



UNIVERSITY OF SWAZILAND

1ST SEM. 2007/2008

FINAL 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) Discuss the utilization of non-protein nitrogen and lipids in ruminant animals.
(10 Marks)
- b) How would you improve the utilization of roughages in ruminants?
(5 Marks)
- c) Explain how you would derive energy and protein requirements of a dairy cow using the factorial approach.
(10 Marks)

QUESTION 2

A cow consumes 10.5 kg DM of hay containing 18.7 MJ/kg DM of gross energy (GE). It excretes 4.7 kg DM faeces containing 17.2 MJ/kg DM GE. Energy losses in the form of gases were estimated to be 8 % of GE intake. Energy losses in urine were estimated to be 10 % of digestible energy (DE).

- a) Provide an estimate of the digestible energy (DE) and metabolizable energy (ME) content of the hay expressed in MJ/kg DM.
(15 Marks)
- b) How do you calculate the total digestible nutrients (TDN) of livestock feedstuff?
(6 Marks)
- c) Identify the limitations of the TDN system of feed evaluation (4 Marks)

QUESTION 3

- a) What basic information does one require in order to formulate a ration for any given animal? How can this information be obtained?
(6 Marks)
- b) Outline the steps you would follow in the construction of a Pearson Square to blend two feedstuffs with different nutrient concentrations. (9 Marks)
- c) Formulate a tonne of layers' containing 200 g CP/kg DM using maize (100 g CP/kg DM) and soybean meal (360g CP/kg DM).
(10 Marks)

QUESTION 4

- a) Discuss FIVE factors that may influence water requirements in livestock.
Provide examples where appropriate. **(15 Marks)**
- b) Discuss the criteria used in the classification of feedstuffs giving appropriate examples. **(10 Marks)**

QUESTION 5

What types of cheap, local feedstuffs are available during the long dry season in the communal areas of Swaziland and how can these be utilized to, at least, maintain ruminant livestock throughout the dry season? **(25 Marks)**