NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY (NUST)

Department of Agriculture and Natural Resources Sciences

QUALIFICATION: Bachelor of Natural Resource Management Honours	
QUALIFICATION CODE: 08BNRH	**LEVEL:** 8
COURSE: Rangeland Ecology	**COURSE CODE:** RGE811S
DATE: July 2022	**SESSION:** July
DURATION: 3 Hours	**MARKS:** 100

SECOND OPPORTUNITY

EXAMINERS: Prof. Ben Strohbach and Mr. Jerome Boys

MODERATOR: Dr. Absalom Kahumba

THIS PAPER CONSISTS OF 3 (THREE) PAGES INCLUDING THIS FRONT PAGE

Instructions

1. Answer **all four (4) questions.**
2. Candidates must correctly number their responses on the ANSWER sheet.
3. Candidates are allowed to use calculators.

Question 1: **[20]**

Define the following terms in Rangeland Science context.

1.1. Savanna (3)
1.2. Biome (3)
1.3. Vegetation type (2)
1.4. Evapo-transpiration Tree Equivalent (ETTE) (2)
1.5. Stability (2)
1.6. Resilience (3)
1.7. Grazing capacity (3)
1.8. Stocking rate (2)

Question 2: **[15]**

Discuss the Highland Savanna vegetation type in detail and with special focus on:

2.1.Its location in Namibia, (2)
2.2. Broad plant composition, (2)
2.3. Adaptability of plants, (2)
2.4. Grazing/fodder availability throughout the year, (2)
2.5. Its suitability for livestock farming and, (5)
2.6. Adjacent savannas

Question 3: **[10]**

Discuss the growth and development of a Karoo Dwarf Shrub in detail with focus on:

3.1. Growth point development (2)
3.2. Growth reserves (3)
3.3. Reasons for slow growth rate (4)
3.4. Active growth time (1)

Question 4: **[20]**

Discuss the different forms of rangeland degradation and possible restoration techniques for each of those forms of degradation.

Question 5: **[5]**

Explain how vegetation in good condition is more beneficial as opposed to

vegetation in a bad condition.

Question 6: **[10]**

Discuss the importance of cultivated pastures in a livestock farm set-up, factors that should be considered before embarking its establishment and some species that are most commonly cultivated in Namibia under dryland or irrigation.

Question 7: **[5]**

Name any five (5) characteristics of good pasture plants from a nutritional point of view.

Question 8: **[15]**

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

8.1. Convert the clipped grass biomass to kg/ha. (3)

8.2. Calculate the grazing capacity in kg Animal Biomass / ha / year, using a 50% utilization factor. (4)

8.3. 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 this farmer and should he/she go ahead with the plan? (5)

8.4. What will be the correct stocking density of sheep on the 80 ha camp for the planned 240 days? (3)