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: June 2022	**SESSION:** June
DURATION: 3 Hours	**MARKS:** 100

FIRST 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. Ecosystem (3)
1.2. Biome (3)
1.3. Veld/Vegetation type (2)
1.4. Plant association (2)
1.5. Plant community (2)
1.6. Carrying capacity (3)
1.7. Grazing capacity (3)
1.8. Livestock farmer (2)

Question 2: **[10]**

Discuss the Dwarf Shrub Savanna vegetation type in detail, 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 and (2)
2.5. Its suitability for livestock farming. (2)

Question 3: **[20]**

Discuss the growth and development of a grass plant in detail with focus on:

3.1. Growth point development (2)
3.2. Growth reserves (3)
3.3. Root growth (3)
3.4. Growth cycle (12)

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 veld in good condition is more beneficial as opposed to veld in bad condition.

Question 6: **[5]**

What are the consequences of grazing a specific camp/area in the summer year after year in the Dwarf Shrub Savanna with sheep only?

Question 7: **[5]**

Name any five vegetation types that fall in the Tree and Shrub Biome in Namibia.

Question 8: **[15]**

A farmer decided to determine the grazing capacity in a camp on his/her farm. The farmer clipped 40 ($1m^2$) quadrates with a yield of 25 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 the 80 ha camp for a planned period of 240 days? (3)