

**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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**University Examinations 2014/2015**

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCES

**SBT 3101: CELLULAR BASIS OF LIFE**

**DATE: NOVEMBER, 2015 TIME: HOURS**

**INSTRUCTIONS:** *Answer question* ***one COMPULSORY*** *and any other* ***two*** *questions.*

**QUESTION ONE – (30 MARKS)**

1. (i) Differentiate between the terms below in the context of cellular activity;
2. Hypotonic Vs isotonic (2 Marks)
3. Microtubules vs microfilaments (2 Marks)
4. Endocytosis vs exocytosis (2 Marks)
5. (i) State the contribution of Camillo (1898) to cell biology (1 Mark)
6. Describe three examples of non-membraneous organelles encountered in eukaryotes.

(3 Marks)

1. Viruses are on the verge of life. Justify this statement. (4 Marks)
2. Describe briefly the structure of the chloroplast. (5 Marks)
3. Outline five role of proteins in the cell. (5 Marks)
4. Cite the evidence adduced as proof that DNA is the primary genetic material. (6 Marks)

**QUESTION TWO (20 MARKS)**

1. Discuss the spectrum of organization of life. (15 Marks)
2. Highlight the environmental factors required for maintenance of life. (5 Marks)

**QUESTION THREE (20 MARKS**)

1. Trace the history of development of the microscope to date. (10 Marks)
2. Highlight and illustrate the main features of a binocular microscope. (10 Marks)

**QUESTION FOUR (20 MARKS)**

Discuss mitotic cell division. (20 Marks)

**QUESTION FIVE (20 MARKS)**

1. Discuss reproduction at the cellular level (10 Marks)
2. Discuss the features of the cell nucleus. (10 Marks)