



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF SCIENCE IN BIOLOGY

SZL 202: COMPARATIVE PHYSIOLOGY

DATE: 16/3/2022

TIME : 2:00 – 4:00 PM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

1.
 - a. Describe feeding in a protozoan (3 marks)
 - b. Explain
 - i. Why many animals can survive well without fat in their diet (1 marks)
 - ii. Why water is an important requirement in animal nutrition (2 marks)
 - iii. Why an athlete may experience pain in the muscles after a marathon race (2 marks)
 - c. Outline three (3) adaptations for mechanical digestion in vertebrates (3 marks)
 - d. Explain why air is a better respiratory medium than water (2 marks)
 - e. Describe three (3) osmoregulatory adaptations in amphibians (3 marks)
 - f. Outline three characteristics of the circulatory system in insects (3 marks)
 - g. Explain why terrestrial animals chose to incur more energy cost to excrete their nitrogenous wastes in form of urea rather than less costly ammonia (3 marks)
 - h. Describe non-shivering thermogenesis (3 marks)
 - i. Give three (3) reasons to explain lack of vivipary in some animals (3 marks)
 - j. Explain the significance of myelin sheath (2 marks)

SECTION B

2. Discuss the following:
 - a. Mechanisms by which animals acquire food (10 Marks)
 - b. Reproductive adaptations in animals (10 marks)
3. Discuss respiration mechanisms in animals (20 marks)
4.
 - a. By use of a well labelled diagram, outline the structure of a multipolar neuron (7 Marks)
 - a. Giving relevant examples in each case, discuss the evolution of the nervous system in animals (14 marks)
5. Discuss ectothermic adaptations in animals (20 marks)