



UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: B. Sc. ANIMAL SCIENCE II
B. Sc. AGRICULTURAL EDUCATION II

COURSE CODE: APH 205

TITLE OF PAPER: NUTRITION, FEEDS AND FEEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

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

QUESTION 1

- a. After years of drought, the Ministry of Agriculture hires you to assess if the feed resources available for the beef herd at Nyanyali ranch will be enough for the next season. Briefly outline what you will consider when carrying out this exercise. **(10 marks)**
- b. The anatomy of the gastro-intestinal tract of ruminants enables them to upgrade poor quality feeds to meet their maintenance requirements, especially in dry season. Briefly describe this phenomenon with respect to nutrients availability. **(8 marks)**
- c. Fresh rye grass and a concentrate fed to lactating cows had to be analysed for dry matter *as fed*. After drying of both feeds in an oven at 60°C for 48 hours, data on Table 1 was obtained.

Table 1: Data for dry matter of rye grass and concentrate

Feeds	Fresh weight (g)	Dry weight (g)	% DM
Fresh rye grass	100	65.8	-
Dairy mal	100	92.5	-

- i) Calculate the dry matter *as fed* of both rye grass and concentrate. **(1 mark)**
- ii) A dairy cow consumed 10 kg of the rye grass; calculate the dry matter intake (DMI) of the cow. **(2 marks)**
- iii) Which of these feeds will provide more nutrients to the dairy cow and why? **(4 marks)**

QUESTION 2

- a. Briefly explain why the requirement for dietary protein in growing non-ruminants is higher than that of growing ruminants. **(6 marks)**
- b. After analysis of the gross energy of Rhodes grass, it was concluded that the grass was at an optimum stage to be harvested for hay. However, during a digestibility trial the net energy was low. Briefly discuss the possible reasons of such an observation. **(8 marks)**
- c. Discuss briefly measure of protein quality in relation to the following:
- i) Amino acids profile **(4 marks)**
 - ii) Protein efficiency ratio **(3marks)**
 - iii) Nitrogen balance **(4 marks)**

QUESTION 3

- a. Animal feed companies when purchasing feed ingredients, the moisture content is considered to be of paramount importance. Why? **(10 marks)**
- b. After you have finished this course you are required to classify the following groups of feeds into their respective categories:
- A – Kikuyu grass, maize silage and rice hulls **(5 marks)**
 - B – Soybean meal, cottonseed meal and sunflower seed meal **(5 marks)**
 - C – Yellow maize, citrus pulp and molasses **(5 marks)**

QUESTION 4

- a. A farmer approaches you for assistance on choosing an ideal protein source to include in the diet of growing lambs. Describe briefly what you will take into consideration before making your decision. **(12 marks)**
- b. After a digestibility trial using wethers, the dry matter (DM) digestibility was found to be 70 %. Discuss the possible reasons of such an observation. **(13 marks)**