



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES
THIRD YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR DEGREE OF
BACHELOR OF SCIENCE IN ANIMAL SCIENCE
2022/2023 ACADEMIC YEAR
REGULAR

COURSE CODE: AAB1303

COURSE TITLE: ANALYTICAL METHODS IN ANIMAL NUTRITION

EXAM VENUE: **STREAM: (BSc Animal Science)**

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions

- 1. Answer ALL questions in Section A (compulsory) and ANY TWO questions in Section B**
 - 2. Candidates are advised not to write on the question paper**
 - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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SECTION A [30 MARKS]

Answer ALL questions in this section

1. Explain the importance of reading the label and material safety data sheet before using chemicals in the laboratory. (3 marks)
2. Explain how grease can be best removed from glassware. (3 marks)
3. State the main difference between solvent extraction using Soxhlet procedure and extraction using Goldfish procedure. (2 marks)
4. Explain the principle behind toluene distillation procedure for dry matter (DM) determination. (4 marks)
5. State the principle behind ether extract and crude fat determination of animal feeds. (3 marks)
6. Describe two methods used for animal feed sample preparation prior to laboratory analysis. (4 marks)
7. Distinguish between gross energy, digestible energy and metabolizable energy. (3 marks)
8. State the function of each of the following parts of a bomb calorimeter:
 - a. Bomb (1 mark)
 - b. Bucket (1 mark)
 - c. Insulating jacket (1 mark)
 - d. Thermometer (1 mark)
9. State four protective equipment that may be used in the laboratory. (4 marks)

SECTION B [40 MARKS]

Answer ANY TWO questions from this section

10. Discuss mineral analysis under the following headings:
 - a. Colorimetric Methods (10 marks)
 - b. Atomic Absorption Spectroscopy (10 marks)
11. Describe the various steps used in determination of nitrogen content in animal feeds using the Kjeldahl method. (20 marks)
12. Analyze how fiber affects animal feed digestibility and explain how the two fiber fractions, Neutral Detergent Fiber and Acid Detergent Fiber can be determined in the laboratory. (20 marks)
13. Discuss how chemicals can be safely handled in the laboratory. (20 marks)