

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

FOURTH YEAR EXAMINATIONS FOR BACHELOR OF SCIENCE IN AGRICULTURAL EXTENSION AND EDUCATION

**AGED 414: STATISTICS AND RESEARCH METHODS IN
AGRICULTURE EDUCATION**

STREAM: R

TIME: 2 HRS

DAY: MONDAY (2.30-4.30PM)

DATE: 4/12/23

THIS QUESTION PAPER CONSISTS OF FIVE (5 PAGES)

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INSTRUCTIONS: Answer question **ONE** and any other **TWO** questions.

QUESTION ONE (30 MARKS)

- a) Using suitable examples, explain the meaning of the followings scales of measurement;
- i. Nominal
 - ii. Ordinal
 - iii. Interval
 - iv. Ratio (8 marks)
- b) You are given that in a Biology test, the class-interval 43-45 had a total of ten students. Find out the following.
- i. Lower and upper limits (2 marks)
 - ii. Lower and upper boundaries (2 marks)
 - iii. Mid class-interval mark (2 marks)
- c) The following table shows the frequency distribution of scores in an agriculture test:

Class - Interval	Frequency
50 – 54	2
55 – 59	4
60 – 64	7
65 – 69	8
70 – 74	10
75 – 79	8
80 – 84	6
85 – 89	5
90 – 94	2

- i. Draw a frequency polygon for the above data. (3 marks)
- ii. Draw a histogram for the above data. (3 marks)
- iii. Prepare a “less than” cumulative frequency curve and use it to estimate the median score. (4 marks)



- d) Differentiate between the following terms as used in research:
- i. Independent and dependent variables
 - ii. Sample and sampling
 - iii. Raw score and Z-score
- (6 marks)

QUESTION TWO (20MARKS)

- a) Differentiate between the following terms:
- i. Discrete and continuous variable (2 marks)
 - ii. Stratified sampling and systematic sampling (2 marks)
 - iii. Purposive and convenience sampling (2 marks)
- b) The following are raw scores obtained by 30 students in a Biology test marked out of 50.

Class – Interval	No. of Students
1-10	2
11-10	7
21-30	11
31-40	6
41-50	4

- i. Calculate the range (2 marks)
- ii. Find the modal mark (2 marks)
- iii. Calculate the median mark (2 marks)
- iv. Calculate the mean mark (2 marks)
- v. Find the new mean if each score is multiplied by 3 (2 marks)
- vi. Calculate the variance of the marks (2 marks)
- vii. Find the new variance if each score is divided by 3 (2 marks)



QUESTION THREE (20MARKS)

- a) Discuss any five reasons for conducting review of literature before engaging on the research process. (10 marks)
- b) i) Find the Pearson’s product moment correlation coefficient between the two variables indicated below:

X	1	3	4	6	8	9	11	14
Y	1	2	4	4	5	7	8	9

(6 marks)

- ii) Calculate the coefficient of determination in percentage form. (2 marks)
- iii) What can you conclude about the variability between the two variables X and Y (2 marks)

QUESTION FOUR (20 MARKS)

- a) i) Distinguish between the following types of research.
- Fundamental research (2 marks)
 - Applied research (2 marks)
 - Action research (2 marks)
 - Evaluation research (2 marks)
- ii) Explain the meaning of a research design. (2 marks)
- b) The following table gives observations between scores in Agriculture (x) and Biology (y) in a class having only five students:



X	10	12	15	23	20
Y	14	17	23	25	21

- i. Calculate the regression equation of y upon x in the form $Y = a + bx$ (8 marks)
- ii. Calculate the expected value of Y when X=30. (2 marks)

QUESTION FIVE (20 MARKS)

- a)
 - i) Explain four methods of collecting primary data. (8 marks)
 - ii) Discuss any three techniques of determining the reliability of a research instrument. (6marks)
- b)
 - i) Using sketch diagrams where necessary, give four properties of normal curve of a variable x. (4 marks)
 - ii) The marks obtained by all Laikipia County Form Four students in an Agriculture test are normally distributed with a mean of 35 and a standard deviation of 10. Calculate the mode and median. (2 marks)

