



1ST SEM. 2006/2007

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: B. Sc. ANIMAL SCIENCE III

COURSE CODE: APH 304

TITLE OF PAPER: NUTRITIONAL BIOCHEMISTRY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY 5 QUESTIONS.

**THIS PAPER MAY NOT BE OPENED UNTIL THE CHIEF
INVIGILATOR HAS GRANTED PERMISSION.**

QUESTION 1

Compare and contrast the digestion/fermentation of starch in the pig and in the cow, in terms of:

- i. Process of digestion/fermentation (5 Marks)
- ii. End products of digestion/fermentation (5 Marks)
- iii. Energy metabolism of the end products (5 Marks)
- iv. Overall efficiency (5 Marks)

QUESTION 2

a) Rumen microbes have a 'levelling' effect on the protein supply of the ruminant animal. Discuss this statement in the context of feeding the ruminant with:

- i. Low quality crop residues
- ii. Protein-rich concentrates
- iii. Urea feeding and microbial protein synthesis (15 Marks)

b) List the factors that influence urea utilization in ruminant animals.

(5 Marks)

QUESTION 3

a) Write notes on the nylon bag (*in sacco*) method of determining protein degradability. (10 Marks)

b) Give a detailed explanation on how a nitrogen balance trial is carried out in a named livestock species. (10 Marks)

QUESTION 4

a) Explain the reason why ruminants can synthesize cysteine and methionine while non ruminants cannot. (5 Marks)

b) Explain and illustrate the synthesis of three amino acids from other amino acids (15 Marks)

QUESTION 5

Explain and illustrate four steps in the TCA cycle that yields energy.

(20 Marks)