"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

NACP 202: BIOMETRY

END OF FIRST SEMESTER FINAL EXAMINATIONS

NOVEMBER / DECEMBER 2022

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

The following is the distribution of Fat (percentage) in 100 samples collected from different milk centres in villages

Fat (%)	1-3	3-5	5-7	7-9	9-11
Samples	40	26	30	2	2

Compute Mean, Median, Mode, Geometric Mean and Harmonic Mean of Fat content per sample. Comment on the answers that you obtained. [20]

SECTION B

Answer any three (3) questions from this section

Question 4

a. Discuss the data types that know. Why is it important to know the type of data in any agriculture decision making process? [10]

b. What are the properties of a normal probability distribution? What are the uses of normal distribution in your area of specialisation in agriculture? [10]

Question 5

a. A discrete random variable X has the following probability distribution.

X	1	2	3	4
P(X=x)	0.2	0.5	a	0.2

i. Find the value of a [2]

ii. Find a). $P(X > 2)$ [2]

b). $P(2 \leq X \leq 3)$ [2]

iii. Find E(X) [2]

iv. Find $E(X^2)$ [2]

v. Find Var (X) [3]

vi. Hence find Standard Deviation and Standard Error for the distribution. [2]

b. Why is the study of Biometry important in your area of specialisation? [5]

Question 6

i. Given the follwing data

Marks (x)	$0<x\leq5$	$5<x\leq10$	$10<x\leq15$	$15<x\leq20$
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. 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.

	Sex	
Type of livestock	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]

Question 7

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

b. Distinguish between ‘skewness’ and ‘kurtosis’ in relation to their application in agricultural statistics. 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]

END OF EXAMINATION PAPER