



**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>QUALIFICATION: BACHELOR OF SCIENCE IN AGRICULTURE</b>	
<b>QUALIFICATION CODE: BAGA</b>	<b>LEVEL: 7</b>
<b>COURSE CODE: RRG611S</b>	<b>COURSE NAME: RANGELAND REGENERATION</b>
<b>SESSION: JUNE 2023</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	Dr Edgar Mowa
<b>MODERATOR:</b>	Dr Hilma Amwele

<b>INSTRUCTIONS</b>
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

**PERMISSIBLE MATERIALS**

1. Examination question paper
2. Answering book

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

1.	Define the following: (a) Benchmarks (b) Heterogeneous rangeland (c) Veld reinforcement	[3]																								
2.	Name any 5 pitfalls to look out for when identifying plants.  <ul style="list-style-type: none"> <li>• <i>Plants vary a lot – look at many specimens, not just one</i></li> <li>• <i>Young plants / growth often different from mature – look at both</i></li> <li>• <i>Beware of two species growing close together</i></li> <li>• <i>Parasites and climbers</i></li> <li>• <i>Many species have look alikes</i></li> <li>• <i>Don't just look at one character and think you know the species</i></li> </ul>	[5]																								
3.	Suppose that during a drought, and grass species A is still alive in both the benchmark and the surroundings, grass species B is found to have died in both the benchmark and the continuously grazed surroundings, grass species C is found to have died out in the surroundings but survived in the benchmark: a. Which species is resistant to continuous grazing? A b. Which is likely to be a mesophyte? A c. Which species is likely to be a palatable xerophyte? C d. Which species is likely to be an unpalatable xerophyte? A e. Which species would you collect seeds from to re-establish in the surrounding areas after the introduction of good grazing management? C	[5]																								
4.	A farm in Otjimbingwe is composed by the following habitats: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Habitat type</th> <th>% of total area covered</th> <th>% of time spent by animals (importance)</th> <th>Number of sampling effort allocated</th> </tr> </thead> <tbody> <tr> <td>Foothills</td> <td>30</td> <td>25</td> <td></td> </tr> <tr> <td>Pans</td> <td>15</td> <td>10</td> <td></td> </tr> <tr> <td>Steep slopes</td> <td>30</td> <td>5</td> <td></td> </tr> <tr> <td>Plains</td> <td>25</td> <td>60</td> <td></td> </tr> <tr> <td>Total</td> <td>100</td> <td>100</td> <td></td> </tr> </tbody> </table> <p>If your study has 20 points that you need to sample overall to cover this farm, indicate how the 20 points will be spread across habitats.</p>	Habitat type	% of total area covered	% of time spent by animals (importance)	Number of sampling effort allocated	Foothills	30	25		Pans	15	10		Steep slopes	30	5		Plains	25	60		Total	100	100		[4]
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5.	Discuss in detail the 4 determinants in measuring rangeland condition.	[8]																								
6.	Suppose a farmer with rangeland of 6000ha estimates at the end of the growing season that a representative square with sides of 25m is required by one LSUday and that the dry season will last for 300 days 1. Estimate the grazing capacity?  2. Determine the number of LSU that the farmer should stock?	[6]																								
7.	Distinguish between advantages and disadvantages of Continuous grazing and Rotational	[10]																								

	grazing.	
8.	Suppose a rangeland of 9000ha yields an average of 50gDM/m <sup>2</sup> . Using the objective method, calculate the number of Large Stock Unit (LSU) and Small Stock Unit (SSU) that the farmer should stock for that year?	[6]
9.	Explain what could cause cattle not to conceive emanating from rangeland management.	[4]
10.	How can you determine the maximum grazing period and minimum rest period in order to prevent overgrazing?	[6]
11.	Suppose that monitoring by a farmer shows that, in order to prevent overgrazing, the maximum grazing period should not exceed 20 days while the minimum rest period should be at least 120 days.  (a) Calculate the number of paddocks per head (b) Calculate the grazing period (c) Calculate rest period	[6]
12.	Explain why a square block firebreak is more efficient than a rectangular firebreak on a rangeland.	[2]
13.	Differentiate between any five (5) main methods of constructing and maintaining firebreaks.	[15]
14.	Differentiate between treatment of symptoms and treatment of causes of rangeland degradation.	[4]
15.	Describe any two (2) main methods used for reseeding of rangeland plants.	[4]
16.	Describe the main methods used for control of bush and weed encroachment.	[3]
17.	Describe the main methods used for controlling water and wind erosion on rangeland land.	[4]
18.	Differentiate between the steps to be followed when using subjective compared to objective method of estimating grazing capacity.	[5]