



**UNIVERSITY OF SWAZILAND**

**2<sup>nd</sup> SEM. 2015/2016**

**FINAL EXAMINATION PAPER**

**PROGRAMME:** B.Sc. ANIMAL SCIENCE YEAR 3, B.Sc. ANIMAL SCIENCE (DAIRY OPTION) YEAR 3, B.Sc. AGRIC EDUCATION YEAR 3

**COURSE CODE:** AS 304

**TITLE OF PAPER:** NUTRITION, FEEDS AND FEEDING

**TIME ALLOWED:** TWO (2) HOURS

**INSTRUCTIONS:** ANSWER ANY THREE QUESTIONS.

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE CHIEF INVIGILATOR**

**QUESTION 1**

- a. By means of definitions only, distinguish between the following terms; (i) balanced ration, (ii) flushing, (iii) steaming-up, (iv) compensatory growth and (v) metabolizable energy  
**(5 Marks)**
- b. List any **FIVE** methods one can use in measuring nutrients digestibility in animals  
**(5 Marks)**
- c. Explain **TWO** advantages and **TWO** disadvantages of each of the methods you listed in "b" above.  
**(10 Marks)**
- d. Mention any **FIVE** advantages of rumen fermentation to the host ruminant animal.  
**(5 Marks)**

**QUESTION 2**

- a. With the aid of annotated diagrams, show **TEN** major anatomical differences between the digestive system of poultry and that of ruminant animals.  
**(10 marks)**
- b. Discuss the nutritional significance of **TWO** named examples of any **THREE** classes of feed resources from plants origin.  
**(9 marks)**
- c. Give any **THREE** examples in each case of; (i) bacteria and (ii) protozoa species commonly found in the rumen of ruminant animals  
**(6 Marks)**

**QUESTION 3**

- a. What is rumen defaunation?  
**(2 marks)**
- b. Discuss any **THREE** rumen defaunation techniques you are familiar with **(3 marks)**
- c. Discuss how the theory of rumen defaunation can be used to influence the digestion and utilization of nutrients in ruminant animals.  
**(10 marks)**
- d. Write an essay on the nutritional significance of rumen degradable protein and undegradable dietary protein in ruminant nutrition.  
**(10 Marks)**



**QUESTION 4**

- a. Explain what you understand by “Pearson Square” in feed formulation. (2 Marks)
- b. Mention any other **THREE** feed formulation methods (3 Marks)
- c. Stepwisely discuss the various steps involved in using Pearson square for ration formulation. (4 Marks)
- d. Formulate a diet of 27% crude protein content for broiler starters with rice bran (8.2% CP), corn (10.2% CP), SBM 44% CP and fish meal (52.7% CP) (4 Marks)
- e. What will be the proportion of each of these ingredients in one tonne mixture? (2 Marks)
- f. What is the implication of feeding only this type of ration to ruminant animals? (2 Marks)
- g. Discuss the function(s) of any **FOUR** reagents normally used during protein analysis in the laboratory. (8 Marks)

**QUESTION 5**

- a. What are essential mineral elements in animal nutrition? (2 Marks)
- b. Discuss the **FOUR** major functions of these nutrients in livestock nutrition. (8 Marks)
- c. Briefly discuss the metabolic functions of any **TWO** named fat soluble vitamins in animals. (10 Marks)
- d. State the reason(s) why vitamin B complex is generally considered non-essential in ruminant diets? (5 Marks)