



**PAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**Faculty of Natural Resources and Spatial Sciences**

**Department of Agriculture and Natural Resource Sciences**

<b>QUALIFICATION: Bachelor of Agriculture</b>	
<b>QUALIFICATION CODE: 07BAGR</b>	<b>LEVEL: 5</b>
<b>COURSE: Rangeland Science</b>	<b>COURSE CODE: RSC520S</b>
<b>DATE: xxx January 2019</b>	
<b>DURATION: 3 hours</b>	<b>MARKS: 100</b>

<b>SECOND OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
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**THIS QUESTION PAPER CONSIST OF 5 PAGES**  
(Excluding this front page)

**INSTRUCTIONS**

1. There is no need to follow this marking scheme rigorously.
2. Also use your own judgment in the allocation of marks.

**PERMISSIBLE MATERIALS FOR STUDENTS**

1. Calculator.

**Question 1**

Explain the difference between dormancy and rest as applied to a perennial grass, while indicating the seasons of the year when each takes place and explaining the factors that may change the time when each starts and ends. [5]

**Question 2**

Copy down the tables and titles below. Then fill in the cells with brief explanations that show the changing balance between the two types of plants. [16]

**Response to grazing pressure over long periods by an individual perennial grass with broad leaves that is palatable and an individual annual grass with thin leaves that is unpalatable, while growing apart from each other**

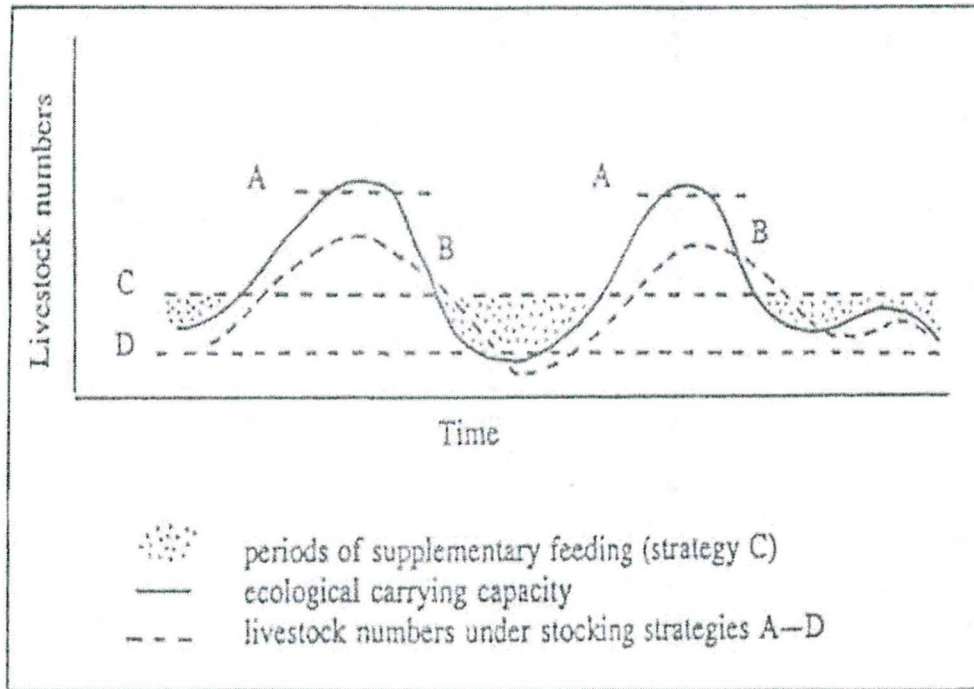
<i>Growing alone</i>	<b>YEARS OF CONTINUOUS HIGH GRAZING PRESSURE</b>	<b>YEARS OF LONG REST THAT FOLLOW GRAZING</b>
<b>PALATABLE PERENNIAL GRASS</b>		
<b>UNPALATABLE ANNUAL GRASS</b>		

**Competition between these same species of palatable perennial grasses and unpalatable annual grasses growing together under changing grazing pressure**

<i>Growing together</i>	<b>YEARS OF CONTINUOUS HIGH GRAZING PRESSURE</b>	<b>YEARS OF LONG REST THAT FOLLOW GRAZING</b>
<b>PALATABLE PERENNIAL GRASS</b>		
<b>UNPALATABLE ANNUAL GRASS</b>		

**Question 3**

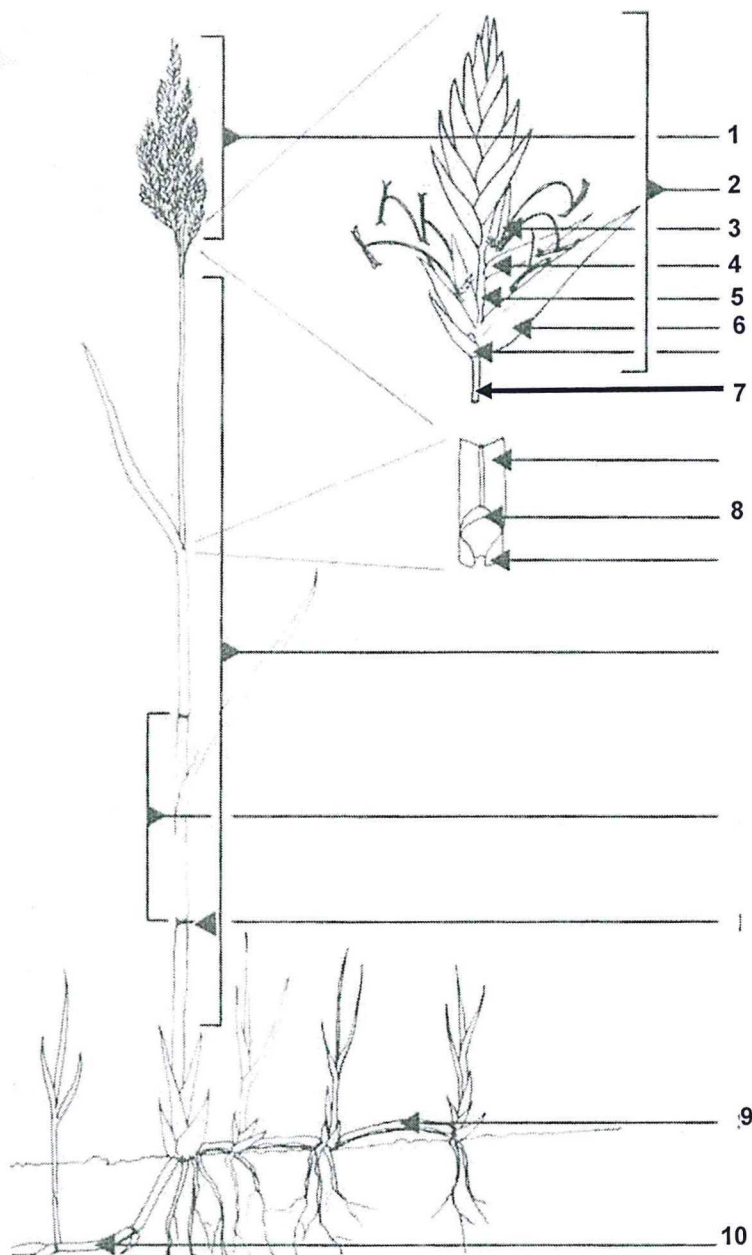
Different farmers may use different strategies to cope with changing rainfall over the years. Describe each of the four strategies marked A-D in the diagram below and explain the major contrasting implications of each.



[12]

**Question 4**

Label the numbered plant parts in the figure below, by writing down each number and alongside it, writing the name of the corresponding plant part. [10]



**Question 5**

- 5.1 Describe how water used to flow through a healthy rangeland. (2)
- 5.2 Explain what caused the water to flow this way and how it was self-reinforced. (5)
- 5.3 Explain how humans interfered with natural water flow and the resulting consequences for the rangeland. (5)
- [12]

**Question 6**

Discuss how the following factors influences the growth processes of plants ?

- 6.1 Grazing (3)
- 6.2 Rest (3)
- 6.3 Establishment of seedlings (3)
- 6.4 Trampling the soil (3)
- [12]

**Question 7**

Name the conditions which the harmfulness of toxic plants depends on in a rangeland [5]

**Question 8**

There are different models that explain the dynamics of plant communities in rangelands. The simplest model is that of succession. Explain how this model functions with the aid of a diagram? [10]

**Question 9**

Desertification is the worsening in the health and productivity of the land. Name and explain the possible causes of desertification induced by human? [18]