UNIVERSITY OF SWAZILAND

2nd SEM. 2013/2014

FINAL EXAMINATION PAPER

PROGRAMME: B.Sc. AGRICULTURAL EDUCATION YEAR 3, B.Sc. ANIMAL SCIENCE YEAR 3 AND B.Sc. ANIMAL SCIENCE (DAIRY OPTION) YEAR 3

COURSE CODE: AS 304

TITLE OF PAPER: NUTRITION, FEEDS AND FEEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

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QUESTION 1

A Holstein cow consumes 20 kg DM /day of a feed with an energy concentration of 18 MJ/kg DM. Of the total energy intake, 15 MJ and 10 MJ are lost in methane and urine, respectively. Forty (40) MJ is lost in faeces and the heat increment of digestion is 15 MJ. Calculate the following:

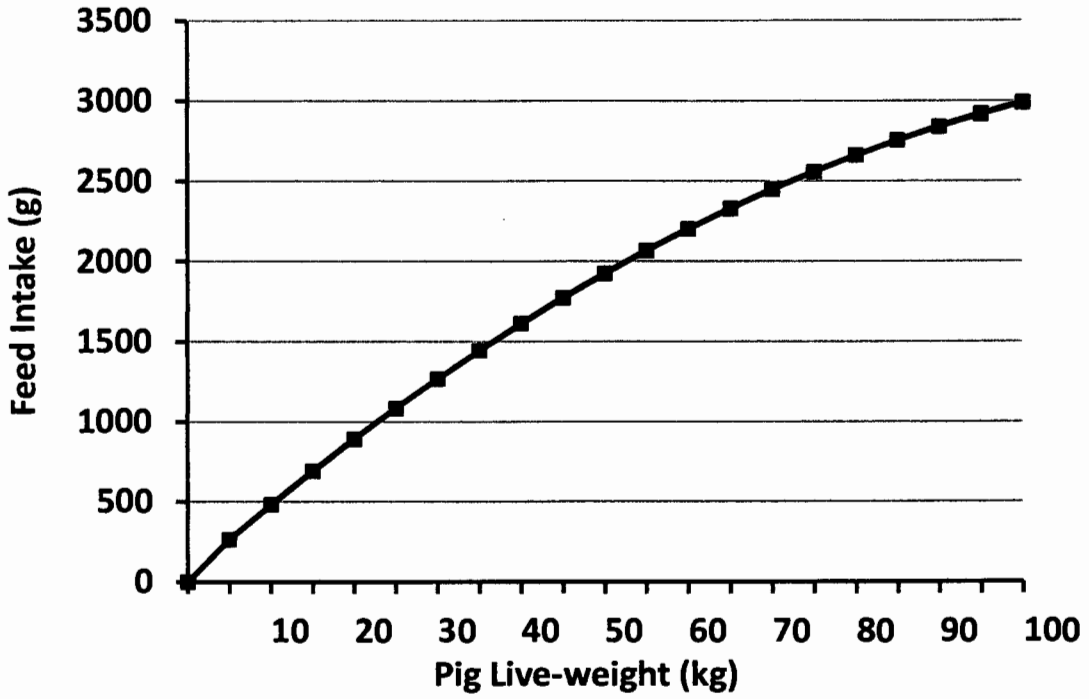
(i) Gross Energy Intake **(7 Marks)**
(ii) Digestible Energy intake **(6 Marks)**
(iii) Metabolisable Energy Intake **(6 Marks)**
(iv) Net Energy Intake **(6 Marks)**

QUESTION 2

a) Briefly describe how animal physiology affects voluntary feed intake. **(9 Marks)**
b) Discuss how social dominance affects feed intake and growth in growing pigs. **(8 Marks)**
c) In September 2012, Swaziland experienced heavy rains and very cold temperatures over a number of days. Subsequently broiler farmers in the Manzini region complained of slow (unprofitable) growth rates of the chickens yet the quality of feed and the feeding system remained unchanged. Explain the possible reasons for the observed poor performance of the chickens. **(8 Marks)**

QUESTION 3

The graph below depicts a prediction of voluntary feed intake (Dry Matter) for grower-finisher pigs based on on-farm research results.



(a) Explain what this graph means as well as why and how this information could be of use to the commercial pig farmer. **(15 Marks)**

(b) Given the feed intake suggested above, explain how and why the farmer can best supply the feed to these grower-finisher pigs to facilitate both economical and biologically efficient feed intake and growth. **(10 Marks)**

QUESTION 4

(a) Explain why cereal grains are in their natural state a poor source of phosphorus in monogastric animals and not in ruminants. **(10 Marks)**

(b) A broiler farmer decides that it would be cheaper for him to formulate and mix his ration; however he later notices that he is not making the desired returns. The formulated ration consists of:

35% Sorghum Grain

35% Barley

13% Rapeseed meal

13% Soya bean Meal

04% Salt, Vitamins and limiting Amino Acids

i. Speculate on the range of problems his flock may be experiencing based on the ingredients used in the feed formulation. **(10 Marks)**

ii. Explain the interventions that would improve the availability of energy from this diet to the chickens. **(5 Marks)**

QUESTION 5

(a) The Glucostatic theory is one of the short term Chemostatic mechanisms for control of feed intake in non-ruminant animals. Give a detailed description of how this system works on animal physiology and its influence on both voluntary feed intake and body energy reserves. **(12 Marks)**

(b) Briefly describe how the dynamics of social dominance, feed availability, space and water affect feed intake and growth in growing pigs and subsequent growth performance. **(13 Marks)**