# MAASAI MARA UNIVERSITY

## REGULAR UNIVERSITY EXAMINATIONS2023/2024 ACADEMIC YEAR
## FIRST YEAR SECOND SEMESTER

## SCHOOL OF WILDLIFE AND TOURISM, AND NATURAL RESOURCES AND SOCIAL SCIENCES

## COURSE CODE: MAT 1200-1
## COURSE TITLE: QUANTITATIVE SKILLS

**DATE:** **TIME:**

**INSTRUCTIONS TO CANDIDATES**

- **Answer question ONE and any other TWO questions**
- **Do not write on the question paper**

*This paper consists of 3 printed pages. Please turn over.*

***QUESTION ONE (20 MARKS)***

a) Differentiate between the following:

i. An empty set and a finite set **(2 marks)**

ii. Rational and irrational numbers **(2 marks)**

b) State 3 methods that can be used in collecting statistical data. **(3 marks)**

c) Use the quadratic formula to solve the following quadratic equation:
$3X^2 + 5X - 2 = 0$ **(3 marks)**

d) Solve each of the following systems of equation by elimination and in each case graph your answer

$3x - 4y = 13$

$3y + 2x = 3$ **(3 marks)**

e) Solve by using Cramer rule

$2x + y + 6z = 3$
$4z - y + x = 1$
$2y + 3x - 2z = 2$ **(5 marks)**

f) Differentiate between primary and secondary data. **(2 marks)**

***QUESTION TWO (15 MARKS)***

Given the data below

| Class interval | Frequency |
|---|---|
| 5 - 9 | 17 |
| 10 - 14 | 18 |
| 15 - 19 | 16 |
| 20 - 24 | 20 |
| 25 - 29 | 12 |
| 30 - 34 | 9 |
| 35 - 39 | 8 |

Determine each of the following

**i)** The arithmetic mean (**3 marks)**
**ii)** The median **(4 marks)**
**iii)** The mode (**4 marks)**
**iv)** The Variance (**4 marks)**

***QUESTION THREE (15 MARKS)***

a) Given matrices A and B as follows

$$A = \begin{pmatrix} 1 & 0 & 3 \\ 2 & 1 & 2 \\ 1 & 3 & 1 \end{pmatrix}$$

$$B = \begin{pmatrix} 2 & 2 & 0 \\ 1 & 3 & 2 \\ 3 & 2 & 0 \end{pmatrix}$$

Find;

i. Matrix C = A – B **(1 mark)**

ii. Determinant of matrix C **(2 marks)**

iii. Inverse of matric C **(4 marks)**

b) The $n^{th}$ term of a G.P is given by $3\times 2^{n-1}$. Determine:

i. The sum of the first 6 terms of the sequence **(3 marks)**

ii. Find the sum of the first 10 terms of the sequence **(3 marks)**

iii. The greatest value of n for which the sum $S_n < 3069$ **(2 marks)**

***QUESTION FOUR (15 MARKS)***

a) Find the possible distinguishes permutations of the following letters

**i.** SOKLOKOBANGOSAE **(2 marks)**

**ii.** NAKUMET **(2 marks)**

**b)** A committee has NINE members, FOUR of whom are male and FIVE are female. Determine the number of ways a sub-committee can be selected if it has to consist of exactly:

**i.** Four females **(2 marks)**

**ii.** Two males and two females (**2 marks)**

**c)** In a survey about colour liking it was determined that everyone surveyed liked at least one of the three colours (Red, Green and Blue). 30% liked red, 40% liked green and 50% liked blue. 10% liked both red and green, 5% liked both green and blue, while 10% liked both red and blue. Representing the information on a Venn diagram determine the proportion;

i. That liked red only **(2 marks)**

ii. That liked blue only **(2 marks)**

iii. That liked green only **(2 marks)**

iv. That liked all the colours **(1 mark)**

**//END**