



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHALOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF EDUCATION (SPECIAL NEEDS)

ANS 301: RUMINANT PRODUCTION

DATE: 8/12/2021

TIME: 8.30-10.30 AM

INSTRUCTION TO CANDIDATES: Answer *ALL* questions from Section A and any other *TWO* from Section B

SECTION A: COMPULSORY: (30 MARKS)

QUESTION ONE

- a) Define the following terms (4 marks)
- i) Production system
 - ii) Compensatory growth
 - iii) Red meat
 - iv) Ruminant
- b) Explain the functions of the four compartments of the ruminant stomach (4 marks)
- c) Explain six roles of the livestock sector to Kenya's socio-economic development agenda. (6 marks)
- d) Explain four factors considered in breeding soundness examination when selecting males for breeding (4 marks)
- e) Explain the following terms: (6 marks)
- i) Notifiable diseases
 - ii) Zoonotic diseases
 - iii) Metabolic disorders

- f) Explain two differences between the nutritional requirements of a heifer and a cow in parity 3 (2 marks)
- g) Prepare a dairy meal ration for a dairy cow using the following ingredients: sunflower cake, maize bran and minerals (2 marks)
- h) Use a graph to demonstrate the effect of time of grazing on dry matter yield and quality of pasture. (2 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a) Use a graph to describe the growth patterns of the different body tissues (6 marks)
- b) With reference to nutrient utilization explain the order of priority in terms of body systems and body tissues (4 marks)
- c) Using a graph, describe the four types of compensatory growth that can be experienced by ruminants due to nutritional stress (6 marks)
- d) Explain four factors than can influence the degree of compensation (4 marks)

QUESTION THREE (20 MARKS)

- a) Explain the rationale of determining whether a breed of cattle or small ruminants is dairy or meat breed (4 marks)
- b) Using a schematic diagram, describe a crossbreeding system for cattle or small ruminants that takes full advantage of maternal heterosis and to improve the final product. (8 marks)
- c) Describe an improvement plan to increase mature weight of the Orma Boran without compromising its adaptive attributes (8 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss five enterprises that have potential to accelerate the commercialization of the small ruminant sector (5 marks)
- b) For a 100 beef-cow commercial herd compute and tabulate the annual offtakes (Show the assumptions of your computations) (8 marks)
- c) Develop an enterprise plan for a flock of 25 small east African goat breeding does (7 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the effect of diseases on the production capacity of ruminants (4 marks)
- b) Explain the symptoms and control measures of the following diseases in ruminants (6 marks)
 - i. Bloat
 - ii. Milk fever
 - iii. Peste des petits Ruminants (PPR)
- c) Describe the process of clean milk production in dairy animals (6 marks)
- d) Explain four factors that influence the marketing of livestock products in Kenya (4 marks)