



**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

PROGRAMME: **DIPLOMA IN AGRICULTURAL
EDUCATION III**

DIPLOMA IN AGRICULTURE III

COURSE CODE: **APH 301**

TITLE OF PAPER: **NUTRITION, FEEDS AND FEEDING**

TIME ALLOWED: **TWO (2) HOURS**

INSTRUCTIONS: **ANSWER ANY 4 QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

QUESTION 1

- a. A sheep consumed 1.24 kg of hay dry matter (DM) having energy content of 16.0 MJ/kg and defecated 0.68 kg of faeces DM having energy content of 17.5 MJ/kg.

Determine the following:

i) Apparent digestibility of the energy of the hay. **(7 marks)**

ii) Digestible energy content of hay DM. **(2 marks)**

- b. Discuss four ways in which nutrients can be absorbed in the gastro-intestinal tract (GIT) of farm animals. **(16 marks)**

QUESTION 2

- a. Define the following and give an example of each;

- i. Saturated fatty acids **(2 marks)**
- ii. Indispensable amino acids **(2 marks)**
- iii. Glucogenic amino acids **(2 marks)**
- iv. Volatile fatty acids **(2 marks)**
- v. Fat soluble vitamins **(2 marks)**

- b. Ruminants have to maintain conducive environment for ruminal microbes in order to avoid cessation of cellulolysis. Briefly discuss how this is achieved. **(15 marks)**

QUESTION 3

- a. Discuss five factors that influence energy requirements of farm animals. **(10 marks)**

- b. How can the energy density of ruminants' feeds be increased during ration formulation? What should be considered during this exercise and why? **(15 marks)**

QUESTION 4

- a. One of the methods used in feed evaluation is the indicator method. Describe the qualities of a good indicator. **(7 marks)**
- b. Give two conditions in which this method is most useful and why? **(4 marks)**
- c. Briefly discuss two ways in which proteins can be protected from rumen degradation. **(4 marks)**
- d. Indicate in chronological order the five distinct intracellular events following bacterial uptake of peptides & free amino acids. **(10 marks)**

QUESTION 5

- a. Forage legumes hold great qualities which qualify them to be mostly used in drought stricken areas as animal feed. Write short notes on five of these qualities. **(15 marks)**
- b. What is the main limitation of most legumes in improving ruminant nutrition and how can it be addressed? **(5 marks)**
- c. Give common and scientific names of two forage legumes mostly found in Swaziland. **(5 marks)**