



# 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

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## 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.