



# MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

ASC 433 ANIMAL NUTRITION AND FEEDING

**DATE:**

**TIME:**

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**INSTRUCTIONS:**

**Answer question one and two other questions**

**QUESTION ONE (30 MARKS)**

- a) Describe the following concepts as applied in animal nutrition;
  - i. Mechanical digestion (5 marks)
  - ii. Feed utilization (5 marks)
  - iii. Mineral deficiencies (5 marks)
- b) With relevant examples, list 3 approaches towards feed formulation (6 marks)
- c) Explain five antinutritive factors in animal feeds (5 marks)
- d) Define Neutral Detergent Fibre (NDF) in relation to feed analysis (1 mark)
- e) List 3 ways of feed protein evaluation (3 marks)

**QUESTION TWO (20 MARKS)**

Briefly,

- a) Define nutrients absorption (2 marks)
- b) Describe four mechanisms of nutrients absorption (16 marks)

- c) List three factors affecting nutrient absorption (2 marks)

**QUESTION THREE (20 MARKS)**

- a) Describe the partitioning of feed energy (10 marks)  
b) Discuss any five animal feed additives (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Describe how Pearson square works in feed formulation (10 marks)  
b) Describe how to formulate a diet from cotton seed meal and maize, to contain 18 % crude protein using Pearson square (10 marks)

**QUESTION FIVE (20 MARKS)**

- a) Discuss four routes of water loss which constitute the summary of any animal's water requirements (8 marks)  
b) Discuss any four nutrient types and their functions (12 marks)