



**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**

<b>QUALIFICATIONS:</b> BACHELOR OF SCIENCE IN AGRICULTURE	
<b>QUALIFICATIONS CODE:</b> 07BAGA	<b>LEVEL:</b> 7
<b>COURSE CODE:</b> RGE521S	<b>COURSE NAME:</b> RANGELAND ECOLOGY
<b>DATE:</b> JANUARY 2025	<b>PAPER:</b> THEORY
<b>DURATION:</b> 3 HOURS	<b>MARKS:</b> 100

<b>SECOND OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER:</b>	DR. JEROME BOYS
<b>MODERATOR:</b>	DR. HILMA RANTILLA AMWELE

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

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

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

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

### **QUESTION 1**

Define the following:

- 1.1. Rangeland, (2)
- 1.2. Saplings, (2)
- 1.3. Mulch or litter, (1)
- 1.4. Continuous grazing, (2)
- 1.5. Growth reserves, (2)
- 1.6. Succession, (2)
- 1.7. Rotational grazing, and (2)
- 1.8. Stocking rate. (2)

**[15]**

### **QUESTION 2**

- 2.1. Name the 5 biomes in Namibia. (5)
- 2.2. Name any 5 vegetation types that fall within the Tree and Shrub biome of Namibia. (5)
- 2.3. Name 5 signs of degraded land. (5)

**[15]**

### **QUESTION 3**

- 3.1. Discuss the process of photosynthesis in both the light and dark phases. (10)
- 3.2. Explain the growth point development in a grass plant. (10)

**[20]**

### **QUESTION 4**

- 4.1. Discuss the different forms of selective feeding. (18)
- 4.2. Name 2 non-structural carbohydrate reserves. (2)

**[20]**

### **QUESTION 5**

A farmer decided to determine grazing capacity in a single camp on his/her farm. The farmer clipped 40, (1m x 1m) 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 an 80% 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 an herbaceous survey on a 50m line and recorded the following plants:

- 7 x *Heteropogon contortus* (1 basal strike, 6 canopy strikes, 0 nearest plants)
- 10 x *Stipagrostis uniplumis* (0 basal strike, 10 canopy strikes, 0 nearest plants)
- 3 x *Cenchrus ciliaris* (0 basal strike, 0 canopy strikes, 3 nearest plants)
- 30 x *Enneapogon cenchroides* (1 basal strike, 10 canopy strikes, 19 nearest plants)

6.1. What is the plant composition (%) on a species basis? (8)

6.2. What is the total percentage canopy cover? (2)

6.3. What is the basal cover percentage on a species basis? (4)

6.4. What is the overall perennial grass composition (%)? (1)

[15]

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END OF QUESTION PAPER