



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 202: COMPARATIVE PHYSIOLOGY

DATE: 26/9/2019

TIME: 11.00-14.00 PM

INSTRUCTIONS: answer question one and any other questions

1.
 - a. Differentiate between
 - i. Book lungs and ventilation lungs (2 marks)
 - ii. Iso-osmotic organisms and osmo-conformers (2 marks)
 - b. Explain
 - i. how mosquitoes are adapted for acquisition of their food (2 Marks)
 - ii. Two (2) mechanisms of protection of the linings of digestive tracts (2 marks)
 - c. Describe three mechanisms by which Mammalian digestion is regulated (3 marks)
 - d. Outline three (3)
 - i. osmoregulatory adaptations in terrestrial amphibians (3 marks)
 - ii. challenges faced by terrestrial animals that have cutaneous respiration (3 marks)
 - e. Describe the mollusc circulatory system (4 marks)
 - f. Describe a functional classification of neurons (3 marks)
 - g. Outline three (3) reproductive differences between birds and mammals (3 marks)
 - h. Describe three (3) adaptations of endotherms to cold temperatures (3 marks)
2. Explain how the mammalian digestive system is adapted to its function (20 Marks)
3.
 - a. By use of a well labelled diagram, illustrate the structure of the elasmobranch circulatory system (8 marks)
 - b. Giving examples, describe the evolution of circulatory systems in animals (12 marks)
4. Describe the structure and function of the human nervous system (20 marks)
5. Explain
 - a. osmotic challenges encountered by animals in their diverse environments (9 marks)
 - b. Mechanisms by which terrestrial organisms are able to maintain osmotic balance in their environments (11 marks)