GWANDA STATE UNIVERSITY

FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF ANIMAL SCIENCE

APPLIED ANIMAL NUTRITION

LAS 4203

Semester 2 Final Examination Paper

May/June 2023

This examination paper consists of **three** printed pages

Time Allowed:	**3 hours**
Total Marks:	**100**
Special Requirements:	**Calculator**
Examiner's Name:	**Mr R. Ndlovu**

INSTRUCTIONS TO CANDIDATES

1. Answer **ALL** questions in Section A

2. Answer **ONLY TWO** questions in Section B

MARK ALLOCATION

QUESTION	MARKS
SECTION A	60
SECTION B	40
TOTAL ATTAINABLE MARKS	**100**

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SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

Question 1

a) Define the following terms as used in the livestock nutrition;

    i)   Complete feed. **(2)**

    ii) Protected fat. **(2)**

    iii) Effective NDF. **(2)**

    iv) Nutrient allowance. **(2)**

    v)   Nutrient requirement. **(2)**

b) By means of definitions and examples, differentiate between primary plant metabolites (PPMs) and secondary plant metabolites (SPMs). **(4)**

c) Discuss the roles of SPMs in plants. **(6)**

Question 2

a) Define the term roughages. **(2)**

b) Give an outline of how the roughages are classified. **(8)**

c) Explain why soya bean meal and maize are the most used protein and energy sources in the livestock respectively. **(10)**

Question 3

a) Using the algebraic method, formulate a 100kg complete broiler grower ration with 20% CP using ingredients shown in **Table 1**. In your formulation, rice bran, fish meal, lysine, methionine, additives and mineral mix (Ca, P, etc) should be fixed at 5%, 8%, 0.05%, 0.15%, 0.5 and 2% respectively. **(16)**

Table 1 Nutrient composition (g/kg DM) and energy content (kcal/kg DM) of the ingredients used in the formulation for broiler grower feed.

Ingredient	CP (% DM)	ME (kcal/kg DM)
Maize	9	3300
Soya bean meal	50	2698
Fish meal	50	2800
Rice bran	11	2700
Lysine	0	0
Methionine	0	0
Additives	0	0
Mineral mix (Ca, P, etc)	0	0

b) Calculate the total metabolizable energy (kcal/kg) of your feed. **(4)**

SECTION B: ANSWER ONLY TWO QUESTIONS IN THIS SECTION

Question 4

a) Outline the methodology you would use to determine the *in vivo* dry matter apparent digestibility of velvet bean hay with goats. **(12)**

b) Outline the applications and limitations of the nylon bag technique in determining feed digestibility/degradability. **(8)**

Question 5

Write short notes on the flowing;

a) Mode of action of antibiotics used as growth promoters. **(5)**

b) Buffers and neutralisers in ruminant feeds. **(5)**

c) Vitamin E deficiency in chicks. **(5)**

d) Energy deficiency in grazing animals. **(5)**

Question 6

a) Explain the rationale for giving acidifying diets to pregnant cows nearing parturition. **(10)**

b) Discuss the usefulness of using feeding standards in animal nutrition. **(4)**

c) What are the merits and demerits of the metabolizable energy (ME) system? **(6)**

END OF QUESTION PAPER

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