both firms.   [8 Marks]

iii)   Determine the profit for each firm.   [8 Marks]

iv)   What will be the equilibrium price.   [4 Marks]

Question 3   (30 Marks)

a) In general equilibrium, define and illustrate in a graph a Pareto Efficient Allocation.

[10 Marks]

b) List 3 characteristics of a Pareto Efficient Allocation.   [6 Marks]

c) Using an Edgeworth's Box, illustrate how general equilibrium is achieved in a pure exchange economy comprising of only two (2) consumers Ike and Abe, and two (2) commodities Pizza and Bread. (Illustrate Pareto Efficient points for full marks)

[14 Marks]

Question 4   (30 Marks)

a) Write short explanatory notes on the following concepts

   i)   Dominant strategy

   ii)   Nash equilibrium

   iii)   Strictly dominated strategies

   iv)   Prisoner's dilemma game   [3.5 Marks Each]

b) Suppose that two firms, Swaziland Electricity Company (SEC) and Mvelaphi Pty Ltd are considering venturing into the solar electricity generation business. Their potential profits in million Emalangeni are depicted in the payoff matrix below, if each firm decides to **enter market** or **stay out of market.**

Mvelaphi Pty Ltd

	Enter	Do not Enter
Enter	SEC **10** / Mve **-40**	SEC **250** / Mve **0**
Do Not Enter	SEC **0** / Mve **200**	SEC **0** / Mve **0**

Swaziland Electricity Company (SEC) — vertical axis label

i) What is each of these firm's dominant strategy? [5 Marks]

ii) What is the Nash Equilibrium for this game? [5 Marks]

iii) How would your answer change if the government of Swaziland in a bid to help small businesses, paid Mvelaphi Pty Ltd as a small business, a subsidy of E50 million if it entered the market for solar energy? [6 Marks]