



1ST SEM. 2006/2007

UNIVERSITY OF SWAZILAND

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) How do you calculate the total digestible nutrients (TDN) of a livestock feed?
(5 Marks)

- b) The table below shows the composition and digestibility of nutrients in rye-grass hay.

Nutrient	Nutrient content (kg/100 kg)	Digestibility (g/kg)
Crude Protein	6.4	1.92
Crude Fibre	42.8	30.82
Nitrogen Free Extracts	49.6	28.92
Ether Extracts	1.0	0.67

- i. What is the TDN per 100 kg rye-grass hay? Show all calculations.
(6 Marks)
- ii. What are the limitations of the TDN system of feed evaluation?
(4 Marks)

- c. Write short notes on the following:

- i. Digestible crude protein
- ii. Metabolizable energy
- iii. Rumen degradable protein
- iv. Apparent digestibility
- v. Digestibility coefficient (10 Marks)

QUESTION 2

With the aid of large, clearly labeled diagrams, describe the function of the different organs that make up the digestive systems of a named monogastric and a named ruminant animal.
(25 Marks)

QUESTION 3

The Kjeldahl method is an analytical method for the determination of nitrogen in various substrates. Provide a step-by-step discussion of this technique, up to the stage where crude protein content is estimated from nitrogen content. Highlight the chemical reactions involved.
(25 Marks)

QUESTION 4

Discuss FIVE factors that may influence the digestibility of a feedstuff. Provide examples where appropriate. **(25 Marks)**

QUESTION 5

Explain FIVE ways in which protein quality in non-ruminants can be assessed. **(25 Marks)**