



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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

**MAIN EXAMINATION**

**JANUARY – APRIL 2015 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF NATURAL SCIENCES (BIOLOGY)**

**SCHOOL FOCUSED PROGRAMME**

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

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

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|---|--------------------------|
| <b>Date: April 2015</b>   | <b>Duration: 2 Hours</b> |
| <b>Instructions: Answer Question ONE and any other TWO Questions.</b> |                          |

- Q1. a) Write short notes on the following specialized cells;
- i) The sperm cell
  - ii) The root hair
  - iii) Ciliated epithelial cell.
  - iv) The red blood cells.
  - v) The chloroplasts.
- (10 marks)**
- b) Differentiate between the following terminologies and give an example in each case.
- i) Prokaryotic and eukaryotic cells
  - ii) Mitosis and meiosis
  - iii) Diffusion and facilitated diffusion.
- (6 marks)**
- c) i) Describe the structure of DNA. **(5 marks)**
- ii) In what THREE ways is DNA different from RNA? **(3 marks)**
- d) i) Attempt a classification of stem cells. **(3 marks)**
- ii) How useful can the stem cells be today? **(3 marks)**
- Q2. Account for transport of substance across the cell membrane. **(20 marks)**
- Q3. i) Describe the light and dark stages of photosynthesis. **(15 marks)**

- ii) What FIVE factors influence the rate of photosynthesis? Explain how they do it. **(5 marks)**
- Q4. a) i) Describe the multiplication cycle of hidden viruses. **(6 marks)**  
ii) Give SIX ways in which you can use to classify viruses. **(3 marks)**  
b) Explain ways bacteria use to overcome harsh environmental conditions. **(11 marks)**
- Q5. Giving examples in each case discuss the various FOUR animal tissues paying attention to their structure and function. **(20 marks)**

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