



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATION FOR 2018/2019 ACADEMIC YEAR

**BACHELOR OF BUSINESS ADMINISTRATION (BBA) AND BACHELOR OF
EDUCATION (BED) FOR FIRST YEAR SECOND SEMESTER**

NAIROBI / KISUMU CAMPUS

COURSE CODE: ABA 107

COURSE TITLE: MANAGEMENT MATHEMATICS 1

DATE: 13/08/19

EXAM SESSION 9.00 – 11.00AM

TIME: 2 HOURS

INSTRUCTIONS:

- (i) Answer question ONE and any other TWO questions.**
- (ii) DO NOT write on the QUESTION PAPER; all writings should be done on the Examination Booklet.**
- (iii) Observe University Examination Rules and Regulations.**

SECTION A: (COMPULSORY QUESTION)

QUESTION 1

- a. List four applications of linear functions (4 marks)
- b. What is the slope of a line joining the points $(x,y) = (2,5)$ and $(x,y) = (5,18)$? (3 marks)
- c. Consider a product with the following data.
P (unit price) = sh 200
V (unit variable costs) = sh 140
f (fixed cost) = sh 800,000

Required

Determine;

- i. The break even sales units (3 marks)
 - ii. The profit if sales are 10,000 units (3 marks)
 - iii. Sales units required to make profit of sh 200,000 (3 marks)
- d. Explain the purpose of venn diagrams (3 marks)
- e. A survey was conducted on the newspapers readership of three dailies: Nation Daily (D), the Standard (s) and the Kenya Times (K) and the following data was obtained. The number of people that read:
- D and K – 19
 - S and D – 15
 - S and K- 14
 - D, K and S =4 only
 - D = 55
 - S = 45
 - K= 39

Required

- I. Determine the number of people who read;
 - i. Daily nation only (5 marks)
 - ii. Standard or Kenya times but not Daily Nation (3 marks)
 - II. Determine the total no of people interviewed if 5 people read none of the papers (3 marks)
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SECTION B: (ANSWER ANY TWO QUESTIONS)

QUESTION 2

- a. List two applications of derivatives (2 marks)
- b. Your company manufactures large scale units. It has been shown that the marginal (or variable) cost, which is the gradient of the total cost curve, is $(92 - 2x)$ Kshs thousands, where x is the number of units of output per annum. The fixed costs are Kshs. 800,000 per annum. It has also been shown that the marginal revenue which is the gradient of the total revenue is $(112 - 2x)$ Kshs thousands.

Required

- i. Establish by integration the equation of the total cost curve (2 marks)
- ii. Establish by integration the equation of the total revenue curve (2 marks)
- iii. Establish the break even situation for your company (4 marks)
- iv. Determine the number of units of output that would
 - a) Maximize the total revenue (5 marks)
 - b) Maximize the total costs, together with the maximum total revenue and total costs (5 marks)

QUESTION 3

- i. Explain five importance of capital investment appraisal to a company (10 marks)
- ii. Discuss the important steps involved in the capital investment appraisal process (10 marks)

QUESTION 4

- i. Define an annuity and differentiate between annuity due from ordinary annuity (6 marks)
- ii. Suppose you are receiving Kshs. 1,000 every year for the next five years, and you invested each payment at 5%. How much would have at the end of the five-year period. (5 marks)
- iii. List three features of capital investment appraisal decisions (3 marks)
- iv. From the below simultaneous equation, solve for x and y using the matrix method (6 marks)
$$\begin{aligned} 2x - y &= 7 \\ x + 3y &= 14 \end{aligned}$$

QUESTION 5

- i. Explain five factors influencing capital investment decisions (10 marks)
- ii. Revenue and average cost functions for a given firm are given as:
$$\begin{aligned} AR &= 4 - \frac{1}{4}Q \\ AC &= \frac{4}{Q} + 2 - 0.3Q + 0.05Q^2 \end{aligned}$$

Required

Find the level of Q and P that would max the profit and compute the max profit. (10 marks)