



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF SCIENCE (BIOLOGY)

BACHELOR OF EDUCATION (SCIENCE)

SZL 200: VERTEBRATE ZOOLOGY

DATE: 1/12/2020

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A: COMPULSORY

QUESTION ONE (30 MARKS)

- a) Differentiate between cephalization and segmentation (2 marks)
- b) Outline three (3) anatomical differences between hag fishes and sharks (3 marks)
- c) Using a well labelled diagram **only**, outline four key chordate characteristics (4 marks)
- d) Describe three characteristics of the circulatory system in amphioxus (3 marks)
- e) Describe three (3) reproductive adaptations in sharks (3 marks)
- f) Outline three (3) behavioural adaptations in amphibians to overcome dessication (3 marks)
- g) Identify three (3) modifications in the reptilian endoskeleton that enabled them to become fully terrestrial (3 marks)
- h) Describe how the the following are structurally adapted to their function
 - i) Amniotic egg (2 marks)
 - ii) Mammalian kidney (2 marks)
- i) Explain why beaks and feet of birds show greater diversity in structure than the rest of the body (2 marks)
- j) In a practical aimed at studying feeding systems in vertebrates, students were provided with two specimen: a rabbit and a cat. Outline three (3) differences they are likely to observe (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

Describe the evolution of the following vertebrate systems

- i) Circulatory (10 marks)
- ii) Respiration (10 marks)

QUESTION THREE (20 MARKS)

Explain the

- i) Significance of teleosts in the vertebrate evolution biology (10 marks)
- ii) Challenges encountered by amphibians on land (10 marks)

QUESTION FOUR (20 MARKS)

Discuss the origin of mammals.

QUESTION FIVE (20 MARKS)

Discuss factors that have contributed to the success of birds in their environment