CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF MASTERS IN SCIENCE COMMUNITY DEVELOPMENT

AGED 710: STATISTICAL METHOD IN EDUCATION

STREAMS: AGED **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 14/8/2013 **2.30 PM- 4.30 PM**

INSTRUCTIONS:

Answer Question ONE and any other THREE Questions

1. (a) Differentiate between each of the following pairs of terms

   (i) Independent and dependent variables.
   (ii) Population and sample
   (iii) Parameter and statistic
   (iv) Descriptive and inferential statistics. [8 marks]

   (b) Name the type of measurement scale that each of the following represents: [5 marks]

   (i) Rating of teaching effectiveness
   (ii) Score on a math test
   (iii) Gender
   (iv) Order of finish of contestants in a decathlon
   (v) Kelvin scale.

   (c) The following were the scores obtained by a form II class in a mathematics test.

49	63	59	58	44	49	51	62	37	30	49	45
52	50	42	54	32	57	41	42	56	44	46	63
44	40	50	46	53	48	37	46	53	68	66	58
36	40	56	37	66	43	40	43	51	59	42	52
46	57										

Make a grouped frequency distribution table form the data starting with 30 – 34, then calculate

(i) Mean
(ii) Median
(iii) Modal class
(iv) Standard deviation [10 marks]

(d) We know that a readily test has a mean $(\bar{x})$ of 10 and standard deviation of 2. Using the normal distribution

(i) What is the percentile rank corresponding to a score of 11.2? [2 marks]

(ii) If 1,000 randomly selected studies are tested, how many would be expected to score 5 or lower? [3 marks]

(iii) What is probability of a score of 13 or higher? [2 marks]

2. The following scores were obtained when a group of 11 students were tested on two tests, Test A and Test B:

Test A	Test B
2	2
2	3
4	4
5	4
3	5
6	5
4	6
5	6
6	7
8	8
7	9

(a) Compute the Pearson product-moment correlation coefficient, r_{xy} between Test A and Test B. [4 marks]

(b) Compute the spearman correlation coefficient, rho , for the above data. [4 marks]

(c) Interpret the computed values in (a) and (b) above. [2 marks]

3. Three groups of people were compared for snake phobia. Each group was made up of six people. The following null hypothesis was tested.

H_0: There is no significant difference in snake phobia between the different groups of people.
ANOVA was run to test the difference in means and the following table was generated.

ANOVA summary table

Source	55	df	ms	F
Between groups	148			
Within groups	72			
Total				

(a) Fill in the table. [2 Marks]

(b) Test the hypothesis at $\propto = 0.05$ significant level. [6 marks]

(c) Interpret the results in (b) above. [2 marks]

4. In a voter survey, people of different religious affiliations were asked whether they had voted for Jubilee or Amani coalition in the last presidential elections. The results were as shown in the table.

	Baptist	Catholic	Methodist	Episcopal
Jubilee	27	24	10	2
Amani	9	15	35	14

Determine whether religious affiliation had anything to do with the way people voted $(take \propto = 0.05)$ [10 marks]

5. (a) Describe in detail the steps followed in hypothesis testing. [6 Marks]

(b) Five first-year students had a mean of 2.9 in a statistics test. An earlier research had indicated that the overall university mean is 2.2. Test the hypothesis that the first –year's group is not different from the university mean against the alternative hypothesis that the first year group performed better if the sample standard deviation is 0.55. (take $\propto = 0.05$) [4 marks]