

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) 70th 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
marks)

(3

8. The numbers ($x = 4.2$, $y = 16.02$) and $Z = 2.5$ are rounded off with corresponding errors of 0.5, 0.45 and 0.02. Calculate this absolute relative error made in $\frac{xy}{z}$ (5 marks)

9. 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)

10. 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)**

11. The table below shows the prices of five items and their corresponding weights for the years 2013 and 2015.

ITEM	Price (Ug Shs)		Weight
	2013	2015	
Food	8400	10080	43
Clothing	5200	6500	40
Housing	15000	18600	42
Transport	7000	9450	50
School fees	4000	4160	35

Taking 2013 as the base year

(a) Calculate

(i) Price relative of each commodity.

(ii) Simple aggregate price index and comment on your result. **(10**

marks)

(b) Find the cost of living index and comment on your result.

12. The numbers 2.358, 5.103 and 1.95 are measured with errors of 3%, 2% and 6.3% respectively. Find an estimate to 3 d.p. of the absolute error in their product. (5 mks)

13. The tabulated values are of marks of ten students in physics and economics.

	1	2	3	4	5	6	7	8	9	10
Physics	A	B	C	E	B	F	D	A	O	A
Economics	C	D	C	A	O	E	D	A	F	B

- a) Calculate the rank correlation coefficient and comment on the performance of physics and economics at 5% level of significance using Spearman's ranks.
- b) The prices of sugar, tea leaves, milk and coffee were as shown in 2009 and 2011 and a family uses the quantities as shown below. (6 mks)

Item	Price in 2009	Price in 2011	Weights
Sugar	Shs. 2000 @ kg	Shs. 3200 @ kg	3 kg
Tea leaves	Shs. 500 @ kg	Shs. 850 @ kg	0.25 kg
Coffee	Shs. 1200 @ kg	Shs. 1650 @ kg	0.75 kg
Milk	Shs. 1000 @ litre	Shs. 1300 @ litre	2 ½ litres

- a) Taking prices in 2009 as the base find the weighted aggregate price index for items in 2011.
- b) Calculate the simple aggregate price index for 2011 taking 2009 as the base year. (6 mks)

14. The table below shows marks of 10 students who were tested in Biology and History.

Biology (x)	40	90	55	32	80	65	55	48	55	30
History (y)	68	40	47	62	55	41	62	76	74	80

(a) Draw a scatter diagram to represent the above data and hence comment on your graph. (06 marks)

(b) Draw the line of best fit and use it to estimate the mark a student who scored 60 in History would get in Biology.

(02 marks)

Calculate the rank correlation coefficient between Biology and History.

Hence comment on the result.

(07

marks