



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**THIRD YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF**  
**BACHELOR OF SCIENCE IN FOOD SECURITY - 2013/2014 ACADEMIC YEAR**

**AFB 3121: HUMAN PHYSIOLOGY**

**Instructions:**

1. This paper consists of **TWO** sections, **A** and **B**.
2. Answer **ALL** questions from section **A** and any **TWO** from section **B**.
3. Write all answers in the booklet provided.

**SECTION A [30 MARKS]**

**Answer ALL questions.**

1. (a) Describe the relationship between amounts of calcium, bone and water in the human body.[4marks]  
(b) Explain the following levels of organization of the human body.
  - i) Cellular level [1mark]
  - ii) Chemical level [1mark]
  - iii) Tissue level. [1mark](c) Briefly explain the different divisions of the peripheral nervous system.[3marks]
2. (a) Explain what causes the striations that are seen in skeletal muscles when viewed under microscope. [4 marks]  
(b) Describe briefly the defecation reflex. [3marks]  
(c) Differentiate between plasma and serum. [3marks]
3. (a) Give two main functions of the conducting portion of the respiratory system. [3marks]  
(b) Define the following:
  - i) Minute ventilation [1mark]
  - ii) Inspiratory reserve volume [1 mark]
  - iii) Tidal volume [1mark](c) Explain the role of lungs in acid-base balance.[4marks]

**SECTION B [40 MARKS]**

**Answer ANY TWO questions.**

4. (a) With aid of diagram, describe structure of kidney nephron. [10marks]  
(b) Give the three processes that take place in the nephron and which are important in urine formation. Name two hormones that affect kidney function and indicate their target areas. [10marks]
5. Describe in detail the digestive process of starch and protein in the human body. [20marks]
6. (a) Outline the effects of insulin in the following tissues:
  - i) Adipose
  - ii) Skeletal muscle
  - iii) Liver[10marks](b) Describe the functions of thyroid hormones. [10marks]
7. Describe the general functions of blood. [20marks]