



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

JANUARY – APRIL 2017 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

REGULAR PROGRAMME

BIO 301: VERTEBRATE BIOLOGY

Date: April 2017

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) State two characteristics that show the link between reptiles and birds
(2 marks)
- b) State the differentiating characteristic for the mammalian orders
(3 marks).
- c) Distinguish the three types of tail fins found in fish (3 marks)
- d) Briefly describe the significance of integument in vertebrates (4 marks)
- e) List and briefly describe four major identifying characteristics in the phylum chordata (4marks)
- f) i) Describe the three different kidney structures that appear at different stages of vertebrate development (3 marks)
- ii) Explain three advantages of vertebrate adaptive radiation in nature (3 marks)
- g) Compare the embryology of a salamander, a bird, a monkey and a human being (8 marks)

- Q2. Describe the stages of vertebrate evolutionary adaptive radiation with reference to Darwin's finches, parrot fish, Caribbean anoline lizard and African cichlids
(20 marks)
- Q3. a) Account for thermoregulation, osmoregulation and circulation in camels and polar bears
(15 marks)
- b) Explain the statement "teeth more than any other physical characteristic reveal the life habitat of mammal" with reference to crocodiles, cheetah and a cow
(5 marks)
- Q4. a) Compare the anatomy of vertebrates in relation to the pectoral and the pelvic girdles
(8marks)
- b) Describe adaptive modifications for flight in birds with reference to the muscles and wing
(6 marks)
- c) Map out six adaptive characteristics that enable reptile survive in their environment. Give named examples
(6 marks)
- Q5. a) Mention 4 basic characteristics in mammals and explain how each serve to increase survival chances of the mammals and their offspring
(8 marks)
- b) Discuss structural adaptations for terrestrial life in amphibians, reptiles and mammals
(12 marks)

END