



(University of Choice)
**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS
MAIN EXAMINATION**

FOR THE DEGREE OF MASTERS. IN:

ANIMAL PRODUCTION

COURSE CODE: AAN 802

COURSE TITLE: FEED EVALUATION AND FEEDING STANDARDS

DATE: 2.7.22

TIME: 9-12

INSTRUCTIONS TO CANDIDATES

Answer FOUR questions

SECTION A: Answer FOUR questions (60 Marks)

1. Discuss the functions of the following feeds of in a dairy cow
 - (a) Carbohydrate (5 marks)
 - (b) protein (5 marks)
 - (c) minerals (5 marks)
2. Discuss the procedure followed in the following methods of feed analysis. In your discussion include the strengths and weaknesses of each method.
 - (a) Three methods of *in-vitro* analytical method (9 marks)
 - (b) Near-infra red spectroscopy (NIRS) (3 marks)
 - (c) Van Soest analytical method (3 marks)
3. The ration to be fed to cows in late lactation stage is made up of pasture/barley/lupins/hay mix. The estimated intake for each cow is 25 kg of pasture, 4 kg of barley, 2 kg of lupins and 5 kg of hay. Table 1 show nutritional composition these feeds.

Table 1: Nutrition composition of feed

Type of feed	Feed nutrient composition					
	DM%	MJ of ME	CP (g)	Fibre (g)	Calcium (g)	Phosphorus (g)
Pasture	20	10.0	270	120	6.3	3.0
Barley	80	12.7	110	43	0.6	3.5
Lupins	80	12.2	290	120	2.0	3.5
Hay	80	9.4	76	320	5.2	3.2

- (a) Outline the steps followed in ration formulation (8 marks)
- (b) Using the above Table 1 calculate the dry matter, energy, crude protein, fibre, calcium and phosphorus intake of the feed. (7 marks)
4. Climate change has potential negative impact on ruminant livestock productivity in sub Saharan Africa
 - (a) Describe in detail how climate change will affect the availability of quality feeds and intake by livestock (9 marks)
 - (b) Discuss in detail THREE strategies/technologies that can be adopted by farmers in order to minimize the effects of climate change (6 marks)
5. (a) Discuss the animal feed impacts on food safety (9 marks)
- (b) Briefly outline the legislative/regulations that have been put in place to produce safe livestock feeds and enhance trade of livestock products. (6 marks)