

BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

AGA430

Department of Animal Science
BSc Agricultural Science Part IV Examination
Animal Nutrition and Feed Technology

JUN 2024

3 HOURS (100 Marks)

INSTRUCTION: Answer any FOUR questions. Each question carries 25 marks

1.
 - a) Distinguish between the following feed processing methods, giving 2 examples for each;
 - i. Dry and wet. [4 marks]
 - ii. Cold and hot. [4 marks]
 - b) Discuss the main objectives of feed processing. [12 marks]
 - c) List the major shortcomings in pelleting feed. [5 marks]
2.
 - a) Explain the important differences between starch and cellulose. [5 marks]
 - b) Name the disaccharides of nutritional significance. [4 marks]
 - c) Identify the major volatile fatty acids (VFAs) produced by rumen fermentation. [4 marks]
 - d) Explain the causes of rumen acidosis. [4 marks]
 - e) Define the term 'essential' as in essential amino acid. [2 marks]
 - f) List 3 essential amino acids and 3 essential fatty acids in animal nutrition. [6 marks]
3. A pig of 27.3kg has a daily requirement of 0.272kg CP and 5390kcal ME. Maize and SBM are the available ingredients and have the following nutritional values;

ME kcal/kg	CP %
MAIZE 3275	9
SBM 2825	46

- a) Determine the amount of maize and SBM required to meet the daily requirements of CP and ME for a 27.3kg pig. [15 marks]
- b) Calculate the proportion of the feed ingredients for a 50kg feed mix of the diet. [10 marks]

4. Acidosis and Bloat are common metabolic disorders in feedlot animals. Discuss causes, symptoms, prevention and treatment of these disorders. **[25 marks]**
5. Discuss Probiotics under the following headings;
- a) Uses and effectiveness. **[7 marks]**
 - b) Mode of action. **[10 marks]**
 - c) Safety concerns for environment, humans and animals. **[8 marks]**
6. Discuss the 3 pillars of sustainable livestock production and farming systems. **[25 marks]**

END OF EXAMINATION PAPER