



KENYATTA UNIVERSITY

MOMBASA CAMPUS

UNIVERSITY EXAMINATIONS 2011/2012

**SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE (FOODS, NUTRITION AND DIETETICS
HFN 101: GENERAL BIOLOGY**

DATE: Tuesday 27th March 2012

TIME: 11.00a.m – 1.00p.m

INSTRUCTIONS:

Answer question 1 (compulsory) and any other TWO questions from questions 2 – 4. Illustrate your answers with diagrams and give examples where appropriate

Question 1 (30 marks)

- a) Outline the early postulates of the cell theory. [2marks]
- b)
 - i) Outline the major features acquired by protobionts in the biological evolution. [2marks]
 - ii) State FOUR major features that distinguish prokaryotic and eukaryotic cells. [4marks]
- c)
 - i) Name FOUR basic tissues of the human body. [2marks]
 - ii) Explain the major functions of any TWO tissues of the human body. [2marks]
- d)
 - i) Illustrate the structure of the human skin. [4marks]
- e) Explain the functional adaptations of the following human body tissues:
 - i) Respiratory system. [3marks]
 - ii) Circulatory system. [3marks]
- f)
 - i) Outline the characteristics of DNA that make it the “genetic material” [3marks]

- ii) Explain the concept of complementarity of the nucleic acid [2marks]
- g) i) State Mendel's First Law of inheritance. [1mark]
- ii) Using an example, explain the concept of chromosome-linked characteristics. [2marks]

Question 2

- a) Describe the functional ultrastructure of the following organelles cell organelles:
 - i) Golgi apparatus [4marks]
 - ii) Endoplasmic reticulum [6marks]
 - iii) Mitochondria [4marks]
- b) Explain the major process that allow movement of materials in the cell. [6marks]

Question 3

- a) Describe the structure of the human digestive system. [14marks]
- b) Explain the functional adaptations of the human digestive system. [6marks]

Question 4

- a) State and explain Mendel's Second Law of inheritance. [2marks]
- b) In a certain community, the inheritance of allergy to a certain food nutrient is sex-linked and inherited in a normal Mendellian fashion. If a marriage involving a carrier takes place,
 - i) Outline the genotypic and phenotypic manifestation of this trait in the offspring. [8marks]
 - ii) Outline how a test cross could be used to confirm presence of the trait in the offspring. [8marks]
- c) Explain the significance of Mendelian genetic in humans. [2marks]