



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS  
2023/2024 ACADEMIC YEAR  
FIRST YEAR FIRST SEMESTER**

**SCHOOL OF ARTS HUMANITIES, SOCIAL  
SCIENCES AND CREATIVE INDUSTRIES**

**CERTIFICATE IN SOCIAL WORK**

**COURSE CODE: CAS 01**

**COURSE TITLE: QUANTITATIVE SKILLS**

**DATE: 28/5/2024**

**TIME: 0830-1030 HRS**

**INSTRUCTIONS**

1. Answer question ONE and any other TWO questions from section II
2. Question one is compulsory

## SECTION A

### Question one

a). Consider the following data set

2,3,4,2,4,7,2,3,4,9,4

- i. Calculate
  - a. The mean (**3mks**).
  - b. The mode (**1mks**).
  - c. Median (**1mks**).

b) How many elements are in each of the sets below (**6mks**)

ii.  $A = \{1, 2, 3, 10\}$

iii.  $C = \{a, d, k, q\}$

iv.  $M = \{1, 2, 3, 4, 5, 6, 7, 9, 10, 14\}$

c) What is the meaning of the following terms (**8mks**)

- i. Set
- ii. Element
- iii. Finite set
- iv. Infinite set
- v. Singleton set
- vi. Union of a set
- vii. Complement of a set
- viii. Frequency

d) Given the following sets,  $A = \{1, 2, 3, 5, 8, 9\}$ ,  $B = \{6, 7, 10, 11\}$  and  $C = \{4, 6, 7, 9, 10\}$ . Find (**6mks**)

- i.  $A \cap B$
- ii.  $A \cup C$
- iii. The difference between A and B

e) Given that  $U = \{a, b, c, d, e, f, g, h\}$  and  $A = \{a, b, d\}$  find  $A^c$  (**3mks**)

f) Jane deposited sh. 5000 in a bank that pays simple interest at 10% p.a. Calculate the amount in the bank at the end of 5 years. (**4mks**)

## SECTION B

### Question two

a. The data below illustrate the distribution of wages of employees in a certain company. Use it to answer the following questions.

Wages	50-56	57-63	64-70	71-77	78-84	85-91
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Frequency	8	3	12	10	5	2
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a. Calculate

- i. Arithmetic mean **(4mks)**
- ii. Mode **(4mks)**
- iii. Median **(4mks)**
- iv. Variance **(4mks)**
- v. Standard deviation **(2mks)**

### Question three

a) The  $n^{\text{th}}$  term of a sequence is given by  $2n+3$

- i. Write down the first five terms of the sequence **(3mks)**
- ii. Find  $S_{10}$ , the sum of the first 10 terms of the sequence **(4mks)**
- iii. Find the  $10^{\text{th}}$  term of the arithmetic sequence **(3mks)**

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

- i. The first four terms **(2mks)**
- ii. The  $10^{\text{th}}$  term of the sequence **(3mks)**
- iii. Find the sum of the first 6 terms of the sequence **(3mks)**
- iv. The  $6^{\text{th}}$  term of the sequence **(2mks)**

### Question four

a) Jane invests Sh. 10,000 in a building society account that pays a simple interest of 10% p.a. calculate; **(12mks)**

- i. The interest accumulated after 5 years
- ii. The interest accumulated after 10 years
- iii. The total amount after 5 years
- iv. How long it will take to accumulate a total of Sh. 30,000.

b) A company invested Sh. 50,000 in a bank that pays a compound interest of 10% p.a. Calculate; **(8mks)**

- i. The amount after 4 years.
- ii. The interest after 4 years

### Question five

a) Solve simultaneous equations below **(8mks)**

1.  $3x + 4y = 18$   
 $5x + 2y = 16$

$$2. \quad x + y = 7$$

$$3x + y = 15$$

b) Factorise and solve the following equations (**6mks**)

i.  $2x^2 + x - 6 = 0$

ii.  $x^2 - 8x - 9 = 0$

c) Solve by completing the square method (**4mks**)

$$x^2 - 5x - 6 = 0$$

d) Find the value of k that make the equation below a perfect square (2mks)

$$x^2 + kx + 16$$

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