



“Investing in Africa’s Future”

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

NACP 202: BIOMETRY

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER / DECEMBER 2023

LECTURER: MR. E. CHIKAKA

DURATION: 3 HOURS

INSTRUCTIONS

Answer **ALL** Questions in **Section A** and **ANY 3** questions from **Section B**

The mark allocation for each question is indicated at the end of the question

Credit will be given for logical, systematic and neat presentations.

SECTION A

Answer ALL questions

Question 1

What do you understand by Biometry? What are the roles of a Biometrician in your field of study? [10]

Question 2

What do measures of central tendency and variation indicate? Describe the important measures of central tendency and variation pointing out the situation when one measure is considered relatively appropriate in comparison to other measures. [10]

Question 3

Discuss advantages and disadvantages of Primary and Secondary data [10]

Question 4

If the marks of 1000 students in BSc Agriculture follow normal distribution with mean mark of 40 and standard deviation of 8, find the number of students:

- (i) between 50 and 59 marks [4]
- (ii) below 35 marks and [3]
- (iii) 60 and above. [3]

SECTION B

Answer any three (3) questions from this section

Question 5

- a. What are the properties of student's t-distribution? [4]
- b. The heights of plants in a particular field were assumed to follow normal distribution. A random sample of 10 plants were selected and whose heights (in cm) were recorded as 96, 100, 102, 99, 104, 105, 99, 98, 100 and 101. Discuss in the light of the above data the mean height of plants in the population is 100. [6]
- c. The following is the experiment conducted on Agronomy farm in the year -2020-2021 at Africa University by the College of Agriculture and Natural Resources, for comparing two types of grasses on neighbouring plots of size 5 x 2 meters in each replication. The weights of grasses per plot (in kgs) at the harvesting time were recorded on 7 replicates:

	1	2	3	4	5	6	7
Cenchrus ciliaris (Grass (I))	1.96	2.10	1.64	1.78	1.95	1.70	2.00
Losirus indicus Grass (II)	2.13	2.10	2.14	2.08	2.20	2.12	2.05

Test the Significant difference between the two grasses with respect to their yield. [10]

Question 6

- a. A random sample of 100 farmers was asked for their opinion about the type of agribusiness enterprise they prefer most. The numbers of males and females making each response are shown in the table.

Type of livestock	Sex	
	Male	Female
Poultry	13	26
Apiculture	22	22
Fish farming	12	5

At 5% level of significance, test whether there is an association between the preferred type of agribusiness enterprise and the sex of the farmer [10]

- b. Discuss observation as a primary method of collecting data in agriculture. Include the types of observations and their merits and demerits [10]

Question 7

- i. Given the following data

Marks (x)	$0 < x \leq 5$	$5 < x \leq 10$	$10 < x \leq 15$	$15 < x \leq 20$
Number of students	2	4	3	1

Find

- a) the modal class [1]
- b) the mean [2]
- c) the variance [3]
- d) the standard deviation [2]
- e) the coefficient of variation [2]

- ii. List ANY FOUR (4) methods of collecting data in agriculture. For each method, give the merits and demerits [10]

Question 8

- a. Distinguish between 'skewness' and 'kurtosis' in relation to their application in agricultural statistics.
- b. Compute coefficients of 'skewness' and 'kurtosis' for the following data on rainfall (cm) in the month of August at a Regional Agricultural Research Station in Manicaland Province.
2, 0, 6, 8, 13, 7, 2, 2, 4, 10, 11, 2, 0, 5, 11, 0, 0, 8, 7, 9, 6, 5, 12, 3, 4, 5, 0, 6, 1, 2, 4 [10]

Good Luck