SECTION A

*Answer **TWO** questions from this section in the spaces provided.*

1. (a) Describe **five** reasons for studying social statistics. (10 marks)

   (b) Define the terms:

   (i) mean;
   (ii) male;
   (iii) range.

   (3 marks)

   (c) The following data relates to the ages of teenagers in a certain community.

   15, 14, 17, 18, 16, 17, 20, 16, 15, 13, 16, 19, 11, 16, 18, 15.

   Using the above data:

   (i) draw a frequency distribution table; (2 marks)

   (ii) determine the mean, mode and range of the data. (5 marks)

2. (a) (i) Explain the meaning of regression. (2 marks)

   (ii) Describe **three** main uses of regression analysis. (6 marks)

   (b) Calculate the regression equation of Y on X of the following data:

X	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

   (12 marks)

3. (a) Explain the following terms as applied in probability:

   (i) random experiment;
   (ii) mutually exclusive events;
   (iii) independent events;
   (iv) dependent events;
   (v) complementary events.

   (10 marks)

   (b) A community sacco had 100 matatus which were subjected to the Ministry of Transport test. The results were: 34 had defective brakes; 30 had defective steering; 26 had defective tyres; 14 had both brakes and steering defects; 10 had tyres and steering defects; 13 had brakes and tyres defects and 6 had brakes, tyres and steering defects:

   (i) Draw a venn diagram. (7 marks)

Find:

    (I)   the number of matatus that had just one defect;   (1 mark)

    (II)   the number of matatus with at least one defect;   (1 mark)

    (III)   those that passed the test with no defects.   (1 mark)

4. (a) (i) Distinguish between primary data and secondary data.

    (4 marks)

    (ii) Describe **three** methods of collecting primary data.

    (6 marks)

(b) The data below shows the wages of a random sample of 100 women workers.

Wage (Ksh "000")	20	18	16	14	12	10	6	4
Frequency	2	4	9	18	27	25	14	1

Calculate the standard deviation of the data.

    (10 marks)

SECTION B

*Answer **TWO** questions in this section in the spaces provided.*

(a) (i) Distinguish between sampling and non-sampling errors.   (4 marks)

    (ii) Briefly explain **three** advantages of sampling method as a means of data collection.   (6 marks)

(b) The table below shows sales of a Kurio shop for a period of one year.

Month	Sales (Sh "000")
January	1200
February	1280
March	1310
April	1270
May	1190
June	1290
July	1410
August	1360
September	1430
October	1280
November	1410
December	1390

Calculate a 3 monthly moving average forecast for the above data.

    (10 marks)

6. (a) Explain the **four** properties of a good estimator.

(8 marks)

(b) A random sample of 1000 households in a given community showed 13% to be living below the poverty line. Using 95% confidence interval, calculate the percentage of the population living below the poverty line.

(12 marks)

7. (a) Explain the following terms as applied in network analysis:

(i) activity;
(ii) event;
(iii) dummy activity;
(iv) network.

(8 marks)

(b) A community project of building a dam has the following activities and associated duration in months.

Activity	Immediate predecessors	Duration (months)
A	-	5
B	-	3
C	A	2
D	A	5
E	A	3
F	C	2
G	D	4
H	B, E	6
I	H	2
J	F, G, I	6

(i) Draw a network for the scheme of activities set out above.

(8 marks)

(ii) Determine the critical path and the associated activities.

(2 marks)

(iii) Determine the shortest duration of the project.

(2 marks)