



20

*(Knowledge for Development)*

# **KIBABII UNIVERSITY**

## **UNIVERSITY EXAMINATIONS 2017/2018 ACADEMIC YEAR**

### **SECOND YEAR SECOND SEMESTER MAIN EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF SCIENCE BIORESOURCE  
MANAGEMENT AND CONSERVATION**

**COURSE CODE: SZL 416**

**COURSE TITLE: ENVIRONMENTAL PHYSIOLOGY**

**DATE: 20<sup>th</sup> December 2017**

**TIME: 3:00 – 5:00 p.m.**

---

#### **INSTRUCTIONS TO CANDIDATES**

Answer Question one (1) and any other two (2) Questions. Question one is compulsory and carries 30 marks, the other Questions carry 20 marks each.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over 

KIBU observes ZERO tolerance to examination cheating

1. a) Explain the relevance of environmental physiology studies to bioresource management and conservation. (4 marks)
  - b) State FOUR avenues of water loss in terrestrial mammals. (4 marks)
  - c) List FIVE processes studied by environmental physiologists. (5 marks)
  - d) Highlight THREE mechanisms of heat production among mammals. (3 marks)
  - e) Describe TWO types of nephrons found in mammalian kidneys. (4 marks)
  - f) Outline FIVE environmental stressors in terrestrial ecosystems. (5 marks)
  - g) Define the following terms as applied in environmental physiology. (5 marks)
    - i. Ectothermy
    - ii. Poikilotherm
    - iii. Internal environment
    - iv. Thermogenesis
    - v. Feedback loop
2. A recent report indicated that Lake Kenyatta, one of Kenya's oldest natural fresh water lakes, is drying up leaving behind a trail of death. The situation threatens the livelihoods of thousands of people and places the survival of rare wildlife at risk. Located on the northern coast of Kenya, 230km north of Malindi and 60km from Lamu Island, the lake covers an area of 496km<sup>2</sup>. The lake used to be home to some of the world's unique birds species that flock the area due to the conducive climate and biodiversity. During its heydays, Lake Kenyatta was home to hundreds of hippos who lived and bred in the waters together with thousands of fresh water snails that lived freely in the lake. While on a fact-finding mission, environmentalists and stakeholders concerned by the situation came face to face with the effects of the destruction of the lake two weeks ago. More than 15 hippo carcasses lay on the drying lake bed while shells of thousands of dead snails were all over the dry areas. From this report, what environmental conditions are likely to change due to the drying of the lake? Discuss FIVE reasons why some hippos and snails may have died in the lake. (20 marks)
3. a) Describe the various ways through which adaptations can be detected. (10 marks)
  - b) Write short notes on various methods through which organisms respond to environmental changes. (10 mark)
4. a) Citing specific examples from the terrestrial mammals, describe the various types of adaptations. (10 marks)

- b) Discuss FIVE types of plasticity. (10 marks)
5. a) Describe the functioning of a mammalian nephron using a well labelled diagram. (10 marks)
- b) Write an essay on the general metabolic responses to temperature. (10 marks)