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

JANUARY – APRIL 2015 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF NATURAL SCIENCES (BIOLOGY)

REGULAR PROGRAMME

BIO 101: INTRODUCITON TO CYTOLOGY AND PHYSIOLOGY

Date: April 2015	**Duration: 2 Hours**
Instructions: Answer Question ONE and any other TWO Questions.	

Q1. a) State four ways in which bacteria cells differ from most eukaryotic cells.
(2 marks)

b) Briefly explain THREE functions of membrane proteins.
(3marks)

c) Give THREE adaptations of mitochondria to its function.
(3 marks)

d) i) Outline the steps involved in replication of viruses.
(3 marks)

ii) Give THREE potential benefits of stem cells.
(3 marks)

e) i) Briefly describe the structure of DNA.
(4 marks)

ii) Name the enzymes involved in DNA replication and explain the function of each in this process.
(6 marks)

f) i) What are the two functions of water during photosynthesis?
(2 marks)

ii) In what FOUR ways are the chloroplasts adapted for the process of photosynthesis?
(4 marks)

Q2. Describe the steps of the cell cycle and give the importance of each step during this cycle.
(20 marks)

Q3. Account for transport of nutrients substances in and out of the cells.
(20 marks)

Q4. a) Explain how bacteria cope with harsh environments and how this influences their elimination.

(15 marks)

b) In what FIVE ways are Gram negative bacteria different from Gram positive bacteria?

(5 marks)

Q5. a) Write short notes on the following specialized cells with reference to their structure, function and adaptations to their functions.

i) Sperm cells
ii) Root hair cells
iii) Red blood cells

(15 marks)

b) List and briefly explain the physiology of FIVE lymphoid organs.

(5 marks)

END