



**PAMIBIA UNIVERSITY**  
**OF SCIENCE AND TECHNOLOGY**

**FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES**

**DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES**

<b>QUALIFICATION: BACHELOR OF NATURAL RESOURCES MANAGEMENT (NATURE CONSERVATION)</b>	
<b>QUALIFICATION CODE:</b> 07BNTC	<b>LEVEL:</b> 7
<b>COURSE CODE:</b> ZLY621S	<b>COURSE NAME:</b> Zoology 2
<b>DATE:</b> January 2023	
<b>DURATION:</b> 3 hours	<b>MARKS:</b> 150

<b>SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION PAPER</b>	
<b>EXAMINER(S)</b>	Mr R. Kavari
<b>MODERATOR:</b>	Ms L. Theron

<b>INSTRUCTIONS</b>
<ol style="list-style-type: none"><li>1. Answer ALL the questions.</li><li>2. Write clearly and neatly.</li><li>3. Number the answers clearly.</li></ol>

**PERMISSIBLE MATERIALS**

1. Question paper
2. Answering book

**THIS QUESTION PAPER CONSISTS OF 5 PAGES (Excluding this front page)**

## SECTION A: Terminology

### QUESTION 1

Give the correct zoological term for each of the following descriptions:

- 1.1 A configuration of blood vessels (arteries and veins) in a sinus at the base of the brain. The structure that helps to keep the brain cooler than the body in desert adapted antelopes such as *Oryx gazelle* and *Antidorcas marsupialis*. (1)
- 1.2 A chemical given off by one animal that acts as a signal to another of the same species. (1)
- 1.3 Social grooming between members of the same species. (1)
- 1.4 A periodic condition in bull (male) elephants; characterized by highly aggressive behaviour and accompanied by a large rise in reproductive hormones. (1)
- 1.5 A form of learning in which reflex behaviour is extinguished when the animal finds that it has no adaptive value. (1)
- 1.6 The occurrence in one habitat of more than two forms of a species. (1)
- 1.7 The behaviour of male birds and other animals aimed at attracting a mate. (1)
- 1.8 Modifications in structure and function shared by the members of a group that aid survival. (An evolutionary process of becoming adjusted to a mode of life in a certain environment!) (1)
- 1.9 An association (symbiotic relationship) between two organisms in which one benefits and the other derives neither benefit nor harm. (1)
- 1.10 Historical reconstruction of the origin, dispersal, and extinction of taxa. (2 words) (1)

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### QUESTION 2

Give the scientific name of each of the following mammals (spelling counts):

- 2.1 Klipspringer (1)
- 2.2 wild dogs (1)
- 2.3 Southern Africa hedgehog (1)

Give the supercohort and order to which each of the following mammals belongs (spelling counts):

- 2.4 *Loxodonta africana* (1)
- 2.5 *Papio ursinus ursinus* (1)
- 2.6 *Melivora capensis* (1)

[6]

**Question 3**

Make use of appropriate examples to explain each of the following ethological terms.

- 3.1 Hierarchy (2)
- 3.2 Camouflage (2)
- 3.3 Blubber (2)
- 3.4 Harem (2)
- 3.5 Synchronised calving (2)

[10]

**SECTION B: Classification, Morphology, Adaptation, Endemism**

**QUESTION 4**

- 4.1 Explain how reptiles show evolutionary advancement over amphibians. (6)
- 4.2 Name the four types of flight in birds. (4)
- 4.3 Give the scientific name of the nocturnal Namib Dune gecko, and say why they glow under ultra-violet light. (2)
- 4.4 Give the scientific name of the Damara Tern and explain why it is considered to be a breeding endemic. (2)

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**SECTION C: Ethology**

**QUESTION 5**

- 5.1 Most animals live in organised social units/groups where they share mutual advantages. Elaborate this statement. (5)
- 5.2 You have to give a talk to environmental club at NUST. Your topic is “The importance of Tactile communication in Mammals”. You have to include examples of how and why ruminants, non-ruminants, carnivores and primates make use of tactile communication. Provide a script of your full report. (5)

[10]

**QUESTION 6**

- 6.1 *Papio ursinus ursinus* is one of the most insightful species. Use realistic examples to explain how the aforementioned species demonstrate intelligence. (4)
- 6.2 When is the Aardvark, *Orycteropus afer*, usually active and how is it adapted to its diet? (5)
- 6.3 Explain the anti-predator behaviour of *Suricata suricata*. (5)
- 6.4 Give 5 behavioural characteristics of the family Hippotamidae. (5)

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**QUESTION 7**

- 7.1 Explain the behaviour associated exclusively with ruminants. (6)
- 7.2 Complete the table comparing different Bovidae tribes. No need to redraw the table, simply give the answers A to G. (7)

Tribes	Bovini e.g. Buffalo	Ancelaphi ni e.g. Wildebees t	Reduncini e.g. Lechwe	Antilopini e.g. "Springbo k	Oreotragini e.g. Klipspringer
Social organisatio n	Gregario us Large herds Mixed in breeding season	Gregariou s Female, territorial and bachelor herds	<b>(A)</b>	Gregariou s Mixed herds/ harems Bachelor herds	<b>(B)</b>
Scent marking	Probably none	<b>(C)</b>	No scent No hoof glands	<b>(D)</b>	Pre-orbital gland Dung middens
Territorial behaviour	Not territoria l	<b>(E)</b>	Breeding males – Lek	<b>(F)</b>	Both sexes

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Parenting behaviour	<b>(G)</b>	Follower calves	Hide calves	Hide calves	Hide calves
Anti-predator behaviour	Individual and group attack. stampeding	Group defence Bunch and flee together	Flee to water Skulking	Leaping, scattering Pronking	Alarm call, freeze, stamp feet, flee

### QUESTION 8

- 8.1 Name two matriarchal mammals studied and describe the social structure, including hierarchy in each. (8)
- 8.2 The most commonly observed social interaction between giraffes is a behaviour known as “necking”. Briefly describe this social interaction. (4)
- 8.3 Draw up a table to compare the appearance and habitat preferences of Mountain Zebra and Plains Zebra species found in Namibia. (Two marks per characteristic compared, any 4 compared) (8)

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### SECTION D: Adaptations to different lifestyles

#### QUESTION 9

- 9.1 Explain how you can use skull morphology to determine the feeding type/habit of an animal. (6)
- 9.2 Discuss the criteria that will determine how well a population is adapted to new conditions at any given time. (6)
- 9.3 You are working in an Animal Factory. You were given the opportunity to design a very well-adapted **scansorial** animal. Provide 4 characteristics that you would put into your design and explain the need/importance for each characteristic. (6)

- 9.4 Use the theory of Darwin's finches to explain the concept of **isolation** and **speciation**. (3)
- 9.5 **Natural selection** is one of the basic mechanisms of evolution, along with mutation, migration, and genetic drift. Explain how Charles Darwin used the example of peppered moth to substantiate the theory of Natural selection (during industrial revolution). (3)
- 9.6 Provide 5 examples of Namibian animals that handle active prey and explain how they do it. (5)
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### SECTION E: Zoogeography

#### QUESTION 10

- 10.1 Name all the zoogeographic regions. (5)
- 10.2 In plate tectonics, the lithospheric plates ride on the asthenosphere. These plates move in 3 ways. Discuss these 3 types of boundaries and what each creates/causes. Make use of drawings to further clarify your answers. (9)
- 10.3 According to scientists South America, Africa, India, Australia and Antarctica were formerly connected to each other, forming a large land mass known as Gondwanaland. On what evidences do they base these allegations? (5)
- [19]

**TOTAL [150]**  
**End**