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UNIVERSITY OF SWAZILAND

2nd SEM. 2012/2013

SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME: B.Sc. ANIMAL SCIENCE III
B. Sc. ANIMAL SCIENCE-DAIRY III
B. Sc. AGRICULTURAL EDUCATION III

COURSE CODE: AS 304

TITLE OF PAPER: NUTRITION, FEEDS AND FEEDING

TIME ALLOWED: TWO (2) HOURS

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

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY
THE CHIEF INVIGILATOR**

QUESTION 1 (COMPULSORY)

(a) Using the NRC Daily Nutrient Requirements of Lactating Dairy Cattle table, tabulate the nutrient requirements in terms of digestible protein, metabolisable energy, total digestible nutrients, Ca and P of a lactating Friesian cow of 550 kg liveweight producing 25 kg/d of milk with a butterfat content of 2.5 %.

[10 Marks]

(b) A ewe consumes 8 kg of grass hay containing 80% DM, 150 g CP/kg DM, 9 MJ/kg DM of energy and 12 g/kg DM of minerals and it excretes 1.5 kg DM of faeces containing 7 g CP/kg DM, 5 MJ/kg DM of energy and 8 g/kg DM of minerals. Calculate:

(i) The dry matter digestibility of the grass hay. **[3 Marks]**

(ii) The crude protein digestibility of the hay. **[5 Marks]**

(iii) The organic matter digestibility of the hay. **[7 Marks]**

QUESTION 2

Write an essay entitled 'Feed additives in livestock diets.'

[25 Marks]

QUESTION 3

Write short notes on the following:

(a) Mastitis **[10 Marks]**

(b) Fatty liver syndrome **[10 Marks]**

(c) Grass tetany **[5 Marks]**

QUESTION 4

Discuss the methods that are used to determine the digestibility of animal feeds.

[25 Marks]

QUESTION 5

Briefly, elaborate on the following:

- (a) Nitrogen balance [5 Marks]
- (b) Protein efficiency ratio [5 Marks]
- (c) The Weende System [15 Marks]

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^a											
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	638	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	7.9	730	400	10.7	19.4	15.9	4.4	26	20	86	34
500	8.6	780	430	11.6	21.1	17.3	4.8	29	22	95	38
550	9.3	850	465	12.6	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)^a											
<i>% Fat</i>											
2.5		66	42	0.59	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	1.13	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		