

UNIVERSITY OF FORT HARE



DEPARTMENT OF LIVESTOCK AND PASTURE SCIENCE

Veld rehabilitation

AGP 412: Exam

Date: June/2023

Time: 3 hours

Marks: 100 marks

Instructions

Answer all questions.

Read and understand the question before answering.

Number all your answers correctly.

Do not copy.

Question 1 [10 marks]

Briefly define the following:

- a. Rangeland degradation. [2 marks]
- b. Bush encroachment. [2 marks]
- c. Passive restoration. [2 marks]
- d. Active restoration. [2 marks]
- e. Biodiversity. [2 marks]

Question 2 [30 marks]

- a. A recently married couple, Mr Yolwa and Mrs Maqungu, bought a farm in a Karoo area Cradock. They insisted to buy this farm although it is degraded with persistent large bare patches and few sparsely distributed swards of palatable grass species. Explain how they should rehabilitate their farm considering that they cannot wait for too long, instead they want to quickly utilize their rangeland. [10 marks]
- b. Discuss the drivers and effects of bush encroachment. [10 marks]
- c. Discuss biological control of plant invasion. [6 marks]
- d. Give four reasons for resting. [4 marks]

Question 3 [20 marks]

- a. Use a diagram to explain a relationship between the stocking rate and animal performance. [10 marks]
- b. How do we rest in karoo vs grasslands, particularly for short-term animal requirements in grasslands? [10 marks]

Question 4 [20 marks]

- a. You as a fire ecologist, are consulted by the department of Agriculture regarding fire management. Giving reasons, which fire prescriptions would you recommend for:
 - I. Control of bush encroachment? [10 marks]
 - II. Removal of moribund and improvement of grass quality? [10 marks]

Question 5 [20 marks]

You have noticed that the condition of the range on your uncle's much talked about new farm is highly variable, ranging from poor to excellent, largely due to poor water distribution. Although range terrain is generally flat, about 40% of the range is within 1.5 km of water, 45% between 1.5 km

and 3.2 km from water, and 15% over 3.2 km from water. The total area of the farm is 3 600 ha, but 5% of this area is heavily encroached by thorny Acacias, which limit animal movements. He would like to graze animals yearlong (365 days). Based on extension information already obtained about the property, production of key forage species averages about 260 kg/ha per year. Beef cow-calf system is the production model of choice.

- a. How many 400-kg cows will this range support?
- i. Without adjustment for distance from water. [12 marks]
 - ii. If he keeps sheep instead of cattle if 1 sheep is 65kg. [2 marks]
 - iii. Fully adjusted for distance from water. [6 marks]

** Assume: forage allowable usage of 50%.

**Percent reduction in carrying capacity for 0 -1.5, 1.5 – 3.2 and over 3.2 km from water is 0, 50 and 100%, respectively.

**daily feed intake of 2% of bodywt.