



PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCE MANAGEMENT (NATURE CONSERVATION)	
QUALIFICATION CODE: 07BNTC	LEVEL: 7
COURSE CODE: ALS520S	COURSE NAME: ANIMAL STUDIES 1
SESSION: NOVEMBER 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 150

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MS GAIL MORLAND
MODERATOR:	MR. H. TJIKURUNDA

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

PERMISSIBLE MATERIALS

1. All written work **MUST** be done in blue or black ink
2. No books, notes and other additional aids are allowed

THIS QUESTION PAPER CONSISTS OF 4 PAGES (excluding this front page)

SECTION A

1. Provide a word/phrase that matches the description provided:
 - 1.1 Reproduction as a result of budding, fragmentation and gemmules. (1)
 - 1.2 Segment used for reproduction in the Annelida. (1)
 - 1.3 Sense organ used by Osteichthyes. (1)
 - 1.4 Venom that affects the clotting capability of blood. (1)
 - 1.5 Teeth used for stabbing and holding prey. (1)
 - 1.6 An interaction whereby one organism benefits and the other is not affected by this relationship. (1)
 - 1.7 When organisms have separate sexes in separate individuals. (1)
 - 1.8 Large cartilaginous projection in mouth on which radula is supported. (1)
 - 1.9 Breathing apparatus used by arachnids. (1)
 - 1.10 Thin flexible covering over the gills of fish. (1)
2. Define the following words/phrases:
 - 2.1 Phenetic classification system. (1)
 - 2.2 Torsion (1)
 - 2.3 Torpor (1)
 - 2.4 Polyandry (1)
 - 2.5 Crepuscular (1)
 - 2.6 Inter-specific interactions. (1)
 - 2.7 Arboreal (1)
 - 2.8 Flame cells (1)
 - 2.9 Papulae (1)
 - 2.10 Aestivation (1)
3. Identify the class/order/phylum of animals below based on their distinguishing characteristics.
 - 3.1 Multicellular, sessile marine organisms with many surface openings. (1)
 - 3.2 Dorso-ventrally flattened organisms with triploblastic tissue arrangement and bilateral symmetry. (1)
 - 3.3 Organisms that are dorso-ventrally flattened with a single shield-like shell and a replication of six parts. (1)
 - 3.4 Nocturnal organism with up to 200 segments and a cylindrical body. (1)
 - 3.5 Sea dwelling organisms with no arms and protective spines and five rows of tube feet. (1)
 - 3.6 Animal with no notochord or nerve cord. (1)
 - 3.7 Fearsome predators with cartilaginous skeletons and several gill openings. (1)
 - 3.8 Large carnivorous reptiles with a four chambered heart and a third eyelid. (1)
 - 3.9 Mammals with horny scales that eats ants and rolls into a ball when threatened. (1)
 - 3.10 Mammals that lack nipples and lay eggs. (1)

[10]
SECTION A: [30]

SECTION B

1. Compare the morphology of the Hydrozoa, Scyphozoa and Anthozoa. (6)
2. Discuss the feeding mechanism in *Planaria*. (6)
3. Compare the Platyhelminthes and Nematoda based on their segmentation and reproductive capabilities. (4)
4. Discuss three differences between the Bivalvia and the Gastropoda and provide an example of each class. (8)
5. Discuss the ecological importance of Oligocheata and Hirudinae. (8)
- 6.1 Name the two subphyla of the Arthropoda and discuss how to distinguish between the two. (4)
- 6.2 Discuss four ways that arthropods became so successful at colonising the earth. (4)
7. Compare the differences between the sea urchins and sand dollars. (5)
8. Discuss three characteristics of breeding in Osteichthyes and discuss three types of offspring development that chordates make use of. (6)
- 9.1 Discuss four characteristics that amphibians developed that helped them transition onto land. (4)
- 9.2 Tabulate a comparison between frogs and toads. (4)
- 10.1 Discuss five ways in which Reptiles are more advanced than Amphibians. (4)
- 10.2 There are three suborders of Squamata that have individuals that are leg-less. Name these suborders and discuss how their sight differs from each other. (6)
- 11.1 Discuss the functions of air sacs in birds. (5)
- 11.2 Discuss two differences between precocial and altricial young. (4)
- 12.1 Compare the birthing and nursing processes in monotremes, marsupials and placentals. Also provide an example of each. (9)
- 12.2 Discuss how mammals practice thermoregulation. (3)

SECTION B:[90]

SECTION C

1. Compare the evolution of animals from Porifera, Cnidaria, Annelida, Arthropoda and Echinodermata based on their level of organisation, symmetry, movement and reproduction. (do not tabulate this comparison, use full sentences to discuss the points) (20)

- 2.1 Ambient temperature around the eggs of fish, amphibians plays a role in determining the sex of hatchling. Warmer temperatures produce more male offspring and cooler temperatures produce more female offspring. Discuss why this could be a problem? (5)
- 2.2 Discuss what factors contribute to the problems stated in 2.1. And how we can mitigate these problems. (5)

TOTAL [150]

SECTION C: [30]