UNIVERSITY OF FORT HARE

AGA606

DEGREE EXAMINATIONS

February 2010 Supplementary Examination

Time: 3 Hours

Subject: Vitamins, Minerals, Non-ruminant nutrition and Research Techniques

Marks: 100

This paper consists of 3 pages including the cover page

Internal Examiners
Dr. V. Muchenje
Prof. M. Chimonyo

External Examiner
Mr F. van de Vyver

Instructions
Answer Question ONE and any other FOUR questions.
**Question 1** (20 marks)

Describe the roles of Vitamins E and K in growing pigs.

**Question 2** (20 marks)

After reading the following description of a trial, do the following (giving reasons in each case):

- (x) Identify the suitable experimental design. (4 marks)
- (xi) Identify the experimental unit. (2 marks)
- (xii) Identify the main factor. (2 marks)
- (xiii) Identify the factor levels. (2 marks)
- (xiv) Identify the blocking factor, if present. (1 mark)
- (xv) Identify possible interactions, if present. (1 mark)
- (xvi) Write the relevant model and its assumptions. (4 marks)
- (xvii) Write a schematic ANOVA table. (4 marks)

A number of 270 unsexed Cobb broiler chicks bought from the Agricultural Co-operation in Berlin at day-old were used in the current study. The chicks were randomly allocated to the following three treatments: No vitamin restriction (T1), Vitamin A restriction (T2), and Vitamin D restriction (T3). Three rooms were sub-divided into three compartments where birds for each of the three treatments were randomly allocated and housed. Each treatment was replicated three times with 30 birds per treatment being fed as a group in three separate compartments in each of the three separate rooms. Water was also removed during the times of feed restriction with constant light offered throughout the study and infrared lighters were used only for the first two weeks. In T1 the birds were fed *ad libitum* with a constant access to the feed provided day and night until slaughter. In T2 the birds were deprived of Vitamin A from 19h00 until 07h00 the following morning from the 22nd day to the 28th day. In T3 the birds were deprived of Vitamin D from 19h00 until 07h00 the following morning from the 22nd day to the 28th day. The ADG, ADFI, body weight, and FCE were recorded weekly starting from week three up until week six, using 30 birds from each treatment replicate. Feed allocation was also done weekly and topped up where there were some shortages.

**Question 3** (20 marks)

Describe the processes involved in developing a manuscript until it is accepted for publication in an animal science journal. (20 marks).

**Question 4** (20 marks)

(a) Write short notes on each of the following

- (i) Comparison of means (10 marks)
- (ii) Hypothesis testing procedures (10 marks)
Question 5  (20 marks)

The growth rate (average daily body weight gain, ADG) was measured in growing pigs that were fed incremental levels of maize cobs. The data presented below were obtained.

<table>
<thead>
<tr>
<th>Maize cob level (g/kg)</th>
<th>0</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG (g)</td>
<td>940</td>
<td>960</td>
<td>900</td>
<td>760</td>
<td>650</td>
<td>615</td>
<td>540</td>
</tr>
</tbody>
</table>

a. Plot the data of ADG against the level of maize cobs.

b. Compute the coefficients in the linear regression equation, $y = \beta_0 + \beta_1 x$.

c. Compute a 95% confidence interval for $\beta_1$.

d. Using the regression equation, estimate the ADG using a diet that contains 120g maize cobs/kg.

Question 6  (20 Marks)

(a) Describe how you can use Completely Randomised Design (CRD) in evaluating the effects of different types of feeds in different pig breeds.

NB. Include the following in your answer:

(i) A description of CRD 
(ii) When it is suitable 
(iii) Advantages/disadvantages 
(iv) Model to be used 
(v) A schematic ANOVA table

(4 marks each)

**********END OF QUESTION PAPER. GOOD LUCK**********