



# MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST/SECOND YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN  
EDUCATION(SCIENCE)

**SZL 0202: COMPARATIVE ANIMAL PHYSIOLOGY AND ANATOMY**

**DATE: 30/5/2017**

**TIME: 8:30 – 10:30 AM**

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**INSTRUCTIONS:**

- 1. Write your Registration number on the answer booklet*
- 2. Answer question 1 in section A (COMPULSORY) and select 2 questions in section B*

**SECTION A (COMPULSORY)**

**QUESTION (30 MARKS)**

- With the aid of diagrams outline the structure and function of the following organelles:  
i). Mitochondria ii) Golgi Bodies and iii) Lysosomes (6 marks)
- Differentiate between Prokaryotic and Eukaryotic cells (2 marks)
- Describe how insect flight muscles are adapted to perform their function (4 marks)
- Discuss the adaption of fish for locomotion in water (3 marks)
- Outline the general organization of the animal body (4 marks)
- Describe the process of the digestion of lipids (4 marks)

- g) Compare the mechanism of excretion in terrestrial animals and freshwater protozoa. (4 marks)
- h) Make a well labeled sketch of the nephron (3 marks)

**SECTION B: ANSWER ANY OTHER TWO QUESTIONS.**

**QUESTION TWO (20 MARKS)**

- a) Describe osmoregulation mechanism terrestrial animals (10 marks)
- b) Discuss how the mammalian lung is adapted to its function (5 marks)
- c) State how the cell membrane is adapted for its functions (5 marks)

**QUESTION THREE (20 MARKS)**

- a) Discuss the thermoregulatory adaptations of terrestrial and aquatic animals. (12 marks)
- b) Describe the digestion of carbohydrates in man and ruminant (8 marks)

**QUESTION FOUR (20 MARKS)**

- a) Discuss the structure and function of connective tissue (10 marks)
- b) Describe the concept of homeostasis with reference to blood sugar (5 marks)
- c) Outline the difference between open and closed blood circulatory system (5 marks)

**QUESTION FIVE (20 MARKS)**

- a) Compare the mechanism of gaseous exchange of mammals and insects (10 marks)
- b) Define nutrition and the concept of balanced diet (5 marks)
- c) Describe the metabolic fate of protein absorbed by vertebrates (5 marks)