FACULTY	**HEALTH SCIENCES & VETERINARY MEDICINE**		
SCHOOL	**VETERINARY MEDICINE**		
DEPARTMENT	**PRECLINICAL STUDIES**		
SUBJECT	**ANIMAL NUTRITION**		
SUBJECT CODE	**V3612EN**		
DATE	**OCTOBER 2024**		
DURATION	**3 HOURS**	**MARKS**	**150**

FIRST OPPORTUNITY EXAMINATION PAPER

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This question paper consists of four (4) pages including this page.

Instructions:

- ***This question paper consists of six questions***
- **Attempt ALL questions!!**
- **Calculators are allowed in the exam**

UNIVERSITY OF NAMIBIA EXAMINATIONS

QUESTION 1 **[25 MARKS]**

(a) A Jersey heifer eats 15 kg of *Chloris gayana* grass hay with 92% dry matter, 10%CP/kg DM, 45%NDF/kg DM, 12% ash/kg DM and voids 12 kg of fresh dung with 45% dry matter, 8%CP/kg DM, 35%NDF/kg DM, and12% ash/kg DM. Showing all steps and giving your answers to one decimal point calculate the percent digestibility of the following nutrients in the grass hay:

(i) Dry matter (2)

(ii) Organic matter (3)

(b) Distinguish between the following terms:

(i) Gross energy and metabolisable energy (4)

(ii) Dry Matter Basis and As-fed Basis (4)

(iii) Apparent digestibility and true digestibility (4)

(iv) Acid detergent fibre and acid detergent lignin (4)

(v) Dry roughages and succulent roughages (4)

QUESTION 2 **[25 MARKS]**

(a) Giving relevant examples, describe the classification of livestock concentrate feed resources. (12)

(b) Write short notes on the following simple proteins.

(i) Fibrous proteins (7)

(ii) Globular proteins (6)

QUESTION 3 **[25 MARKS]**

(a) Carbohydrates are the major source of energy for ruminants. Describe the digestion of dietary carbohydrates in the reticulo-rumen of a beef cow. (15)

(b) Briefly explain the functions and clinical signs of deficiency in animals of the following vitamins.

(i) Vitamin A (5)

(ii) Vitamin E (5)

QUESTION 4 **[25 MARKS]**

(a) Describe the limitations of the proximate analyses system. (12)

(b) Explains the importance of determining the nutritive values of animal feeds. (13)

QUESTION 5 **[25 MARKS]**

(a) A Brangus steer eats 15 kg of *Anthephora pubescens* hay with 90% dry matter, 10%CP/kg DM, 11% ash/kg DM and voids 8 kg of fresh dung with 70% dry matter, 6%CP/kg DM, 10% ash/kg DM. Giving your answers to one decimal point and showing all working steps, calculate the percentage digestibility of the *Anthephora pubescens* hay:

(i) Dry matter (2)

(ii) Organic matter (3)

(b) Briefly describe the laboratory procedures of determining the dry matter content of feed. (5)

(c) Describe the partitioning of dietary energy in an animal. (15)

QUESTION 6 **[25 MARKS]**

(a) Briefly explain the negative effects of dietary tannins in ruminants. (5)

(b) Briefly describe the basic information required in order to formulate a ration for any given animal. (10)

(c) A farmer in Kavango East region has maize that has 90% DM, 9% CP, 11.5 MJ/kg ME, 84% TDN, and soyabean meal (SBM) with 92% DM, 36% CP, 9.5 MJ/kg ME and 70% TDN.

(i) Using the two feed ingredients formulate a steer ration with 16% CP. (4)

(ii) Calculate the DM, ME and TDN content of the steer ration. (6)

END OF EXAM