



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

**A. M. E. C. E. A**

P.O. Box 62157  
00200 Nairobi - KENYA  
Telephone: 891601-6  
Fax: 254-20-891084  
E-mail: academics@cuea.edu

**MAIN EXAMINATION**

**AUGUST - DECEMBER 2015 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF BIOLOGY**

**REGULAR PROGRAMME**

**BIO 101: INTRODUCTION TO CYTOLOGY AND PHYSIOLOGY**

**Date: DECEMBER 2015**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and ANY other THREE Questions**

- Q1. a) Define the following terms
- i Cytology (1 mark)
  - ii Physiology (1 mark)
  - iii Atom (1 mark)
  - iv Element (1 mark)
- b) Differentiate between the following
- i Prokaryotic and eukaryotic cell. (1 mark)
  - ii Ribonucleic and Deoxyribonucleic acid (1 mark)
  - iii Flagellum and pilus (1 mark)
- c) Explain the basic steps of viral infection and replication in host organism (3 marks)
- d) What is a living cell? Outline EIGHT properties of a living cell. (5 marks)
- e) Name THREE components that make up the cytoskeleton of the animal cell. (3 marks)
- f) Using a well labeled diagram what are the main structures of chloroplasts? (3 marks)

- g) What is difference between transcription and translation? **(3 marks)**
- h) List SIX major types of mature connective tissue. **(3 marks)**
- i) How do you understand the fluid mosaic model of the cell membrane. **(2 marks)**
- Q2. Briefly describe the cell theory including the modern tenets that explain the same.
- Q3. Elaborate the chemical components of major macromolecules in living things.
- Q4. Discuss
- a) Giving examples where appropriate, explain the structure and role played by each of the following specialized cells;
- i Blood
  - li Bone marrow
  - iii Lymphatic systems
- b) Briefly what happens in the dark reaction of photosynthesis?
- Q5. Discuss the process of cell division in animals. Include a description of mitosis and cytokinesis and other phases of the cell cycle.

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