EXODUS COLLEGE SCHOOL WAKISO
S.5 END OF TERM TWO EXAMINATIONS, 2026

SUBSIDIARY MATHEMATICS

Paper 1

2 hours

INSTRUCTIONS TO CANDIDATES

*This examination paper consists of **three items**.*

*Respond to **all the three** items.*

Begin each item on a fresh page.

*All necessary working **must** be shown clearly.*

Silent, non-programmable scientific calculators and mathematical tables with a list of formulae may be used.

ITEM 1

The Uganda Coffee Development Authority (UCDA) is reviewing export performance to advise farmers on future planting. The Authority has recorded the quarterly revenue in billions of UGX from coffee exports over the last 5 quarters as shown below:

Quarter (t)	1	2	3	4	5
Revenue (Yt)	120	150	160	130	170

The board is concerned about short-term fluctuations and wants to identify the underlying trend to guide next quarter's export targets. The economic analyst suggested smoothing the data before making any projections.

TASK

As the data analyst attached to UCDA, prepare a report to advise the Board:
Calculate the 3-point moving average for the revenue data and use the trend points to predict the likely revenue trajectory for the next quarter.

ITEM 2

The Uganda Bureau of Statistics (UBOS) has been contracted by the Ministry of Finance to study the relationship between inflation and consumer behavior. Quarterly data for the last 6 quarters was collected as follows:

Inflation Rate (%)	5	7	10	12	8	6
Consumer Spending Growth (%)	8	6	3	1	5	7

The Ministry needs to know whether inflation affects spending and to what extent, in order to plan fiscal policy for the coming year.

TASK
As the statistician hired by UBOS, prepare a report to advise the Ministry:

(a) Present the data graphically to show the relationship between inflation rate and consumer spending growth.

(b) Determine the equation of the line of best fit and use it to predict consumer spending growth when inflation is 9%.

(c) Calculate Spearman's rank correlation coefficient to assess the strength and direction of the relationship between the two variables.

ITEM 3

A District Education Officer is reviewing the performance of pupils in a recent mathematics test administered to a sample of 50 pupils drawn from a large class in Kampala District. The marks obtained are summarized below:

Marks	**Number of pupils**
$0- < 10$	8
$10- < 20$	11
$20- < 40$	17
$40- < 50$	7
$50- < 60$	4
$60- < 80$	3

The officer needs this information to decide whether to recommend remedial classes and to report on the overall performance of the district.

TASK
As the education statistician, prepare a report for the District Education Officer:

(a) Calculate estimates of the mean and standard deviation of the marks scored by the pupils.

(b) Draw an appropriate graph and use it to estimate:
(i) The median mark
(ii) The interquartile range of the marks

END