



NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Faculty of Health, Applied Science and Natural Resources

Department Agriculture and Natural Resources Sciences

QUALIFICATION: Bachelor of Natural Resource Management (Nature Conservation)	
QUALIFICATION CODE: 07BNRS	LEVEL: 6
COURSE: Rangeland Ecology and Management	COURSE CODE: REM611S
DATE: June 2022	SESSION: June
DURATION: 3 (three) hours	MARKS: 150

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Ms. E. N. Nghalipo
MODERATOR:	Mr. R. Kavari

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL eleven (11) questions.2. Read all questions carefully before answering.3. Number your answers clearly.4. Make sure your student number appears on the answering script.

PERMISSIBLE MATERIALS

1. Examination paper
2. Examination script
3. Calculator

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

QUESTION 1

Describe the following terms and phrases fully, as applied to Rangeland Ecology and Management, using a relevant example for each.

- 1.1 Rangelands (2)
 - 1.2 Rangeland Monitoring (2)
 - 1.3 Ecological status of a grass (2)
 - 1.4 Carrying capacity (2)
 - 1.5 Landscape Function Analysis (2)
 - 1.6 Fire regime (2)
 - 1.7 Bush encroachment (2)
 - 1.8 Plant Succession (2)
 - 1.9 Adaptive management (2)
 - 1.10 Root cause analysis (2)
- [20]

QUESTION 2

- 2.1. Describe the four principles of sustainable rangeland management. (10)
- [10]

QUESTION 3

- 3.1 Discuss the current status and trends of the Namibian rangelands, giving relevant examples, explain factors contributing to its state. (10)
 - 3.2 What does the current status of the Namibian rangelands mean in terms of the socio-economic aspect of the country? (10)
- [20]

QUESTION 4

- 4.1 You are the newly appointed Warden of Mahango National Park. You are given three years of veld monitoring data for one habitat type and you are required to interpret them. (15)

The data you have are as follows:

Results of 200 point step-point survey for the tree and woodland Savanna habitat type:

Year	Decreaser	Increaser I	Increaser II a	Increaser II b	Increaser II c
2016	90	50	20	20	20
2017	80	70	30	10	10
2018	100	60	20	10	10

Use the Ecological Index Method to compare veld condition for the tree and woodland savanna between 2016-2017-2018.

[15]

QUESTION 5

You are the newly appointed Warden for NamibRand Nature Reserve; you are to rent a 3000 ha portion of the reserve for the following year and want to know how many springboks can sustainably be stocked on this portion. A grass biomass assessment indicated that the farm has on average 600 kg dry grass material per ha. An average springbok on this reserve eats 2 kg of dry grass per day.

- 5.1 Assuming a utilization factor of 0.35, how many hectares are required per springbok on this farm? (4)
- 5.2 How many springboks can be stocked sustainably on this reserve? (2)
- 5.3 A new private game reserve has been established in Omaheke region, as a recent NRM graduate, you have been asked to assist in setting up the stocking rate for the game reserve. (4)

What factors do you need to consider when setting up a stocking rate?

[10]

QUESTION 6

- 6.1 Grazing value refers to the quantity and quality of grazing material. Name and clearly describe the six aspects of the grazing value. (12)
- 6.2 What can be concluded regarding the grazing status of a rangeland if you find a substantial abundance of? (2)
- (a) Decreaser grasses
- (b) Increaser I grasses
- 6.3 Name 6 grass species that make up the “Namibian six-pack” grasses. (6)

[20]

QUESTION 7

- 7.1 Landscape Function Analysis (LFA) is a widely recommended approach for rehabilitation work in rangelands, mining industry and conservation. Explain why this approach is recommended. (8)
- 7.2 What aspects does LFA assess? (2)

[10]

QUESTION 8

8.1 Fire is an important factor to consider in the management of a park or farm. Explain the importance of prescribed fire in the rangeland. (5)

8.2 Mention five factors that influence fire behavior. (5)

[10]

QUESTION 9

9.1 Bush encroachment and thickening is one of the major environmental problems in Namibia. (5)

What are the ecological consequences of bush encroachment and thickening?

9.2 Name 5 woody species responsible for bush encroachment in Namibia. (5)

[10]

QUESTION 10

10.1 Game count activities are an important part of wildlife management in national parks, conservancies and game reserves that must be conducted annually. Discuss why information from the game count is important in wildlife management. (10)

10.2 Mention five **ground** game count methods. (5)

[15]

QUESTION 11

11.1 National Parks are vital tools for conserving Namibia's biodiversity. It is therefore important that parks have management plans that guide their operations. Explain the objectives of park management plans in Namibia. (10)

[10]

Total marks: 150

The END