



UNIVERSITY OF SWAZILAND

2ND SEM. 2011/2012

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FINAL EXAMINATION PAPER

PROGRAMME: B.Sc. ANIMAL SCIENCE IV (DAIRY OPTION)

COURSE CODE: ASD 401

TITLE OF PAPER: DAIRY ANIMAL FEEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER QUESTION 1 AND ANY THREE (3)
OTHER QUESTIONS

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

QUESTION 1 [COMPULSORY]

(a) Using the NRC Nutrient Requirements of Dairy Cattle tables, tabulate the nutrient requirements in terms of dry matter, total protein, metabolisable energy, net energy for lactation and total digestible nutrients of the following animals:

- (i) A lactating Jersey cow of 400 kg liveweight producing 20 kg/d of milk with 4 % butterfat content. [10]
- (ii) A pregnant Friesian- Nguni cow of 350 kg liveweight during the last two months of pregnancy. [5]

(b) A farmer has available on the farm maize grain (90 % DM, 10 % CP, 11 MJ/kg ME, 88 % TDN) and soyabean meal (90 % DM, 42 % CP, 12 MJ/kg ME, 85% TDN).

- (i) Using the Pearson Square method, calculate the composition of the required mixture of the two ingredients to formulate a 16 % CP heifer grower ration. [4]
- (ii) Calculate the DM, ME and TDN content of the heifer grower ration. [6]

QUESTION 2

Write short notes on the following:

- (a) Milk fever [10]
- (b) Body condition score [10]
- (c) Ketosis [5]

QUESTION 3

Discuss the feeding management of a parturient dairy cow. [25]

QUESTION 4

Explain the fermentation changes that occur during the ensiling process. [25]

QUESTION 5

Write an essay on 'Calf rearing up to weaning.' [25]

Table 1: NRC Daily Nutrient Requirements of Lactating Dairy Cattle

Body Weight (kg)	Dry Feed (kg)	Protein		Energy			TDN (kg)	Ca (g)	P (g)	Carotene (mg)	Vitamin A (1000 IU)
		Total (g)	Digestible (g)	NE Lactating cows (Mcal)	DE (Mcal)	ME (Mcal)					
Maintenance of Mature Lactating Cows*											
350	5.0	468	220	6.9	12.3	10.1	2.8	14	11	37	15
400	5.5	521	245	7.6	13.6	11.2	3.1	17	13	42	17
450	6.0	585	275	8.3	15.0	12.3	3.4	18	14	48	19
500	6.5	658	300	9.0	16.3	13.4	3.7	20	15	53	21
550	7.0	691	325	9.6	17.6	14.4	4.0	21	16	58	23
600	7.5	734	345	10.3	18.9	15.5	4.2	22	17	64	26
650	8.0	776	365	10.9	19.8	16.2	4.5	23	18	69	28
700	8.5	830	390	11.6	21.1	17.3	4.8	25	19	74	30
750	9.0	872	410	12.2	22.0	18.0	5.0	26	20	79	32
800	9.5	915	430	12.8	23.3	19.1	5.3	27	21	85	34
Maintenance and Pregnancy (Last 2 Months of Gestation)											
350	6.4	570	315	8.7	15.8	13.0	3.6	21	16	67	27
400	7.2	650	355	9.7	17.2	14.1	4.0	23	18	76	30
450	8.0	730	400	10.7	19.4	15.9	4.4	26	20	86	34
500	8.8	780	430	11.6	21.1	17.3	4.8	29	22	95	38
550	9.3	830	465	12.5	22.9	18.8	5.2	31	24	105	42
600	10.0	910	500	13.5	24.6	20.2	5.6	34	26	114	46
650	10.6	960	530	14.4	26.4	21.6	6.0	36	28	124	50
700	11.3	1000	555	15.3	27.7	22.7	6.3	39	30	133	53
750	12.0	1080	595	16.2	29.5	24.2	6.7	42	32	143	57
800	12.6	1150	630	17.0	31.2	25.6	7.1	44	34	152	61
Milk Production (Nutrients Required per kg of Milk)*											
% Fat											
2.5		66	42	0.39	1.12	0.91	0.255	2.4	1.7		
3.0		70	45	0.64	1.23	0.99	0.280	2.5	1.8		
3.5		74	48	0.69	1.34	1.06	0.305	2.6	1.9		
4.0		78	51	0.74	1.46	1.15	0.330	2.7	2.0		
4.5		82	54	0.78	1.57	1.21	0.355	2.8	2.1		
5.0		86	56	0.83	1.68	1.28	0.380	2.9	2.2		
5.5		90	58	0.88	1.79	1.36	0.405	3.0	2.3		
6.0		94	60	0.93	1.90	1.43	0.430	3.1	2.4		