



# MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF SCIENCE IN BIOLOGY

SBT 100:CELLULAR BASIS OF LIFE

DATE: 24/7/2019

TIME: 11.00-1.00 PM

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## INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

## SECTION A

### QUESTION ONE COMPULSORY (30 MARKS)

- |    |   |         |
|----|---|---------|
| a) | Differentiate scientific method from technical research method                | 3 marks |
| b) | Outline the three assumptions of cell theory                                  | 3 marks |
| c) | Explain the following terms   | 3 marks |
|    | i. Physiological adaptation   |         |
|    | ii. Chiasmata   |         |
|    | iii. Non homologous chromosomes   |         |
| d) | Draw and fully label a named prokaryotic cell                                 | 3 marks |
| e) | Highlight the function of cytoskeleton  | 3 marks |
| f) | Describe the structure of cell membrane                                       | 3 marks |
| g) | Describe the anatomy of DNA double helix                                      | 3 marks |
| h) | Outline any three protein conformations observed in cell cytoplasm            | 3 marks |
| i) | Explain why is interphase the longest stage of cell cycle                     | 3 marks |
| j) | Distinguish the following three terms: cytokinesis, cytolysis and plasmolysis | 3 marks |

## SECTION B

### QUESTION TWO

Discuss the various steps of the scientific method of inquiry

### QUESTION THREE

Discuss the function of various biomolecules found in cells

#### **QUESTION FOUR**

Discuss the general processes leading to the formation of gametes in animals

#### **QUESTION FIVE**

Write an essay on cell transport