



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF SCIENCE IN BIOLOGY

SBT 100: CELLULAR BASIS OF LIFE

DATE: 25/5/2022

TIME: 11.00-1.00 PM

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 (30 MARKS)

- a) Viruses can be classified both as cellular and acellular, explain. (3 marks)
- b) Contrast the structures of DNA and RNA. (3 marks)
- c) Using illustration, Describe the basic structure of the cell membrane. (3 marks)
- d) Describe the structure and main functions of the Endoplasmic reticulum. (4 marks)
- e) Distinguish between gram positive and gram negative bacteria. (4 marks)
- f) Distinguish between homologous chromosome and sister chromatids. (4 marks)
- g) Explain the differences between the events of anaphase I and anaphase II of meiosis. (3 marks)
- h) Describe the basic structure of a phospholipid. (3 marks)
- i) Recount the postulates of "The Cell Theory". (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Discuss the distinctive features of plant cells.

QUESTION THREE (20 MARKS)

Discuss the classification of carbohydrates.

QUESTION FOUR (20 MARKS)

Discuss the phases of the eukaryotic cell cycle.

QUESTION FIVE (20 MARKS)

Discuss prokaryotic DNA replication.