1. The heights of 250 students were recorded in a survey as below.

Height (cm)	170-	175-	180-	185-	190-	195-<200
No of students	19	36	70	64	39	22

   a) Calculate the mean and the modal height.
   b) Plot a cumulative frequency curve to represent the data and use it to estimate;
      i) The median height
      ii) The standard deviation
      iii) 70^{th} percentile

2. The table below shows the order in which ten candidates were ranked in an aptitude test.

Position	1^{st}	2^{nd}	3^{rd}	4^{th}	5^{th}	6^{th}	7^{th}	8^{th}	9^{th}	10^{th}
Test 1	A	F	D	C	H	J	K	B	E	L
Test 2	D	F	C	A	J	K	H	B	L	E

Calculate the rank correlation coefficient between tests 1 and 2. Hence comment on your result.

3. The table below shows the ranks of marks awarded by judge 1(R_x) and Judge 2(R_y) to 7 choir groups A to G.

Choir	A	B	C	D	E	F	G
Rank Judge 1(R_x)	2	4	6	1	5	3	7
Rank Judge 2(R_y)	2	3	5	1	6	4	7

Calculate Spearman's rank correlation coefficient between the marks awarded by the two judges. Comment on your result. (5marks)

4. The table below shows the number of students and the marks scored in a test.

Marks	Number of Students
0 – 4	10
5 – 9	7
10 – 14	5
15 – 19	3
20 – 24	7
25 – 29	11
30 – 34	37
35 – 39	20

a) i) Draw a cumulative frequency curve (Ogive) for the data.
ii) Use the Ogive to estimate the medium mark. (6marks)

b) Calculate the
i) Mean mark
ii) Standard deviation (9marks)

5. The table below shows the prices (in Ug Shs) of some food items in January, June and December together with the corresponding weights.

Item	Price(in Ug Shs)			Weight
	January	June	December	
Matooke (1 bunch)	15,000	13,000	18,000	4
Meat 91kg)	6,500	6,000	7,150	1
Posho (1kg)	2,000	1,800	1,600	3
Beans (1kg)	2,200	2,000	2,860	2

Taking January as the base month, calculate the;

a) Simple aggregate price index for June
Comment on your results. (5marks)

b) Weighted aggregate price index for December.

Comment on your results (10marks)

6. Marks obtained by students in mathematics paper I and II are as illustrated in the table.

Paper I	40	90	60	35	55	82	27
Paper II	37	83	76	50	44	68	40

Calculate the rank correlation coefficient between the papers and comment on the relationship. (5 marks)

7. The table below shows the ages of people who attended a certain function.

Age (years)	Frequency
10 – 19	6
20 – 34	16
35 – 44	27
45 – 64	39
65 – 79	18
80 – 89	8

(a) Draw a cumulative frequency curve and use it to estimate the semi- inter quartile range

(6 marks)

(b) Calculate the

(i) Mean age (3 marks)

(ii) Standard deviation (3 marks)

8. The lengths and masses of 12 pieces of wood are given in the table below.

Length (cm)	158	142	149	157	160	146	152	151	156	141	158	160
Mass (g)	68	57	55	60	70	58	63	58	62	56	57	68

a(i) Plot the data on a scatter diagram and comment on it. (05marks)

(iii) Draw the line of best fit. Hence estimate the length corresponding to a mass of 65g.
(04marks)

b) (i) Calculate the rank correlation coefficient for the data. (05marks)

9. The intelligence quotient (IQ) of 100 pupils were tested and recorded as in the table below.

IQ	10 -	20 -	30 -	40 -	50 -	60 -	70 -	80 -	90 - <100
No. of pupils	1	1	2	6	21	29	24	12	4

a) Calculate the mean and standard deviation of the IQ for the pupils. ***(06marks)***

b) Draw a cumulative frequency curve and use it to estimate the:

i. number of pupils who have IQs within 1 standard deviation of the mean.

ii. standard deviation of the IQ and compare it with the calculate value.***(06marks)***

10 . Given that $\frac{1}{\sqrt{2}} - \frac{\sqrt{2}+1}{1+3\sqrt{2}} = a\sqrt{2} + b$ where a and b are constants, find the values of a and b.

10. Use matrix to solve the simultaneous equations

$$8x - y = 6$$
$$3x + 2y = 26$$

(6marks)

(b.) Mukisa ordered for the following items from a shop; 2 kg of sugar, 3 bars of soap and 1 packet of tea leaves. And Okello ordered for 4 kg of sugar, 1 bar of soap and 2 packets of tea leaves. If the cost of sugar is shs. 2500 per kg, soap shs.2100 a bar and tea leaves shs. 1200 a packet.

(i) Form a matrix of order 2 X 3 for the items ordered

(ii) for a matrix of order 3 X 1 for the costs of the items.

(iii) Use matrix multiplication to find the bills paid by each person.