



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCES

THIRD YEAR FIRST SEMISTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

ASC 433: ANIMAL NUTRITION AND FEEDING

DATE: 1/9/2022

TIME: 2.00-4.0 PM

INSTRUCTIONS: Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

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

QUESTION TWO (20 MARKS)

- a) Describe the partitioning of feed energy in relation to animal nutrition. (10 marks)
- b) Discuss any five feed additives that can be used during animal feed formulation. (10 marks)

QUESTION THREE (20 MARKS)

- a) Describe how the Pearson Square method works in feed formulation. (10 marks)
- b) Describe how to formulate a diet from 40% crude protein (CP) cotton seed meal and from 10% CP maize, to contain 18 % CP using Pearson Square method. (10 marks)

QUESTION FOUR (20 MARKS)

- a) Explain the meaning of nutrients absorption in livestock (2 marks)
- b) Describe four mechanisms of nutrients absorption (12 marks)
- c) Explain three factors affecting nutrient absorption in livestock (6 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) Explain any four nutrient types and their functions in livestock. (12 marks)