MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR
FIRST YEAR SECOND SEMESTER

SCHOOL OF SCIENCE & INFORMATION SCIENCE
COMMON COURSE

COURSE CODE: MAT 1200
COURSE TITLE: QUANTITATIVE SKILLS

DATE: 17TH APRIL 2019 **TIME: 1100 - 1300HRS**

INSTRUCTIONS TO CANDIDATES

- **Answer question ONE and any other THREE questions**
- **Do not write on the question paper**
- **Use illustration and diagrams where they serve to support the answers.**

This paper consists of 4 printed pages. Please turn over.

QUESTION ONE **(25 MARKS)**

a) Given the case define the function below

$$f(x) = \begin{cases} 5 & \text{if } -2 \le x \le 2 \\ 7 & \text{if } 3 \le x < 5 \\ X-10 & \text{if } 5 \le x \end{cases}$$

Determine

i) F (2) **(2 marks)**

ii) F (4) **(2 marks)**

b) Determine the domain of each of the following

i). $F(x) = \sqrt{x-6}$ **(2 marks)**

ii). $F(z) = \frac{y}{y-16}$ **(2 marks)**

c) 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)**

d) Solve by using Cramer rule

$2x + y + 6z = 3$

$4z - y + x = 1$

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

e) Solve the system of linear equations using substitution method

$4y + x + 3z = 10$

$4x + 2y - 2z = -2$

$3x - y + z = 11$ **(5 marks)**

f) Solve the system of linear equations using Gauss – Jordan approach

$3x + y + 4z = 4$

$x - z - y = 12$

$z + y + x = 18$ **(4 marks)**

QUESTION TWO **(15 MARKS)**

Given the data below

Class interval	Frequency
5 under 10	17
10 under 15	18
15 under 20	16
20 under 25	20
25 under 30	12
30 under 35	9
35 under 40	8

i) Construct a histogram **(2 marks)**
ii) Construct a frequency polygon (**2 marks)**
iii) Construct an ogive **(2 marks)**
iv) Determine the interquartile range **(4 marks)**
v) The 65^{th} percentile **(3 marks)**
vi) The range **(2 marks)**

QUESTION THREE **(15 MARKS)**

a) Given the data below

Class interval	Frequency
10 under 20	15
20 under 30	10
30 under 40	18
40 under 50	15
50 under 60	20
60 under 70	15
70 under 80	5
80 under 90	10

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 FOUR **(15 MARKS)**

a) Show that in a compounding interest amount at the end of n period (An) equal $A_1(1+i)^{n-1}$

(5 marks)

b) Mr. Limo has paid sum of Ksh.100,000 into a fund at an interest rate of 10% Determine the amount he will earn after 8 years if interest is compounded quarterly.

(4 marks)

c) John invested ksh. 800,000 and received an amount of 1200,000/- after five years. Determine the nominal rate of interest if compounding was done annually.

(**3 marks)**

d)Assume you have a choice between inverting at a rate of 8% compounded annually and 7% compounded daily all for a period of 2 years which of the xx would earn you more money at the end of the two years. **(3 marks)**

QUESTION FIVE **(15 MARKS)**

a) Find the possible distinguishes permutations of the following letters

i. SOKLOKOBANGOSAE **(2 ½ marks)**

ii. NAKUMET **(2 ½ marks)**

b) A donor group has 30 different book in each given area of study. He has decided to donate them to four different county libraries as follows; FIVE to Kisumu, SIX to Kericho, FOUR to Nyamira and EIGHT to Narok and SEVEN to Homabay.. Determine the number of ways this can be done

(4 marks)

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

i. Four females **(3 marks)**

ii. Two males and two females (**3 marks)**

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