ALUPE UNIVERSITY

OFFICE OF THE DEPUTY PRINCIPAL

ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS
2024 /2025 ACADEMIC YEAR

FOURTH YEAR FIRST SEMESTER REGULAR EXAMINATION

FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE

COURSE CODE: ZOO 403 E

COURSE TITLE: ENVIRONMENTAL PHYSIOLOGY

DATE: 6TH JANUARY 2025 **TIME: 08.00 A.M – 11.00 A.M**

INSTRUCTIONS TO CANDIDATES

- **SEE INSIDE**

THIS PAPER CONSISTS OF 4 PRINTED PAGES **PLEASE TURN OVER**

ZOO 403 E

REGULAR – MAIN EXAM

ZOO 403 E: ENVIRONMENTAL PHYSIOLOGY

STREAM: BED (SCIENCE) **DURATION: 3 Hours**

INSTRUCTIONS TO CANDIDATES

i. *Answer **ALL** questions from section A and any **FOUR** from section B.*

ii. *Diagrams should be used whenever they serve to illustrate the answer.*

iii. *Do not write on the question paper.*

SECTION A

Question One

i. Do you think the current climate change scenario is good for the fauna and flora? Explain your answer (3 Marks)

ii. Do smaller endothermic animals require more energy to maintain a constant internal temperature compared to their larger counterparts? Explain. (4 Marks)

iii. What is meant by the following terms?

a. Environmental physiology (2 Marks)

b. Adaptation (2 Marks)

c. Stress (2 Marks)

d. Ectotherm (1 Mark)

e. Endotherm (1 Mark)

f. Poikilotherm (1 Mark)

g. Homeotherm (1 Mark)

Question Two

i. Differentiate between temporal variation and spatial variation (4 Marks)

ii. Explain how environmental conditions creates diversity globally (3 Marks)

iii. Single-celled organisms can satisfy most if not all of their nutrients and waste requirements via diffusion while their multi-cellular counterparts cannot. Why so? (3 Marks)

iv. List any THREE solutions to osmoregulatory problems encountered in aquatic environments (3 Marks)

SECTION B

Question Three

Discuss any FIVE physical factors that affect how animals become adapted to an Environment. (10 Marks)

Question Four

i. Explain how osmoregulation happens in marine organisms. (8 Marks)

ii. What is hypothermia tolerance? How vital is it for organismal survival? (2 Marks)

Question Five

What is meant by:

i. Phenotypic plasticity (2 Marks)

ii. Phenotypic flexibility (2 Marks)

iii. Acclimatization (2 Marks)

iv. Acclimation (2 Marks)

v. Reaction norm (2 Marks)

Question Six

Animals found in colder environments tend to have shorter appendages but with significantly larger body sizes compared to those found in warmer regions. Explain this phenomenon. (10 Marks)

Question Six

Diapause takes place in stages. Discuss (10 Marks)

Question Seven

i. Explain any TWO structural modifications of the desert animals' kidneys (6 Marks)

ii. Explain any TWO ways through which animals respond to environmental Change. (4 Marks)

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