CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

IGEMBE CAMPUS

EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF EDUCATION ARTS

EPSC 123: STATISTICAL METHODS

STREAMS: BED (ARTS)   **TIME: 2 HOURS**

DAY/DATE: FRIDAY 09/08/2019   **11.30 AM – 1.30 PM**

INSTRUCTIONS:

- **Answer Question One and any other Three Questions**
- **Do not write on the question paper**

QUESTION TWO (15 MARKS)

(a)   Explain the meaning of the following terms used in statistics

     (i)   Inferential statistics   [2 marks]
     (ii)   Sample   [2 marks]
     (iii)   Population   [2 marks]
     (iv)   Parameter   [2 marks]
     (v)   Discrete data   [2 marks]

(b)   The following data was obtained from students who sat in a psychology test.

20	47	22	7	32	30	18	15	38	32	
26	11	25	24	18	20	26	27	14	32	38
21	42	40	20	21	19	37	20			

     (i)   Prepare a grouped frequency distribution starting with 5 – 19 as your lowest class interval include mid-points and cumulative frequency columns.   [5 marks]

     (ii)   Construct a histogram and a frequency polygon for the above data. [4 marks]

      (iii)   Calculate the mean for the data.   [2 marks]

(c)   Suppose in a class of 45 students, the mean score in a biology test was 56% and a standard deviation of 7. Compute the z-score for two students raw scored of 40% and 71%.   [4 marks]

QUESTION TWO (15 MARKS)

Use the data in the table below to answer question 2

Class	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44	45 - 49
Frequency	1	6	2	3	10	8

(a)   Compute the mode of the distribution.   [1 mark]
(b)   Calculate the mean   [3 marks]
(c)   Compute the median   [4 marks]
(d)   Calculate the variance   [4 marks]
(e)   Determine the standard deviation   [2 marks]
(f)   Compute the range   [1 mark]

QUESTION THREE (15 MARKS)

Use the data in the table below to answer question three

Scores	12 – 14	15 – 17	18 – 20	21 – 23	24 – 26	27 – 29	30 – 32	33 – 35
Frequency	1	2	5	8	8	4	4	2

(i)   Compute variance   [5 marks]
(ii)   Calculate standard deviation   [2 marks]
(iii)   Calculate the first and third quartiles.   [6 marks]
(iv)   Determine the interquartile range.   [2 marks]

QUESTION FOUR (15 MARKS)

The following data was derived from police department in an effort to determine the relationship between the number of police and number of crimes reported in major urban centres. Use the data to answer question four.

No. of police (X)	15	17	25	27	17	12	11	22
Crimes (Y)	17	13	5	7	7	21	19	6

(i)   Define correlation analysis   [2 marks]

(ii)   Draw a scatter diagram   [3 marks]

(iii)   Compute the Pearson Product Moment Correlation between x and y   [7 marks]

(iv)   Determine the coefficient of determination.   [3 marks]

QUESTION FIVE (15 MARKS)

(a)   The following data was obtained for three students on these tests. Along with these tests scores, the mean and standard deviation (s) for the scores given.

Biology: , ,

Chemistry: , ,

Physics: , ,

   (i)   By converting in biology and in physics into Z-scores, find out whether student 3 had done better in physics or biology.   [4 marks]

   (ii)   What is the mean Z-score for student on all the three tests.   [4 marks]

   (iii)   State two types of hypothesis   [2 marks]

   (iv)   Distinguish between Type 1 and Type II errors in hypothesis testing.
                                                                            [5 marks]