MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF PURE, APPLIED AND HEALTH SCIENCE

DEPARTMENT OF PHYSICAL &BIOLOGICAL SCIENCES

UNIVERSITY ORDINARY EXAMINATION

2019/2020 ACADEMIC YEAR

FIRST YEAR **SECOND** SEMESTER EXAMINATION FOR BACHELOR OF

SCIENCE IN EDUCATION
UNIT CODE: ABT 101

UNIT TITLE: LABORATORY METHODS IN BIOLOGY

DURATION: 2 HOURS

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.
4. Illustrate your answers with well-labeled diagrams where appropriate.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

a. Explain the laboratory safety measures to observe when handling the following
   i. Glassware (2 marks)
   ii. Chemicals (2 marks)
   iii. Heating (2 marks)
b. Outline the steps in risk assessment (6 marks)
c. Justify the importance of plant and animal dissections (6 marks)
d. Explain how you would care for the following equipment
   i. Light microscope (2 marks)
   ii. Dissolved oxygen probe (2 marks)
   iii. PH meter (2 marks)
e. Briefly discuss the applications of polymerase chain reaction (PCR) technique (4 marks)
f. Distinguish gene therapy from genetic engineering (2 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a. Discuss the steps involved in micro propagation of plant tissue (8 marks)
b. Justify the importance of plant tissue culture (12 marks)

QUESTION THREE (20 MARKS)

a. Explain the working principles of a phase - contrast microscope (8 marks)
b. Discuss the strengths and limitations of phase -contrast and bright - field microscopy (12 marks)

QUESTION FOUR (20 MARKS)

Account for the steps in preparation of a historical sample (20 marks)