



UNIVERSITY OF SWAZILAND

2ND SEM. 2007/2008

SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME: B.Sc. in Animal Science Year II

COURSE CODE: APH 205

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) A sheep consuming 1.2 kg/day of silage DM, containing 19 MJ GE/kg DM excreted 5.0 MJ/day of energy in faeces, 1.36 MJ/day in urine and 1.80 MJ/day in methane. Calculate the digestible energy (DE) and metabolizable energy (ME) value of silage per kg DM. **(8 Marks)**
- b) Explain the following terms:
- i. Digestible crude protein **(3 Marks)**
 - ii. Rumen degradable protein **(3 Marks)**
 - iii. Net energy **(3 Marks)**
 - iv. Total digestible nutrients **(3 Marks)**
- c) Explain the symbiotic relationship between rumen microorganisms and the ruminant animal. **(5 marks)**

QUESTION 2

Describe and illustrate how ruminants digest and metabolize nitrogenous compounds in the rumen. **(25 marks)**

QUESTION 3

What nutritional problems do cattle that rely solely on range feed resources face on Swazi Nation Land in Swaziland? How can these problems be addressed? **(25 Marks)**

QUESTION 4

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

- a) Protein efficiency ratio (PER) **(5 Marks)**
- b) Gross protein value (GPV) **(5 Marks)**
- c) Nitrogen balance **(5 Marks)**
- d) Net protein retention (NPR) **(5 Marks)**
- e) Biological value (BV) **(5 Marks)**

QUESTION 5

- a) The table below shows results of a digestibility trial in which 3 sheep were fed on alfalfa hay.

	Dry Matter (DM)	Organic Matter (OM)	Crude Protein (CP)	Ether Extract	Acid Detergent Fibre (ADF)
Chemical analyses (g/kg DM)					
Alfalfa Hay	-	919	93	15	350
Faeces	-	870	110	15	317
Nutrients (kg/day)					
Consumed	1.63	1.50	0.151	0.024	0.57
Excreted	0.76	0.66	0.084	0.011	0.24

- i) Calculate the digestibility coefficients of DM, OM, CP, EE and ADF. **(5 Marks)**
- ii) Calculate the composition of alfalfa hay in terms of digestible nutrients (OM, CP, EE and ADF). **(8 Marks)**
- b) Define metabolic faecal nitrogen (MFN) and explain how you would estimate the amount of MFN. **(3 Marks)**
- c) The detergent system for fibre analysis was designed to replace crude fibre determination, especially for ruminant animals. Identify the 3 chemical components determined under system and write short notes on them. **(9 Marks)**