



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

(MAIN CAMPUS)

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**MAIN EXAMINATION
FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN BIOLOGY/ BIOTECHNOLOGY/
AGRICULTURAL EDUCATION AND EXTENSION /
EDUCATION (SCIENCE)**

COURSE CODE: SBL 221

COURSE TITLE: BIOLOGICAL TECHNIQUES

DATE: FRIDAY, 22ND APRIL 2022

TIME: 12:00 – 2:00 P.M.

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in section A and **ANY TWO** selected from section B

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over 

SECTION A (SHORT ANSWER QUESTIONS, 40 MARKS)

1. Outline various use of stains in slide preparation. (5 marks)
2. Define the following terms;
 - i. Microtomy (1 mark)
 - ii. Dehydration (1 mark)
 - iii. Molarity (1 mark)
 - iv. Autoclave (1 mark)
 - v. Herbarium (1 mark)
3. Briefly explain five challenges experienced during fixation of a biological specimens. (5 marks)
4. Briefly explain characteristics of an electron microscope. (5 marks)
5. Outline the working principles of Polymerase chain reaction. (5 marks)
6. Make short notes on:
 - a. Retrogressive staining (2.5 marks)
 - b. Progressive staining (2.5 marks)
7. Briefly explain applications of polymerase chain reaction. (5 marks)
8. Outline five features of a data label. (5 marks)

SECTION B (ESSAY QUESTIONS, 30 MARKS)

9. Describe in details five process in making a permanent stain preparation mounted in Canada balsam. (15 marks)
10. (a) Describe the working principles of a bright field microscope. (5 marks)
(b) Differentiate between a compound light and a scanning electron microscope. (10 marks)
11. What is chromatography? Describe any four types of chromatography. (15 marks)