

**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**2014/2015 UNIVERSITY EXAMINATIONS**  
**2<sup>nd</sup> YEAR BACHELOR OF SCIENCE (BIOLOGICAL SCIENCE).**

**SBI 3212- Introduction to Animal Physiology**  
**2 HOURS**

**Section A – Answer All Questions (30 marks)**

1. With regard to structural organization of the mammalian body, explain the following levels:
  - a. Cellular level (1 Mark)
  - b. Tissue level (1 Marks)
  - c. System level (1 Mark)
2. Briefly explain “motor unit summation” with reference to contraction of muscles. (3 Marks)
3. State four ways by which animals exchange heat with the surrounding. (3Marks)
4. Give the function of the following white blood cell:
  - a. neutrophils (3 Marks)
  - b. eosinophils (3 marks)
  - c. monocytes (3 marks)
5. Outline four main functions of lymphatic system. (Marks).
6. Briefly describe the defecation reflex. (3 marks).
7. Carbohydrates fall into two major groups: sugars and non-sugars. Differentiate between the two, and give examples. (3marks).
8. Distinguish between plasma and serum. (3 Marks)
9. List three functions of protein in the animal body. (3 Marks)
10. Explain the concept of negative feedback mechanism. Give examples. (3 Marks)

**Section B – Answer any TWO Questions (40 marks)**

11. Describe the fermentative digestion of forages in the ruminant stomach. (20 marks)
12. Describe in detail the control of body temperature in mammals. (20 marks).
13.
  - a. Describe the role of lungs in acid-base balance. (10 marks).
  - b. Outline the functions of blood. (10 marks).
14. a) Describe, with aid of a diagram, the association between sarcolemma, T-tubules, sarcoplasmic reticuli and myofibrils in a muscle fiber. (10 Marks)

b) Outline the events that take place along the membranes of sarcolemma, T-tubules and sarcoplasmic reticuli following the arrival of a nervous signal at the sarcolemma.  
(10 marks)