



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

SCHOOL OF AGRICULTURE AND NATURAL RESOURCES SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCES AND AGRIBUSINESS

QUALIFICATIONS: BACHELOR OF SCIENCE IN AGRICULTURE	
QUALIFICATIONS CODE: 07BAGA	LEVEL: 7
COURSE CODE: RGE521S	COURSE NAME: RANGELAND ECOLOGY
DATE: NOVEMBER 2024	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER:	DR. JEROME BOYS
MODERATOR:	DR. HILMA RANTILLA AMWELE

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer all questions.2. Please write neatly and legibly.3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.4. No books, notes and other additional aids are allowed.5. Mark all answers clearly with their respective question numbers.

PERMISSIBLE MATERIALS:
<ol style="list-style-type: none">1. None-programmable calculator

ATTACHMENTS
<ol style="list-style-type: none">1. None

**THIS QUESTION PAPER CONSISTS OF 3 PAGES
(Including This Front Page)**

QUESTION 1

Define the following:

- 1.1. Livestock farmer, from a rangeland point of view, (2)
- 1.2. Grass, (2)
- 1.3. Mulch or litter, (1)
- 1.4. Primary succession, (2)
- 1.5. Growth reserves, (2)
- 1.6. Desertification, (2)
- 1.7. Land degradation, and (2)
- 1.8. Stocking rate. (2)

[15]

QUESTION 2

- 2.1. Why is a mixed veld consisting especially of grass and dwarf shrubs amongst others considered to have a higher nutritional value throughout the year? (2)
- 2.2. Differentiate between interspecific and intraspecific competition amongst plants. (4)
- 2.3. What time of the year would be the best to burn veld and why? (2)
- 2.4. What time of the year is most detrimental to burning veld and why? (2)
- 2.5. Name 5 signs of degraded land. (5)

[15]

QUESTION 3

- 3.1. Discuss 5 factors that can influence the grazing habits of animals. (10)
- 3.2. Explain 5 factors influencing the harmfulness of toxic plants. (10)

[20]

QUESTION 4

- 4.1. Discuss the different forms of selective feeding. (18)
- 4.2. Name 2 traits that make indigenous livestock more adapted to harsh grazing conditions in Namibia. (2)

[20]

QUESTION 5

A farmer decided to determine grazing capacity in a single camp on his/her farm. The farmer clipped 40, (0.5m x 0.5m) quadrates with a TOTAL yield of 15 kg of grass after it was dried in an oven.

- 5.1. Convert the clipped grass biomass to kg/ha. Show all your calculations. (3)
- 5.2. Calculate the grazing capacity from the dry matter yield for a year (365 days) in kg Animal Biomass / ha / year, using a 50% utilization factor. Show all your calculations. (4)

5.3. The camp is 80 ha and the farmer is planning to stock the camp with 1500 ewes with an average mass of 55kg for 240 days. How will you advice the farmer and should he/she go ahead with the plan? Show all your calculations (5)

5.4. What will be the correct stocking density of sheep (in numbers) on the 80-ha camp for the planned 240 days? Show all your calculations. (3)

[15]

QUESTION 6

You have done a woody survey in a 50m x 2.5m belt transect and recorded the following plants with their plant heights:

- 7 x *D. cinerea*: 2.8m height/plant
- 10 x *G. flava*: 2.3m height/plant
- 3 x *B. albitrunca*: 4.7m height/plant

6.1. What is the plant density (plants/ha) on a species basis? (6)

6.2. What is the total plant density (plants/ha)? (2)

6.3. What is the total plant density (Tree Equivalents/ha)? (5)

6.4. Why are there more Tree Equivalents (TE)/ha than plants/ha? (2)

[15]

END OF QUESTION PAPER