KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ANIMAL SCIENCE

SECOND SEMESTER 2024/2025

[JANUARY – APRIL, 2025]

AGRO 171: STATISTICS FOR AGRICULTURE

STREAM: Y1 S2 **TIME: 2 HOURS**

DAY: TUESDAY, 12:00 - 2:00 P.M. **DATE: 15/04/2025**

INSTRUCTIONS:

1. Do not write anything on this question paper.

2. Answer question ONE (Compulsory) and any other TWO questions.

QUESTION ONE [30 MARKS]

a. Explain the following terms
   i. Population [2 marks]
   ii. Sample [2 marks]
   iii. Stem and leaf plot [2 marks]
   iv. Variable [2 marks]

b. What is the role of statistics in agriculture [4 marks]

c. Name one source of data [1 mark]

d. Elaborate on the following terms
   i. Frequency distribution table
   ii. Given the following data. Prepare a frequency distribution table using 5 classes
   20, 31, 23, 53, 21, 39, 26, 35, 50, 34, 44, 41, 20, 48, 67 [5 marks]
   iii. What is the mean and mode of the above dataset [6 marks]

QUESTION TWO [20 MARKS]

a. Give two properties of the mean which make it the most suitable measure of the central tendency [2 marks]

b. The following data were collected as the height of a certain plant. Compute the range, median height, mode height and standard deviation for the height.

23, 27, 28, 28, 28, 30, 30, 33, 35 and 38 [12 marks]

c. Which statistics is/are not affected much by extreme values [2 marks]
d. What is the most suitable measure of dispersion [2 marks]
e. In normal distribution what is the relationship among the mean, mode and median [2 marks]

QUESTION THREE [20 MARKS]

a. Define the following terms
   i. Hypothesis testing [2 marks]
   ii. Significance level [2 marks]
   iii. Type II error [2 marks]
b. Explain the meaning of the following terms as used in statistics
   i. Skewness [2 marks]
   ii. Kurtosis [2 marks]
c. Give a brief description of a box and whisker diagram [4 marks]
d. Given the data below. Draw a box plot.
   Data: 3, 5, 4, 9, 1, 6, 8, 10, 5, 8, 9, 13, 10,7,7,2 [6 marks]

QUESTION FOUR [20 MARKS]

a. Define the following terms
   i. Hypothesis testing [2 marks]
   ii. Type I error [2 marks]
b. List steps involved in hypothesis testing [4 marks]
c. Differentiate between discrete and continuous data [4 marks}
d. If the following data are given for 20 observations, $\sum_{i=1}^{18} X_i$=306, $\sum_{i=1}^{18} X_i^2$=54900, X_{19}=16 and X_{20}=10. calculate the standard deviation for the 20 observations [8 marks]

QUESTION FIVE [20 MARKS]

The data in the following table come from a controllable experiment on the effects of different amounts fertilizers on the yields of potatoes

Amount (X)	2.7	2.9	4.5	4.0	6.3	6.2	8.0	7.4	9.7	10.1
Yield (Y)	10	10	15	15	20	25	25	25	30	30

i. Define correlation analysis and linear regression [4 marks]
ii. Draw a scatter plot for the above data and fit a regression line to the above data [8 marks]
iii. Calculate correlation coefficient [8 Marks]