CHUKA   **UNIVERSITY**

COLLEGE

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE (ANIMAL HEALTH AND PRODUCTION)

ANSC 372: DESIGN AND ANALYSIS OF ANIMAL EXPERIMENTS

STREAMS: B.SC. (ANPD) Y2S1 & Y3S1   **TIME: 2 HOURS**

DAY/DATE: FRIDAY 5/8/2011   **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:

(i)   Answer all questions.
(ii)   Show all calculations.

1.   In an experiment to evaluate 10 feed rations with respect to rate of gain in piglets, 40 piglets of the same sex, appropriate age and weight were randomly assigned to ten pens (4 piglets per pen). The 4 piglets in a given pen were fed the same ration. Rate of grain over a thirty-day period was determined for each individual piglet. Give the appropriate answers to the following questions. In this experiment, what were:

          (a)   the treatments
          (b)   the experimental units
          (c)   the sampling units
          (d)   how many replications were there per treatment
          (e)   how many sampling units were there per experimental unit
                                                          [10 marks]

2.   A study was conducted to compare milk production of Ayrshire and Guernsey at a large scale farm in Nithi County. Table below presents the measurements.

Table: Milk production (Kg/month) of Ayrshire and Guernseys selected at random.

Ayrshires	Guernseys
326	194
245	220
300	216
225	212
247	222
232	214
259	234

(a)   For each breed calculate:

    (i)   Mean milk production
    (ii)   The standard deviation
    (iii)   Standard error of the mean   [10 marks]

(b)   Test whether there is any significant difference between milk production of Ayrshires and Guernseys on the farm. Give the level of significance of your test and interpret the results of this test.   [6 marks]

(c)   Place a 95% confidence interval for each breed. Show the confidence level.   [4 marks]

3.   The following is an experiment to test the effect of walking distance during foraging in the weight gains of goats. Data is weight gains in grams.

    Walking distance in km

	5	10	15
R_1	20	35	50
R_2	16	30	60
R_3	18	40	50
R_4	15	34	55

(a)   What is the design of the experiment?

(b)   Calculate the ANOVA and make interpretation of the result.
                                                                                              [15 marks]

4. An experiment was conducted to test the nutritive value of sorghum silage subject to four chemical treatments (A, B, C & D), on the growth rate of beef calves. The stage of cutting the maize and length of silage storage were taken as important effects. Data is gains in weight (g) of calves.

Stage in weeks

		8	12	16	20
Storage	2	A = 60	C = 110	B = 160	D = 200
in weeks	4	D = 215	B = 153	A = 70	C = 120
	6	C = 118	A = 80	D = 196	B = 163
	8	B = 140	D = 218	C = 111	A = 75

(a) What is the design of this experiment?

(b) Calculate the ANOVA and test all the effects   [15 marks]