



# UNIVERSITY OF EMBU

2016/2017 ACADEMIC YEAR

FIRST SEMESTER EXAMINATION

THIRD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

AGRICULTURAL (ANIMAL SCIENCE OPTION)

AAS 301: ANALYTICAL METHODS IN ANIMAL NUTRITION

**DATE: DECEMBER 7, 2016**

**TIME: 8:30-10:30AM**

**INSTRUCTIONS:**

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

**QUESTION ONE (30 MARKS)**

- a) Explain the meaning of the following terms as used in analysis of animal Nutrition
- i) Accuracy (2 marks)
  - ii) Toxins (2 marks)
  - iii) Crude Protein (2 marks)
  - iv) Dry Matter (2 marks)
  - v) Crude Fibre (2 marks)
- b) Give short answers to the following questions
- i) How you would treat a student whose clothes caught fire in the laboratory? (4 marks)
  - ii) Give any six examples of personal protective equipment in the laboratory (3 marks)
  - iii) How you would treat student whose face has been splashed with a laboratory chemical (3 marks)
  - iv) Laboratory Sample preparation (5 marks)
  - v) Glassware cleaning (5 marks)

**QUESTION TWO (20 MARKS)**

- a) Highlight any eight safety precautions that one requires to observe in the laboratory (8 marks)
- b) A researcher conducted a dry matter analysis on a feed sample and came up with the following results.

Replicate	Pan weight (gms)	Pan + Sample weight (gms)	Sample weight (gms)	Pan + Dry Sample weight (gms)	Dry sample weight (gms)
1.	1.0000	3.0000	2.0000	2.9000	1.9000
2.	1.0000	3.1000	2.1000	2.9500	1.9500

From the above results, calculate the

- i) Dry matter of the sample (4 marks)
- ii) The coefficient of variance (8 marks)

**QUESTION THREE (20 MARKS)**

- a) Highlight the possible sources of error in laboratory experiments (8 marks)
- b) Define the term ash as used in feed analysis (2 marks)
- c) Discuss the principles applied in dry ashing (4 marks)
- d) Discuss the three methods of determining ash in a feed sample (6 marks)

**QUESTION FOUR (20 MARKS)**

- a) Highlight the three stages of Kjeldahl procedure of crude protein analysis explaining what happens at each stage (8 marks)
- b) Discuss the qualities of an ideal solvent in lipid analysis. (12 marks)

**QUESTION FIVE (20 MARKS)**

- a) Describe any 4 examples of ether extracts found in livestock feedstuff. (8 marks)
- b) Differentiate between Apparent Digestible Energy (DE) and Metabolizable Energy (ME). (4 marks)

b) Discuss the classification of laboratory chemicals based on the hazards that they cause.

(8 marks)

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