



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 202: COMPARATIVE PHYSIOLOGY

DATE: 7/5/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer question one and any other two questions

QUESTION ONE (30 MARKS)

- a) Describe feeding in a protozoan (3 marks)
- b) Explain
 - i. Why many animals can survive well without fat in their diet (1 mark)
 - ii. Why water is an important requirement in animal nutrition (2 marks)
 - iii. Why an athlete may experience pain in the muscles after a marathon race (2 marks)
- c) Outline three (3) adaptations for mechanical digestion in vertebrates (3 marks)
- d) Explain why air is a better respiratory medium than water (2 marks)
- e) Describe three (3) osmoregulatory adaptations in amphibians (3 marks)
- f) Outline three characteristics of the circulatory system in insects (3 marks)
- g) Explain why terrestrial animals chose to incur more energy cost to excrete their nitrogenous wastes in form of urea rather than less costly ammonia (3 marks)
- h) Describe non-shivering thermogenesis (3 marks)
- i) State three (3) reasons to explain lack of vivipary in some animals (3 marks)
- j) Explain the significance of myelin sheath (2 marks)

QUESTION TWO (20 MARKS)

Discuss the following:

- a) Mechanisms by which animals acquire food (10 marks)
- b) Reproductive adaptations in animals (10 marks)

QUESTION THREE (20 MARKS)

Discuss respiration mechanisms in animals

QUESTION FOUR (20 MARKS)

- a) Describe the structure of a multipolar neuron by use of a well labelled diagram (7 marks)
- b) Discuss the evolution of the nervous system in animals citing examples in each case (14 marks)

QUESTION FIVE (20 MARKS)

Discuss ectothermic adaptations in animals