



# MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF AGRICULTURE AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

SECOND YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF  
SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

**KAP 204: PRINCIPLES OF ANIMAL NUTRITION**

**Date: 5/12/2016**

**Time: 2 HRS**

---

## INSTRUCTIONS:

**Answer Question One And Any Other Two Questions**

1. (a) Explain the role of rumen microbes in the digestive system of ruminants  
(10 marks)
- (b) Explain what happens to forage in each of the four chambers of the ruminant stomach.  
(10 marks)
- c) Explain what the following terms mean:
  - i) Dry matter
  - ii) Crude protein
  - iii) Total mixed ration
  - iv) Metabolism
  - v) Tropical livestock unit (10 marks)

2. a) Explain the four major functions of livestock. (10 marks)  
b) What is the social and economic importance of animal nutrition? (10 marks)
3. a) Explain the importance of calcium and phosphorus to livestock, citing the relationship between the two minerals. (10 marks)  
b) Explain the factors that affect the absorption of minerals by livestock. (10 marks)
4. a) Explain the physical indicators of feed quality. (10 marks)  
b) Explain the following components considered when describing the nutritional value of a feed:  
i) Dry matter  
ii) Crude protein  
iii) Crude fiber  
iv) Ash  
v) Digestibility (10 marks)
5. a) What is voluntary feed intake? Explain the factors that affect voluntary feed intake. (10 marks)  
b) Explain the factors that should be considered when formulating rations for livestock. (10 marks)