



# UNIVERSITY OF EMBU

2019/2020 ACADEMIC YEAR

SUPPLEMENTARY/SPECIAL EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF  
AGRICULTURE

AAS 206: PRINCIPAL OF ANIMAL NUTRITION

**DATE: OCTOBER 27, 2020**

**TIME: 8:30 AM – 10:30 AM**

## INSTRUCTIONS

**Answer Question ONE and ANY Other TWO Questions**

### QUESTION ONE (30 MARKS)

- a) Define the following terms
- i) Nutrition. (1 mark)
  - ii) Relative biological value of protein. (1 mark)
  - iii) Discuss major pathways of carbohydrates catabolism. (2 marks)
- b) Using examples discuss the significance of mineral supplements in cattle? (2 marks)
- i) Discuss how to determine Nitrogen Free Extract (NFE) using proximate analysis. (2 marks)
  - ii) Explain the importance of NFE value in feed analysis (3marks)
  - iii) Describe the limitation of NFE (2 marks)
- c) differentiate Neutral Detergent Fibre (NDF) and Acid Detergent Fibre (ADF) methods (4 marks)
- d) Explain importance of considering the stage of growth and maturity of forage used as feed for livestock (2 marks)



ISO 27001:2013 Certified

*Knowledge Transforms*



ISO 9001:2015 Certified

- e) Water is often overlooked and not considered as a nutrient when formulating ration for livestock. Describe the functions of water in livestock's body. (4 marks)
- f) Suppose we have a protein concentrate, such as cotton seed cake meal with 40% Crude Protein (CP) and a grain with 10% CP and we wish to have a blend with 18% CP. Using the Pearson's square determine the % parts of the crude protein and grain in the feed ration. (4 marks)

**QUESTION TWO (20 MARKS)**

- a) Understanding animal feed can make or break a farm. Elaborate on this statement. (10 marks)
- b) Explain the importance of by-pass protein an important management practice for high yielding dairy animals (10 marks)

**QUESTION THREE (20 MARKS)**

- a) How does thiamine (B1) function in energy metabolism? (10 marks)
- b) Describe how the major volatile fatty acids (VFA) absorbed are catabolized by ruminants. (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Explain the relation between the dietary cobalt concentrations, emaciation and anaemia in cattle (5 marks)
- b) Explain the effect of acetate:propionate ratio in methane production and metabolic efficiency in cattle. (5 marks)
- c) Determine the amount of Net Energy (Kcal) per day used for the maintenance by a Zebu cow weighing 350 Kg live weight. (5 marks)
- d) Describe proximate analysis in estimating feed nutrients. (5 marks)

**QUESTION FIVE (20 MARKS)**

- a) Illustrate terms that are used to describe the energy content of feedstuff and briefly describe each one of them. (10 marks)
- b) Describe at least five functions of nutrients in a dairy cow. (10 marks)

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