



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**UNIVERSITY SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN BIOLOGICAL SCIENCES**

4TH YEAR 2ND SEMESTER 2019/2020 ACADEMIC YEAR

MAIN CAMPUS - SPECIAL

COURSE CODE: SBI 3421
COURSE TITLE: ENVIRONMENTAL PHYSIOLOGY
EXAM VENUE: STREAM: (BIO)
DATE: EXAM SESSION:
TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in Section A and Any two questions in Section B**
 - 2. Candidates are advised not to write on question paper**
 - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Highlight characteristics of homeostatic systems (2 marks)
2. Outline the differences between aerobic and anaerobic respiration (2 marks)
3. Explain the importance of the following responses by animals
 - a) Avoidance (2 marks)
 - b) Conformity (2 marks)
4. Describe mechanisms involved in the process of cryptobiosis (3 marks)
5. Highlight unique adaptive characteristics of organisms living in acidic waters (3 marks)
6. Explain the impact of humans on nitrogen cycle (4 marks)
7. Describe various modes of respiration in animals (3 marks)
8. Outline the difference between comparative and environmental physiology (2 marks)
9. Describe strategies used by desert animals to control and tolerate of water loss (3 marks)
10. Highlight survival strategies used by small desert animals (4 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Discuss different processes of nitrogen fixation (20 marks)
12. Discuss problems facing animals living in aquatic environments (20 marks)
13. Describe osmotic challenges of amphibians and reptiles in salt and fresh waters (20 marks)
14. Discuss the following adaptation strategies used by mammals for energy conservation during periods of cold and limited food availability.
 - a) Satiety and feeding behavior (10 marks)
 - b) Fuel switch (10 marks)