FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF ANIMAL PRODUCTION AND HEALTH

BACHELOR OF SCIENCE HONORS DEGREE IN ANIMAL PRODUCTION AND HEALTH

ANIMAL NUTRITION (NAP 2103)

Semester I, Examination

June 2024

Time Allowed : 3 hours
Special requirement : Calculator
Examiner : Mr. B Mpala

Instructions to Candidates:

1. This paper consists of six questions, answer **ALL** questions in **Section A** and **ANY TWO** in **Section B**.
2. Marks for each question are shown in brackets. Where a question has subdivisions, the marks for each subdivision are given.
3. Illustrate your answer, where applicable, with large clearly labelled diagrams.

MARK ALLOCATION PER SECTION	MARKS
SECTION A	**60**
SECTION B	**40**
TOTAL ATTAINABLE MARKS	**100**

This paper consists of three printed pages including this one.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION 1

a) Explain the following terms as used in animal nutrition:

i). Nutrient [2]

ii). Gavage [2]

iii). NPN [2]

iv). Limiting amino acid [2]

v). Essential fatty acids [2]

b) Using examples, distinguish between trace and ultra trace minerals. [4]

c) Discuss iron deficiency and prevention in young pigs. [6]

QUESTION 2

a) A feedlot steer consumed 12.4 kg of grass hay with a moisture content of 4% and excreted 5.2 kg dung dry matter of which 0.37 kg were metabolic products from the animal's body. Calculate:

i). Dry matter intake. [2]

ii). Apparent digestibility coefficient of the hay. [3]

iii). True digestibility coefficient of the hay. [3]

iv). State any two constituents that can be found in the 0.37 kg metabolic products in the steer excreta. [2]

b) Discuss the factors that may affect the digestibility of the hay by the steer. [6]

c) Explain two reasons why it is recommended to use male animals instead of female animals in digestibility experiments. [4]

QUESTION 3

A local packing house is currently offering reject cabbages as stock feed. Before deciding to purchase this livestock feed, it is important to obtain a feed analysis to assess its feeding value.

a) What specific feed components should be measured, and which laboratory methods can be used to determine them? [12]

b) What aspects, that could potentially affect the feeding value of the feed but may not be detected through laboratory analysis? [8]

SECTION B: ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION 4

Write short notes on the following feed additives or growth enhancers used in animal nutrition:

a) Probiotics [4]
b) Prebiotics [4]
c) Ionophores [4]
d) Growth hormone [4]
e) Beta agonists [4]

QUESTION 5

Discuss the differences in digestion and nutrient absorption between a young calf and a mature cow. [20]

QUESTION 6

Discuss the concerns on public health regarding the health hazards associated with the use of biotechnology in animal feed production. [20]