CHUKA **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATIONS FOR THE AWARD OF DEGREE
OF BACHELOR OF EDUCATION SCIENCE AND BACHELOR OF SCIENCE

BOTA 302: BIOSTATISTICS

STREAMS: BED (SCI) BSC   **TIME: 2 HOURS**

DAY/DATE: TUESDAY 9/12/2014   **2.30 P.M – 4.30 P.M.**

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND TWO QUESTIONS IN SECTION B

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1.   Highlight the importance of the following in research.   [5 marks]

   (a)   Replication

   (b)   Placebo

   (c)   Hypothesis

   (d)   Visual displays

   (e)   Sampling

2.   (a)   What are measures of central tendency.   [2 marks]

   (b)   Describe four measures of central tendency and for each state when it is
           considered to be the most appropriate.   [6 marks]

3.   Weights were taken on a sample of 22 babies and a mean of 1.4kg and standard deviation
      of 0.8 kg were obtained. Test whether these babies were from a population with a mean
      weight of 2.1 kgs.   [5 marks]

4.   (a)   Give four properties of a normal distribution.   [4 marks]

(b) State circumstances under which the following statistical methods are applied.

[3 marks]

    (i)   Tukey's test
    (ii)   Correlation analysis

    (iii)   Data transformation

5. A random sample of 200 measurements from an infinite population gave a mean value of 50 and a standard deviation of 9. Determine the 95% confidence interval for the mean value of the population. [5 marks]

SECTION B: ESSAY (40 MARKS)

6. The following data show the number of arrest made last year for drug abuse in three types of settlement that is rural, sub-rural and urban areas of four districts of Nakuru county.

Rural	Sub – rural	Urban
15	19	40
14	27	36
21	20	22
17	33	27

Use one – way – anova to test whether the number of arrest are the same in the three types of settlements at $P = 0.05$. [20 marks]

7. (a) A theory predicts the proportion of beans, in four groups A, B, C and D to be 9: 3: 3: 1. In an experiment, 1600 beans were harvested, the total number of beans per group was 882, 313, 287 and 118 respectively. Test whether the experimental results support the theory. [16 marks]

   (b) Explain the significance of the statistical method used in 7 (a) above. [4 marks]

8. (a) Discuss the importance of research in modern times. [12 marks]

   (b) Explain how statistical conclusion is arrive at. [8 marks]