



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE
AND TECHNOLOGY**

**SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES,
FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE,
BACHELOR OF SCIENCE IN BIOLOGY AND BACHELOR OF EDUCATION (SIENCE)
2013/2014 ACADEMIC YEAR**

COURSE: SZL 304 - COMPARATIVE PHYSIOLOGY

SECTION A [30 MARKS]

Answer **ALL** questions in Section A

- 1 (a) State the four main classes of organic compounds in the body. [1 mark]
- (b) Differentiate between anabolism and catabolism. [1 mark]
- (c) Explain the mechanisms by which endothermic and ectothermic organisms regulate their body temperature. [2 marks]
- (d) What are the functions of caecum and appendix in digestion? [2 mark]
- 2 (a) List the three formed elements of the blood, giving examples of each. [3 mark]
- (b) Explain the term basal metabolic rate (BMR). [1 marks]
3. Differentiate between essential amino acids and non-essential amino acids. [4 marks]
4. Explain the terms acidosis and alkalosis. [2 mark]
5. In multicellular organisms, what is the term given to cells similar in structure and function grouped together into functional masses? [1 mark]
6. State any four organ systems of the body. [2 marks]
7. Explain any three (3) adaptations of desert mammals to water scarcity. [3 marks]
8. Differentiate between smooth muscles and striated muscles. [1 mark]
9. Show diagrammatically, how the principle of negative feedback mechanism works in mammals. [4 marks]
10. State the three components of a negative feedback mechanism. [3 marks]

SECTION B [40 MARKS]

Answer any **TWO** questions in Section A

- 11.** Discuss briefly the following aspects of digestion:
- a) Roles of the liver in nutrition. [8 marks]
 - b) Three adaptations to nutrition. [6 marks]
 - c) Composition and functions of the bile. [6 marks]
12. a) Give a schematic outline and a detailed description the stages in the exchange of respiratory gases in mammals. [10 marks]
- b) How is carbon dioxide transported in the mammalian body?
Explain, giving examples, the role(s) of haemoglobin in material transport. [10 marks]
13. a) Discuss in detail the three stages of the process of urine formation. [10 marks]
- b) Identify and discuss an example of adaptation of desert animals to water scarcity. [10 marks]
14. Outline and discuss the processes involved in mammalian nutrition. [20 marks]