UNIVERSITY OF EMBU

2016/2017 ACADEMIC YEAR

SECOND SEMESTER EXAMINATION

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE, ANIMAL SCIENCE OPTION, BACHELOR OF SCIENCE IN RANGE MANAGEMENT

AAS 206: PRINCIPLES OF ANIMAL NUTRITION

DATE: APRIL 4, 2017 **TIME: 8:30-10:30AM**

INSTRUCTIONS:

Answer Question ONE and ANY other TWO Questions

QUESTION ONE (30 MARKS)

a) Define Nutrition (1 Mark)

b) Name the six classes into which nutrients are classified (3 Marks)

c) How do animals get their water? (3 Marks)

d) Highlight the importance of minerals in animal nutrition? (2 Marks)

e) Proximate analysis does not provide true protein value of food, explain. (2 Marks)

f) Describe the role of sulphuric acid and sodium hydroxide in Kjedahl protein analysis (2 Marks)

g) Calculate the amount of protein contained in a feed sample with 100g N/kg of dry matter (DM) (4 Marks)

h) Ether extracts consist of fats and fatty acids. Explain why they are referred to as ether extracts. (2 Marks)

i) Calculate the amount of moisture in a feed sample of 235 grams when wet and steady weight

of 170 grams after heating steadily in an oven at $105^{O}C$ for 6 hours (4 Marks)

j) Differentiate between Metabolizable Energy and Digestible Energy (4 Marks)

k) Briefly discuss the role of oesophageal groove in young ruminant nutrition? (2 Marks)

QUESTION TWO

a) Draw a well labelled diagram of the digestive system of a pig (10 Marks)

b) Discuss how digestion takes place in the mouth of a pig (10 Marks)

QUESTION THREE

a) A sheep consuming 1.2 kg/day silage dry matter (DM) containing 19.0 MJ GE/kg excreted 6.0 MJ GE/day in the faeces, 1.56 MJ GE/day in urine and 1.80 MJ GE/day as methane. Calculate the digestible energy (DE) and metabolizable energy (ME) content of the silage. (8 Marks)

b) Discuss the digestion of food in the rumen of a bovine. (12 Marks)

QUESTION FOUR

a) Discuss the possible reasons why most ruminant animals survive drought period only to die after consuming the first pastures after onset of the rains and what can be done to prevent this occurrence. (8 Marks)

b) The digestibility of feed in animals is determined by various factors. Discuss any six factors that affect feed digestibility in an animal. (12 Marks)

QUESTION FIVE

a) The data below was obtained in an experiment with rats. Study it carefully and use it to determine the biological value for maintenance and growth of the rat used in the experiment. (8 Marks)

Food consumed daily (g)	6.0
Nitrogen in food (g/kg)	10.43
Daily nitrogen intake (mg)	62.6
Total nitrogen excreted daily in urine (mg)	32.8
Endogenous nitrogen excreted daily in urine (mg)	22.0
Total nitrogen excreted daily in faeces (mg)	20.9
Metabolic faecal nitrogen excreted daily (mg)	10.7

b) Formulate a 14% crude protein (CP) diet using maize (8.8% CP) and a sunflower seed meal protein supplement (38% CP). (12 Marks)

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