CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

THARAKA CAMPUS

EXAMINATION FOR THE AWARD OF DEGREE OF

EAPE 902: ADVANCED APPLICATIONS OF EDUCATIONAL STATISTICS

STREAMS: PhD   TIME: 3 HOURS

DAY/DATE: MONDAY 12/08/2019   2.30 P.M. – 5.30 P.M.

INSTRUCTIONS:
- **Answer question ONE and any other TWO questions**
- **Do not write on the question paper**

Q1.   A teacher wishes to establish the correlation between performance in mathematics (x) and
       that in statistics (y). He administers a test in mathematics and another in statistics to the
       same group of 10 students and obtain the following results.

Mathematics	18	16	16	14	13	12	10	7	5	3
Statistics	18	16	14	12	12	13	8	6	3	2

(a)   Calculate Spearman Rank correlation coefficient, interpreting you results.
                                                                      (10 marks)

(b)   A student carried a simple Regression Analysis and obtained the following
       results.

Model summary

Model	R	R square	Adjusted R square	Standard error of estimate
1	0.515	0.265	0.241	2.6770

Independent variable: performance in mathematics

(i)   Interpret above results   (3 marks)

(c)   Coefficient table

Model 1	Unstandardized coefficients Beta	Std error	Standard Coefficient beta	t	Sig.
Constant	4.336	1.745			
Performance in mathematics	0.560		0.515	3.342	0.002

Dependent variable: Performance in statistics.

(i)   Write the regression model equations
(ii)   Calculate the standard error
(iii)   Test the null hypothesis at 0.05 level in a two tailed test about the relationship
        between mathematics and statistics performance.   (9 marks)

(d)   A researcher needs to be familiar with measurement scales before undertaking
        correlation Analysis. Discuss the scales used in correlation analysis.   (8 marks)

Q2.   (a)   Ministry of education has introduced a new mathematical programme. In the old
               programme, the students obtained an average of . To test the new
programme a   sample of 33 students took a test with a mean performance of . The
variance for   the the results of the 33 students was 12.6. At level of significance in a two
               tailed test, do the results show that the new programme produces better
results?

       (b)   Describe the procedure used in testing hypothesis.   (15 marks)

Q3.   (a)   State the properties of correlation coefficient (r)
       (b)   Discuss the applications of correlation coefficient (r)
       (c)   Describe the factors that influence correlation coefficient (r)   (15 marks)

Q4.   (a)   The number of primary school pupils in Tharaka Nthi County is estimated to be
               over 150,000 in number what sample will you take at:
               (i)   99% confidence limit
               (ii)   95% confidence limit
               (iii)   90% confidence limit with a maximum error of 0.05.   (10 marks)

       (b)   Calculate the (i) mean (ii) mode of the following scores   (5 marks

No of accidents	2-4	5-7	8-10	11-13	14-16	17-19	20-22	23-25	26-28	29-31
No of days	3	5	6	7	9	10	4	3	3	2