KISII UNIVERSITY EXAMINATION 2023/2024 ACADEMIC YEAR

EXAMINATION FOR THE BACHELOR OF SCIENCE DEGREE IN ANIMAL SCIENCE
COURSE CODE: ANSC 372: ANIMAL EXPERIMENTATION
YEAR THREE SEMESTER 1   **DURATION: 2 HOURS**

DATE:

1. **Answer all questions in section A and any other two in section B**
2. **Don't write anything on this question paper**
3. **You can use a calculator**
4. **The number of points per question is indicated in parenthesis**

SECTION A: ANSWER ALL QUESTIONS

1). What experimental design is appropriate for high schools participating in the hand washing poster campaign?   (4MARKS)

2). List and explain 3 fundamental principles required in research in order to attain quality research and conclusions.   (6 marks)

3). Briefly state and discuss the various linear models that can be used the behaviour of any variable that can be used to express outcomes (6marks).

4) Write short notes on the following: (10 marks)

5). A proper storage and backup of the collected data is important in any research being undertaken, illustrate the important steps that can be undertaken to perform this task (4marks).

SECTION B: ANSWER ANY TWO QUESTIONS

6). A horticulturist is interested in studying the effectiveness of fungicide treatments applied to plots on which roses are grown. Six treatments, consisting of one of three types of fungicide at one of two dose levels, were randomly assigned to 24 plots. This is a CRD with a factorial $(2 \_ 3)$ treatment structure and $r \_ 4$ replications per treatment. Rose plants of the same health, size, and age were inoculated, planted, and after twenty weeks were dug up and the root weights determined. However, a number of plants died during the twenty weeks. This resulted in an unbalanced design with the number of reps per treatment varying from $nij \_ 2$

to *nij* _ 4. (see Table below). Test the effectiveness of fungicide treatments applied to plots on which roses are grown. (20 marks). **Note Use the formulas for a balanced design**

Fungicide

Dose level	1	2	3
1	19	24	22
	20	26	25
	21		19
2	25	21	31
	27	24	32
		24	33
			32

7) The pig's population consists of males and females in the form of 3, 4, 4, 5, 5, 5, 5, 6, 6, 7 respectively when drawn from a wild sample of population. A PhD scientist from Netherlands wanted to summarize these wild pig's population observations in a frequency table but he could not.

a) Can you assist the researcher in preparing the summarized wild pig's population observations in a frequency table, calculate the *mode, μ, σ^2 and σ* (10 marks)

b)). A farmer has a number of indigenous poultry which laid eggs daily without broodin with proper treatment of vitaming. The farmer gave following data of number of eggs laid in 30 days birds treated with a vitamin (H = hens number).

Observation	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
Data	14	18	15	24	19	16	15	26	22	20	14	18

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Estimate the following giving their meaning: mean, variance, variance of the mean, standard deviation and Coefficient of variation (CV) (10 marks)

8). Kisii University Animal Science Students gave the following data taken from an experiment in which four dietary treatments were compared with eight sheep allocated to each treatment in a randomised complete block design. The block was based on live weight of the sheep at the start of the trial. The data is presented in the table below:

Block number	1	2	3	4	Block totals
I	16.3	18.9	19.4	18.0	72.6
II	16.4	18.2	17.6	17.5	69.7
III	16.7	18.9	17.6	18.6	71.8
IV	17.7	19.5	19.8	19.1	76.1
V	18.0	17.4	19.3	18.4	73.1

VI	19.1	18.0	16.5	17.6	71.2
VII	19.1	21.0	18.9	21.3	80.3
VIII	18.0	21.3	19.9	21.1	80.3
Treatment totals	141.3	153.2	149.0	151.6	595.1

Test the significance of the blocks and the treatments in the experiment, giving conclusions (20 marks)