



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 409: ENVIRONMENTAL PHYSIOLOGY

DATE: 23/7/2019

TIME: 11:00 – 1:00 pM

Instructions

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

SECTION A

QUESTION ONE COMPULSORY (30 MARKS)

- a) Explain how desert birds respond to temperature. (3 marks)
- b) Name three factors affecting metabolic rate. (3 marks)
- c) Explain why lack of vitamin C in the diet may cause anaemia (3 marks)
- d) How is tuna fish, a poikilotherm similar to homeotherms? (3 marks)
- e) State three factors determining the amount of oxygen dissolved in water. (3 marks)
- f) Explain the physiological changes in a hibernating animal. (3 marks)
- g) State the adaptations of animals in oxygen deficient water (3 marks)
- h) Explain osmoregulation in brackish water animals such as eriocher. (3 marks)
- i) Explain the starling law of the heart. (3 marks)
- j) Give reasons for animal aestivation. (3 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTION TWO (20 MARKS)

Discuss phases of insect diapause.

QUESTION THREE (20 MARKS)

Explain the mechanisms of thermoregulation in aquatic poikilotherms.

QUESTION FOUR (20 MARKS)

Describe the hormonal control of the menstrual cycle.

QUESTION FIVE (20 MARKS)

Write an essay on how animals migrate.