UNIVERSITY EXAMINATIONS

1ST SEMESTER 2022/2023 ACADEMIC YEAR

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

AGED 414: STATISTICS AND RESEARCH METHODS

STREAM: R   *TIME: 2 HRS*

DAY: MONDAY (11.30-1.30PM)   *DATE: 19/12/22*

THIS QUESTION PAPER CONSISTS OF FIVE (5 PAGES)

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

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INSTRUCTIONS: Answer Question **ONE** and any other **TWO** questions

QUESTION ONE   (30 MARKS)

1(a) Using suitable examples , explain the meaning of the following scales of

measurement.

i)	Nominal	(2 marks)
ii)	Ordinal	(2 marks)
iii)	Interval	(2 marks)
iv)	Ratio	(2 marks)

 (b) Explain the meaning of the following terms as used in research.

i)	Sample and population	(2 marks)
ii)	Discrete and continuous variables	(2 marks)
iii)	Sampling	(2 marks)
iv)	Research design	(2 marks)

(c)   The following table shows the frequency distribution of scores in an Agriculture

test.

Class –interval	Frequency (f)
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)   Using the interval 50-54, find

- Lower and upper limits   (2 marks)

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- Lower and upper boundaries (2 marks)
- The mid mark (1 mark)

(ii)   Draw a frequency polygon for the above data (3 marks)

(iii)   Draw a histogram for the above data (3 marks)

(iv)   Prepare a "less than cumulative frequency curve and use it to

determine the median score (3 marks)

QUESTION TWO (20 MARKS)

(a) Differentiate between the following terms:

(i) Independent and dependent variables (2 marks)

(ii) Stratified sampling and systematic sampling (2 marks)

(iii) Purposive and convenience sampling (2 marks)

(b) The following are raw marks obtained by 50 students in a Biology

test marked out of 40.

Marks (x)	Frequency (f)
5	2
10	7
15	11
20	15
25	10
30	4
35	1

Calculate:

i)   The range (2 marks)

ii)   The modal mark (2 marks)

iii)   The mean mark (2 marks)

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iv) The new mean if each score is added 3 marks (2 marks)

v) The variance of the marks (2 marks)

vi) The standard deviation (2 marks)

vii) The new standard deviation if each score is multiplied

by 3 (2 marks)

QUESTION THREE (20MARKS)

(a) (i) Briefly explain the following types of research:

- Fundamental research (2 marks)
- Applied research (2 marks)
- Action research (2 marks)
- Evaluation research (2 marks)

(ii) Using an example, explain the meaning of a "null hypothesis (2 marks)

(b) (i)Calculate the Pearson's product moment correlation coefficient between the two variables x and y as indicated below:

X	5	6	7	8	9	10	11
Y	4	5	10	8	12	18	20

(6 marks)

(ii)Find 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) Discuss any five reasons for conducting literature review before engaging on

the research process (10 marks)

(b) The following table gives test marks obtained by 10 students in two subjects,

namely: Agriculture (x) and Biology (y)

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X	6	5	8	8	7	6	10	4	9	7
Y	8	7	7	10	5	8	10	6	8	6

(i) Find the regression equation of y upon x in the form y = a+bx   (8 marks)

(ii) Find the expected value of y when x=15   (2 marks)

QUESTION FIVE (20 MARKS)

(a) (i) Discuss any four methods of collecting primary data   (8 marks)

   (ii) Explain any four techniques of determining the reliability of

       research instruments.   (8 marks)

(b) In a Form Four class Agriculture test, the mean mark for 30 boys is 82 and   and the mean

mark of 25 girls is 86 marks.

Calculate:

(i)   The total marks obtained by all boys in the class   (1 mark)

(ii)   The total marks obtained by all girls in the class   (1 mark)

(iii)   The combined mean for both boys and girls.   (2 marks)

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