



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY
FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES**

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES

QUALIFICATION: Bachelor of Science in Agriculture	
QUALIFICATION CODE: 07BAGA	LEVEL: 6
COURSE CODE: RRG611S	COURSE NAME: Rangeland Regeneration
DATE: June 2022	SESSION: June
DURATION: 3 Hours	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr Richard Kamukuenjandje
MODERATOR:	Dr Hilma Amwele

INSTRUCTIONS
<ol style="list-style-type: none">1. Write clearly and neatly.2. Number your answers clearly.3. Make sure your student number appears on the answering script.4. Include the formulas used for each calculation.

PERMISSIBLE MATERIALS

1. Calculator

THIS EXAMINATION QUESTION PAPER CONSISTS OF 3 PAGES (Excluding this front page)

Question 1

Name the 13 vegetation types of Namibia labelled in the map below (Fig. 1) ?

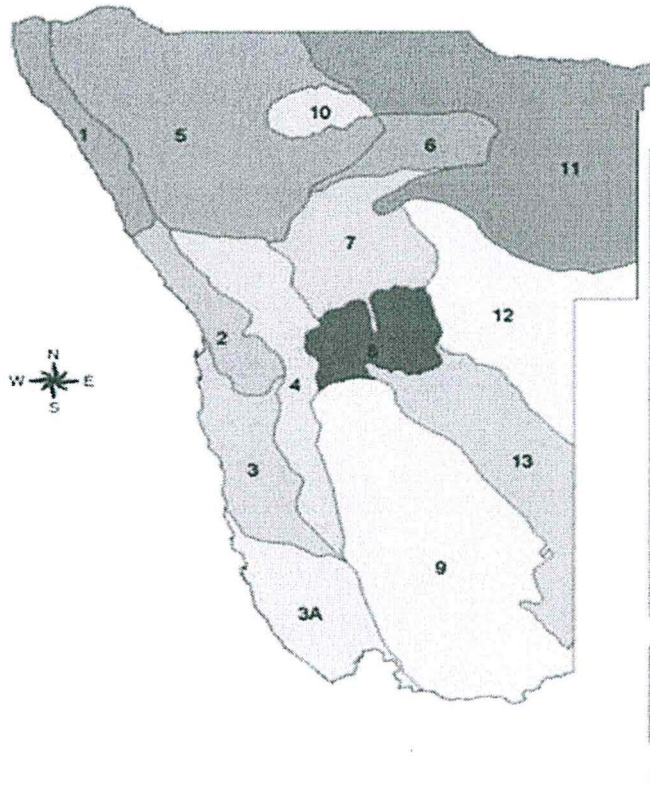


Fig. 1 [13]

Question 2

Plant identification is important for a rangeland scientist. Below is a list of different plant species that fall under different plant types or classes such as annual grasses, perennial grasses, forbs(dicots), forbs (monocots), bushes and trees:

Acacia erioloba, *Anthehora pubescens*, *Cynodon dactylon*, *Boscia albitrunca*,
Commelina benghalensis, *Cleome gynandra*, *Schmidtia kalahariensis*, *Brachiaria nigropedata*,
Tarchonanthus camphoratus, *Aristida congesta*,

In the table below, rearrange the above-mentioned species into their respective classes: annual grasses, perennial grasses, forbs(dicots), forbs (monocots), bushes and trees:

Annual grasses	Perennial grasses	Forbs (dicots)	Forbs (monocots)	Bushes and trees

[10]

Question 3

Whenever you are looking at a rangeland to assess its condition, it is always useful to look at the nearest benchmark for comparison. Answer the following questions about establishing a benchmark?

- 3.1 Which two factors should a benchmark normally be protected from? (2)
- 3.2 Why should a benchmark have a gate? (2)
- 3.3 What are two reasons why the shape of a benchmark is normally square? (2)
- 3.4 Which two types of problem are likely to arise if a benchmark is too small, i.e. less than 30 x 30 m (2)
- 3.5 If, during a drought, you find some grasses dying in the benchmark due to lack of water, would you irrigate them to keep them alive? Give the reasons for your answer (2)

[10]

Question 4

4.1 Briefly explain the overall purpose of the restoration work that you participated in at farm Krumhuk in March, in relation to the hydromorphic grassland. (4)

Then explain the function of each of the following, in contributing to the overall purpose:

- 4.2 Suspension filters. (2)
- 4.3 Diversion filters. (2)
- 4.4 Road humps. (2)

[10]

Question 5

Suppose that monitoring by a farmer shows that, in order to prevent over-grazing, the maximum grazing period should not exceed 7 days under fast growth and 28 days under slow growth. While the minimum rest period should be at least 36 days under fast growth and 150 days under slow growth. However, he can only afford to allocate four paddocks per herd of cattle.

Make use of a table, like that below, to show your figures:

	Based upon maximum		Based upon minimum rest	
	Fast growth	Slow growth	Fast growth	Slow growth
Grazing period				
Rest period				

☑ = correct timing ☒ = slight overgrazing ☒☒☒ = destructive overgrazing [8]

Question 6

Name and explain different methods used to construct and maintain fire breaks [10]

Question 7

Drought occurs naturally in Namibia; the year 2013 was declared a drought year due to below average rainfall received in most parts of the country. As an extension officer, you are asked to put in place advanced management strategies in order to reduce the negative impact of a drought. What would you advice the farmers in this regard. [10]

Question 8

Name any five (5) fodder plants grown in Namibia for livestock production. [5]

Question 9

Resting of rangelands can be achieved by herding or fencing.

9.1 Briefly explain the relative advantages and disadvantages of each. (5)

9.2 Suggest two ways whereby you could lobby for the use of herding to be promoted. (4)
[9]

Question 10

Holistic management provides long rest with short grazing periods, whereas the grazing strategy of Riaan Dames provides long rest with long grazing periods. Explain the differences between the effects of these two grazing strategies on each of the following:

10.1 The abundance of dense patches of annual grasses (5)

10.2 The vigour of perennial grasses (5)

10.3 The growth rate of cattle (5)

[15]

TOTAL: 100