

UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER 2017/2018

TITLE OF PAPER: VERTEBRATE ZOOLOGY

COURSE CODE: BIO242/B302

TIME ALLOWED: THREE (3) HOURS

- INSTRUCTIONS:
1. SECTION A IS COMPULSORY. ANSWER ALL QUESTIONS IN THIS SECTION.
 2. ANSWER ANY ONE QUESTION FROM SECTION B.
 3. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELED DIAGRAMS WHERE APPROPRIATE.

SPECIAL REQUIREMENTS:

NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN
GRANTED BY THE INVIGILATORS

SECTION A(Answer all the questions in this section)**Question 1**

Single word answers (if more than one word appears then that answer will immediately be given a “zero”).

- A. How many extant orders of reptiles are there?
- B. What type of jaw articulation do sarcopterygians have?
- C. Do the Anaspida have a carapace and plastron?
- D. How many extra cervical vertebrae (compared with the typical mammal) are there in the neck of a giraffe?
- E. Do amphibians have a single undivided ventricle?
- F. What major artery carries blood from the heart to the afferent branchial arteries in fishes?
- G. Do birds have two functional ovaries?
- H. Does the salamander have bone in its skeleton?
- I. Do existing mammals exhibit all three reproductive systems (e.g. oviparous, ovoviviparous and viviparous)?
- J. Is the proventriculus unique to birds?
- K. Does the Nile crocodile *Crocodylus niloticus* have a diaphragm?
- L. Does the puffadder *Bitis arietans* lay eggs?
- M. Does the pectoral girdle of *Tiktaalik* attach to its head?
- N. How many middle ear ossicles does a bird have?
- O. What is the name of the extant order of Agnatha?

[15 marks]**Question 2**

These two questions (**2A** and **2B**) should be answered by way of sketches or diagrams, with a minimum of writing (except for labels).

2A. Using fully labelled drawings, depict the crania of the following reptiles: a typical aglyph snake; a solenoglyph snake; an opithsoglyph snake; and a typical lizard.

[20 marks]

2B. Draw fully labeled diagrams of the circulatory systems of the following two vertebrates: osteichthyan fishes and mammals.

[20 marks]

Question 3

These questions should be answered by, at most, a short paragraph (i.e. short answers).

Five (5) marks per question. There is no need to present any diagrams.

3A. Explain how a typical adult frog ventilates its lungs.

3B. What is the difference between incubation and nestling periods in birds? Give examples of typical durations for each period type.

3C. Describe the evolutionary development of teeth in vertebrates.

3D. Describe the mode of locomotion in a typical shark.

[20 marks]

SECTION B

(Answer any **one** out of the two questions in this section)

Question 4

Write an essay on the diversity and life histories of Swaziland's amphibians.

[25 marks]

Question 5

The digestive systems of herbivorous mammals show remarkable adaptations for the processing of plant material. With the aid of diagrams, explain how digestion is achieved in different mammalian herbivores; and how this differs from that of a typical (e.g. carnivorous) mammal.

[25 marks]