

UNIVERSITY OF SWAZILAND

DEPARTMENT OF ECONOMICS

FINAL EXAMINATION 2009/2010

TITLE OF PAPER : MICROECONOMICS

COURSE CODE : ECON 201(FT)/ECON 201(IDE)

INSTRUCTIONS : 1. ANSWER TWO QUESTIONS IN SECTION A AND TWO QUESTIONS IN SECTION B

2. ALL QUESTIONS CARRY 25 MARKS EACH

3. DECIMAL NUMBERS ARE TO BE ROUNDED TO TWO(2) DECIMAL PLACES

TIME ALLOWED : THREE (3) HOURS

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

SECTION A

ANSWER TWO QUESTIONS FROM THIS SECTION

Question 1

Using diagrams, explain the following economic concepts.

- | | |
|---|------------|
| a) The law of returns to scale | [10 marks] |
| b) Diminishing returns of a factor input | [5 marks] |
| c) Marginal rate of technical substitution (MRTS) | [5 marks] |
| d) Producer equilibrium/Cost minimization level | [5 marks] |

Question 2

The output of Swazi Joy Bakeries can be determined by the following production function:

$$B = 30K^{0.5}L^{0.5},$$

Where

B = Loaves of bread produced per day

K = Number of Ovens used

L = Amount of labour employed

- a) If the price of an oven is indicated by P_K and the price of labour indicated by P_L , and total expenditure on ovens and labour indicated by M, then:
- Set up the Lagrangian function based on the above information
[4 marks]
 - Obtain the first order conditions for maximizing output subject to the expenditure constraints.
[6 marks]
 - Derive the optimum input combinations.
[6 marks]
- b) If $P_K = \text{E}20$, $P_L = \text{E}10$ and $M = \text{E}600$.
- Calculate the firm's optimum input combination.
[5 marks]
 - What is the optimum production level?
[4 marks]

Question 3

- a) Using the following Cobb-Douglas production function, demonstrate the concept of returns to scale.
 $Q = AK^\alpha L^\beta$, where A, α and β are all positive constants. [13 marks]
- b) The long run average cost (LRAC) is referred to as an “*envelope of the short run average cost curves (SRAC)*” Explain. [7 marks]
- c) The points of the short run average cost (SRAC) curve that are tangential to the long run average cost (LRAC) curve are not necessarily the minimum of the SRAC. Explain why this is so. [5 marks]

Question 4

- a) Explain and graphically decompose the effect of a **price increase** into substitution and income effects, for an **inferior good**. [10 marks]
- b) Given the following market demand and supply functions:

$$Q_d = 52 - 2P$$

$$5P - Q_s = 25$$

Where Q_d = quantity demanded

Q_s = quantity supplied

P = price

- i) Determine the equilibrium price and quantity for the market. [6 marks]
- ii) If the government imposes a tax of E2 per unit sold, what will be the post-tax equilibrium price and quantity? [5 marks]
- iii) How will the producer's revenue be affected by the tax? [4 marks]

SECTION B

ANSWER TWO QUESTIONS FROM THIS SECTION

Question 5

- a) Explain why the demand curve for the perfectly competitive firm is horizontal. [5 marks]
- b) With the aid of a diagram compare and contrast the welfare effects between a perfectly competitive industry and pure monopoly. [10 marks]
- c) Explain and graphically illustrate the perfectly competitive firm's shutdown decision in the short run. [10 marks]

Question 6

- a) Explain and diagrammatically illustrate the long run market supply of a perfectly competitive firm in an **increasing cost** market. [13 marks]
- b) "A perfectly competitive firm will make zero profits in the long run". With the aid of graphs explain why this is so. [12 marks]

Question 7

- a) Using suitable graphs, determine how price and output is determined in a Cournot Oligopoly model. (Assume a duopoly market) [15 marks]
- b) Algebraically derive the Cournot equilibrium price and quantity. Assume that all the firms have zero marginal costs. [10 marks]

Question 8

A monopoly firm discriminates its price in three (3) different markets whose demand functions are:

$$\text{Market 1} \quad 0.2P_1 + Q_1 = 90$$

$$\text{Market 2} \quad P_2 + 5Q_2 = 250$$

$$\text{Market 3} \quad 2P_3 + 5Q_3 = 300$$

The Total Cost (TC) function of the firm is given by

$$TC = 1500 + 14Q$$

Where $Q = Q_1 + Q_2 + Q_3$

If the firm's objective is profit maximization, determine the price which the firm should charge and quantity sold if the firm:

- i) Adopts a price discrimination policy [10 marks]
- ii) Adopts a non price discrimination policy. [9 marks]
- iii) Which policy would you recommend that the firm use (show your working) [6 marks]