MASINDE MULIRO UNIVERSITY OF SCIENCE & TECHNOLOGY

SCIENCE & MATHEMATICS EDUCATION ESM 101: QUANTITATIVE SKILLS 1 FINAL CAT 2022/2023

Question 1

Given the matrix; $\begin{pmatrix} 2 & 2 & 4 \\ 4 & 2 & 2 \\ 2 & 4 & 2 \end{pmatrix}$

i) Determine its inverse (8mks)

ii) Hence or otherwise solve the following system of simultaneous equations.

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

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

$2x + 4y + 2z = 6$ (7mks)

Question 2

The data given below represents sugar consumed at Githae Girls School per week.

Week	1	2	3	4	5	6	7	8	9	10
Sugar(Kg)	40	70	90	130	110	120	130	120	150	140

Using the above information calculate:-

a) i) The 3 - weekly moving averages. (3mks)

ii) The 5 - weekly moving averages. (3mks)

b) On the same axis, plot the 3- weekly and the 5- weekly moving Averages (4mks)

c) On a separate axis, plot the Sugar consumption and show the trend line using the method of semi averages. (5mks)

Question 3

A Hospital wished to investigate malaria patients of age between 10 and 30 years. The ages of the following 40 patients were recorded.

17	20	22	20	21	20	19	20	19	23
19	23	20	19	17	21	21	18	22	18
24	20	17	16	19	17	25	20	23	21
18	21	16	20	22	18	17	21	22	17

i) Make a frequency distribution table using class intervals 15 – 17, 18 – 20… (3mks)

ii) Calculate the mean age. (4mks)

iii) Calculate the medium age. (3mks)

iv) Calculate the standard deviation. (5mks)