



UNIVERSITY OF ESWATINI
FINAL EXAMINATION PAPER
(2ND SEMESTER- 2019/2020)

PROGRAMME: B. Sc. ANIMAL SCIENCE (DAIRY OPTION) YEAR 4

COURSE CODE: ASD404

TITLE OF PAPER: DAIRY ANIMAL FEEDING

TIME ALLOWED: TWO HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

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BY THE CHIEF INVIGILATOR**

QUESTION 1

As a dairy scientist, discuss in detail how the physiological stages and the production status of the dairy cow depicted in Figure 1 would influence your feeding. (25 Marks)

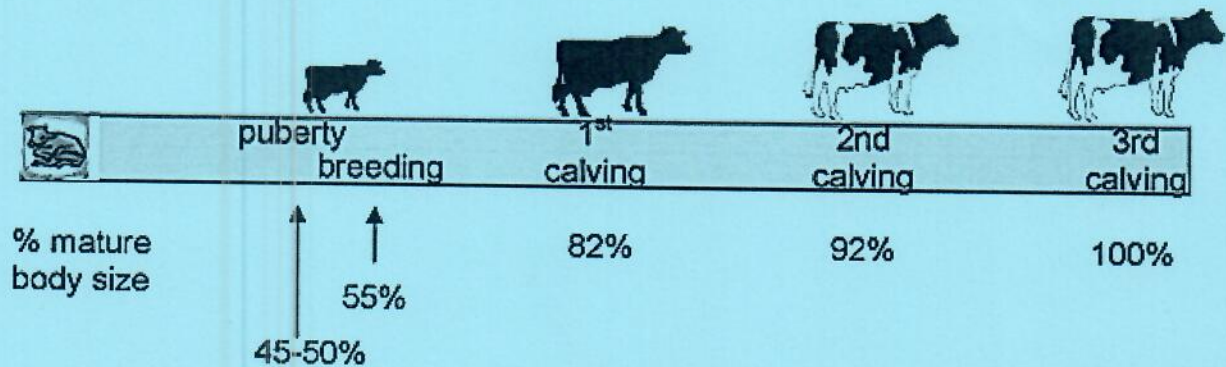


Figure 1: Physiological stages of a dairy cow over a three year period.

QUESTION 2

Mr Makhubu is one of the small-scale dairy farmers in the Luyengo community who struggles with feeding of the lactating dairy herd. What would be your advice regarding the nutritive value of the following by-products available in Eswatini:

- a) Pineapple-pulp (5 Marks)
- b) Brewer's grain (5 Marks)
- c) Maize stover (5 Marks)
- d) Sugarcane tops (5 Marks)
- e) Maize bran (5 Marks)

QUESTION 3

Saanen goats and dairy cows kept at UNESWA farm are both milk producing animals. Discuss what you would consider when establishing a feeding plan of these species.

(25 Marks)

QUESTION 4

Using the skills you acquired whilst pursuing your studies, describe how you would carry out **on-spot assessment** of the quality of the following common dairy feeds:

- a) Maize silage **(5 Marks)**
- b) Grass hay **(5 Marks)**
- c) Colostrum **(5 Marks)**
- d) Milk replacer **(5 Marks)**
- e) Calf starter **(5 Marks)**

QUESTION 5

a) A recent study carried out at Eswatini dairy farm found that the milking herd, with an average weight of 550 kg, produced 20 kg/day of milk containing **32 g/kg fat, 28 g/kg protein and 38 g/kg lactose**. These cows were on a diet with metabolisability (q_m) of 0.6. Using the prediction equations by AFRC (1993) in Appendix 1, calculate the total metabolisable energy requirement of these cows. **(15 Marks)**

b) Describe the following practices of concentrate feeding to dairy cows:

- i) Flat rate feeding **(5 Marks)**
- ii) Individualized feeding **(5 Marks)**

APPENDIX 1

$EV_L \text{ (MJ/kg)} = 1.509 + 0.0406F$*Equation 1*

$EV_L \text{ (MJ/kg)} = 0.0384F + 0.0223P + 0.0199L - 0.108$*Equation 2*

$E_m \text{ (MJ/day)} = 0.53(BW/1.08)^{0.67} + 0.0091BW$*Equation 3*

$K_m = 0.35qm + 0.503$*Equation 4*

$K_L = 0.35qm + 0.42$*Equation 5*