



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF ECONOMICS AND STATISTICS

BACHELOR OF ECONOMICS AND FINANCE

BACHELOR OF ECONOMICS

EAE 303: MANAGERIAL ECONOMICS

DATE: 13/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question **ONE** and any other **TWO** questions

QUESTION ONE

- a) Rapusha is a firm that manufactures two products x and y. Rapusha exhibits a total revenues function from the sales of these products given by
- $$R = 4x + 2.5y + xy - 0.5x^2 - y^2 + 10, \text{ where } x \text{ and } y \text{ are thousands of units of the products.}$$
- Compute values of x and y that maximizes revenue (5 marks)
 - Suppose now that due to some external factors, Rapusha has to adhere to the restriction given by $x + y = 7$, solve for the optimum values of x and y (5 marks)
- b) i. Despite inefficiencies associated with monopoly, the occurrence of this market structure has persisted. Highlight the causes for existence of monopoly (4 marks)
- Using a well labelled diagram, illustrate the inefficiencies associated with monopoly (8 marks)
- c) A linear demand function for a normal good x is given by
- $$Q_{dx} = \beta_0 + \beta_1 P_x + \beta_2 P_y + \beta_3 M + \beta_4 A$$

Where P_x is its own price, P_y is the price of related good, M is the consumers' income and A is advertisement expenditure. $\beta_1, \dots, \beta_4$ are corresponding coefficients.

- i. Give the economic interpretations of β_0 and β_3 and state the expected sign for β_3 (3 marks)
- ii. Suppose that $\beta_2 = 0$, comment on the relationship between the two goods (1 mark)
- iii. Advertisement agencies are often motivated by the perception that $\beta_4 > 0$. State the assumptions underlying this connotation. (4 marks)

QUESTION TWO

- a) Antonio who is considering investing in a machine that could efficiently produce some electronic doodads has approached you for advice. The choice of two machines X and Y are at his disposal. The cash flow that could be tapped from each machine for the various years are shown in the table below

Year	Machine X	Machine Y
0	(5,000,000)	(5,000,000)
1	2,000,000	2,200,000
2	1,800,000	1,500,000
3	1,700,000	1,800,000
4	1,500,000	1,400,000
5	1,400,000	1,600,000

Given that the opportunity cost of capital, r , is 10% and using the Net present value, advice Antonio on the machine to invest in (10 marks)

- b) Malcomid Co. Ltd is a firm operating in an oligopolistic market. The firm has been experiencing constant prices for its product over a long period of time and as a result, the board members have contracted you to explain to them the economic justification for this price stickiness. Using appropriate diagrams and the concept of elasticity, respond to the concerns of your clients. (10 marks)

QUESTION THREE

- a) Derive mathematically the relationship between marginal revenue and price elasticity of demand and hence show that the optimal price charged by a firm is a function of marginal cost and price elasticity of demand (8 marks)
- b) The use of regression analysis has become common approach used by managerial economists to estimate demand. Discuss the steps followed in regression analysis. (8 marks)

- c) State four objectives of non-profit organizations (4 marks)

QUESTION FOUR

- a) In the Sportpesa premier league played in Kenya, two soccer archrivals GFC and AFC are scheduled for a clash in early January 2018. Each of the teams can employ one strategy among the three namely: attack (A), Defend (D) and Attack-defend (AD). The teams move simultaneously without the knowledge of the strategy to be used by the opponent. The payoff matrix representing the number of goals conceded is shown in the table below.

GFC	AFC			
		Attack (A)	Defend (D)	Attack-defend (AD)
	Attack (A)	-3, -3	0, -4	-3, -5
	Defend (D)	-1, 0	-5, -5	-4, -1
	Attack-defend (AD)	-4, -2	-2, -4	-1, -3

- Define a Nash equilibrium and show if it exists in this scenario (6 marks)
 - Distinguish between a dominated and dominant strategies (3 marks)
 - In this scenario, is there any team with a dominant strategy? Support your answer (3 marks)
 - Suppose that AFC moves first and defends (D), what will be the best strategy for GFC? (1 mark)
- b) Define price discrimination (1 mark)
- c) Distinguish between clinics and market experiments methods for estimating demand in the market (4 marks)
- d) When is a firm regarded to be at break-even? (2 marks)

QUESTION FIVE

- a) State the law of diminishing returns (2 marks)
- b) With the aid of a well labelled diagram, explain the three stages of production and state the stage under which a firm should operate (10 marks)
- c) A monopoly is operating in a market whose demand, Q , is given by

$$Q = 55 - 4P$$

If the cost function for this monopoly is estimated to be

$$TC = 2.5 + 2.75Q^2$$

- Compute the levels of output the firm should produce so as to maximize profit (5 marks)
- What is the firm's level of profit? (3 marks)