

**UNIVERSITY OF SWAZILAND  
FACULTY OF AGRICULTURE**

**DEPARTMENT: ANIMAL PRODUCTION AND HEALTH**

**Final Examination (Semester I, 2004/5)**

**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 4 questions. Choose AT  
LEAST ONE question from each  
Section.**

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

**SECTION A**

**QUESTION 1**

- a). Write short notes on carbohydrates and fats of the organic matter in livestock feeds. **(10 Marks)**
- b). Give an account of lesser-known or non-conventional energy and protein sources of feedstuffs. **(15 Marks)**

**QUESTION 2**

- a). Outline the process of digestion and absorption of protein and carbohydrates in the mouth, stomach, small and large intestines of monogastric animals. **(15 Marks)**
- b). What are leguminous pastures? **(10 Marks)**

**SECTION B**

**QUESTION 3**

- a). The proximate analysis system of feed characterization has been used to generate information about the composition of various feedstuffs. This system divides food into six fractions. Identify the six fractions and briefly describe how you would go about determining their content in a named feedstuff. **(12 Marks)**
- b). Write short notes on the factors that affect the digestibility of livestock feeds. **(10 Marks)**
- c). In a digestibility trial, how do you calculate the digestibility coefficient? **(3 Marks)**

**QUESTION 4**

a). Give a detailed outline of the partition of food energy in an animal. All energy losses should be indicated. **(15 Marks)**

b). Write short notes on the following measures of protein quality for monogastric animals:

- i. Protein efficiency ratio (PER)
- ii. Gross protein value (GPV)
- iii. Nitrogen balance
- iv. Net protein retention (NPR)
- v. Biological value (BV) **(10 Marks)**

**SECTION C**

**QUESTION 5**

Discuss any five nutrients required by the farm animals under the following headings:

- a). Source
- b). Functions
- c). Deficiency symptoms

**(25 marks)**

**QUESTION 6**

a). Briefly discuss the purpose of feed evaluation in animal production.

**(10 marks)**

b). Balance for the crude protein in diet of a pig weighing 50 kg. The crude protein (CP) requirement is 16 %. The available feed ingredients include yellow maize, 8.9 % CP and commercial premix, 36 % CP. **(15 Marks)**