



MACHAKOS UNIVERSITY

University Examinations 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF SCIENCE IN BIOLOGY

SZL 200: VERTEBRATE ZOOLOGY

DATE: 22/3/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS

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

SECTION A

QUESTION ONE (30 MARKS)

- a) Briefly, describe the structure of a pentadactyle limb. (3 marks)
- b) State three characteristics that differentiate vertebrates from other chordates. (3 marks)
- c) State the theories that explain the origin of chordates. (3 marks)
- d) Briefly, explain the functions of hair in mammals. (3 marks)
- e) Draw a well labeled cleidoic egg with a developing embryo. (3 marks)
- f) Briefly, describe the respiratory surfaces in amphibians. (3 marks)
- g) Briefly, explain how the structure of birds was modified with the evolution of flight. (3 marks)
- h) Define the following:
 - i. Ovipary (1 mark)
 - ii. Ovovivipary (1 mark)
 - iii. Vivipary (1 mark)

- i) Give three reasons for challenges in shark conservation. (3 marks)
- j) Name any **three** classes of fish. (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Give an account of mammalian evolution.

QUESTION THREE (20 MARKS)

Discuss:

- a) The unique combination of characteristics present at some stage in development of chordates. (10 marks)
- b) Adaptations of bony fishes. (10 marks)

QUESTION FOUR (20 MARKS)

Discuss the general features of amphibians.

QUESTION FIVE (20 MARKS)

Explain:

- a) The importance of *Archaeopteryx lithographica* in the evolution of birds. (5 marks)
- b) The distinguishing characteristics of members of class reptilia. (15 marks)