



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF COMMERCE

UNIVERSITY ORDINARY EXAMINATION

2021/2022 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR, DIPLOMA IN
BUSINESS MANAGEMENT.**

AMS 050– QUANTITATIVE TECHNIQUES

DURATION: 2 HOURS

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a) List any Five types of functions. (5Marks)
- b) Highlight Five properties of a determinant. (5Marks)
- c) What is the slope of the ***** joining the points $(X,Y) = (2,5)$ and $(X,Y) = (5,18)$. (5Marks)
- d) Find the following:
 - i. ***** $23dx$
 - ii. ***** $r2dx$

Where r is a variable independent of Xs thus it is treated as a constant. (5Marks)

- e) List Five ways of specifying sets. (5Marks)
- f) Highlight any Five ***** of probability. (5Marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) Pioneer manufactures 3 models of stereo receivers, 2 cassettes decks, 4 speakers and 3CD carousels. When the 4 types of compatible are sold together they form a system. How many different systems can the ***** firm offer. (10Marks)
- b) Consider a product with the following data:

$$P = 200\text{Ksh}$$

$$Y = \text{Sh.}140$$

$$F = \text{Sh.} \text{*****}$$

- i. Required: Determine the Break even sales units. (5Marks)
- ii. The sales units required to make profit of sh.200,000. (5Marks)

QUESTION THREE (20 MARKS)

- a) ***** and average cost function for a given firm are given a:

$$AR = \text{*****}$$

$$AC = 4/Q + 2 - 0.3Q + 0.05Q\text{*****}$$

Required: Find the ***** of Q and P that would max the profit and *****

(10Marks)

- b) In a certain country there are two daily newspapers. The citizen and the mirror. A researcher interested in the reading habit of this country found the following: of the readers who read citizen on a given day 50% do so following day while the rest change to the Mirror. Of those who read Mirror on a given day 40% change to the Citizen following day. Yesterday the readership levels were 30% Citizen and 70% Mirror. Assume all conditions hold.

Required:

- i. Determine the readership levels of both dailies. (5Marks)
 - a) Today
 - b) Tomorrow
- ii. If this process persists long enough, what will be the eventual readership? (5Marks)

QUESTION FOUR (20 MARKS)

- a) There are 10 numbers, 0 through to 9 which are being used in code group of four to identify an item of clothing e.g code 1083 is to identify blue blouse, code 1030 is to identify a pair of socks and so on. Repetition of numbers is not permitted i.e same numbers can't be used twice or more in a total sequence e.g 2256 or 2872; How many different code groups can be designed? (10Marks)
- b) Assume that you have just invested Ksh.100,000. The investment is expected to earn interest at a rate of 20% compounded annually. Find the future value of the investment after 3 years. (10Marks)