



1ST SEM. 2006/2007

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

**PROGRAMME: DIPLOMA IN AGRICULTURE AND
DIPLOMA IN AGRICULTURE
EDUCATION YEAR III**

COURSE CODE: APH 301

TITLE OF PAPER: NUTRITION, FEEDS AND FEEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY 4 QUESTIONS.

**THIS PAPER MAY NOT BE OPENED UNTIL THE CHIEF
INVIGILATOR HAS GRANTED PERMISSION.**

QUESTION 1

- a) What information does one require prior to formulating a ration for livestock?
What are the possible sources of this information? **(6 Marks)**
- b) Given that cottonseed meal (CSM) has 40 % crude protein and maize meal has 10 % crude protein, formulate a 200 kg ration containing 15 % crude protein using the **ALGEBRAIC** method. You must show all calculations. You must calculate proportions of each ingredient and verify that you have the desired ration. **(15 Marks)**
- c) Write short notes on Digestible Crude Protein (DCP). **(4 Marks)**

QUESTION 2

- a) Describe and illustrate how ruminant animals digest and metabolize nitrogenous compounds in the rumen and its immediate surroundings. **(15 Marks)**
- b) Explain the symbiotic relationship that exists between a ruminant animal and the microbial population resident in the rumen. **(10 Marks)**

QUESTION 3

- a) Identify the three components of the detergent system for fibre analysis and briefly explain their determination in the laboratory. **(9 Marks)**
- b) Explain how you would derive energy and protein requirements of a dairy cow using the factorial approach. **(10 Marks)**
- c) Write short notes on total digestible nutrients (TDN). **(6 Marks)**

QUESTION 4

- a) Compare and contrast the digestion of feedstuffs in chickens and pigs. **(10 Marks)**
- b) Discuss the utilization of non-protein nitrogen and lipids in ruminant animals. **(10 Marks)**
- c) How would you improve the utilization of roughages in ruminants? **(5 Marks)**

QUESTION 5

- a) Give a detailed outline of the partition of food energy in an animal. All energy losses must be indicated. **(15 Marks)**
- b) Explain the importance of the following proximate analysis components:
- i. Crude protein
 - ii. Ether extract
 - iii. Crude fibre
 - iv. Moisture **(10 Marks)**