



(University of Choice)

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

MAIN CAMPUS

MAIN EXAMINATIONS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS
FOR DIPLOMA**

IN

APPLIED BIOLOGY

COURSE CODE: DSB 021

COURSE TITLE: CYTOLOGY

DATE: FRIDAY, 22ND APRIL 2022

TIME: 8:00 – 10:00 A.M.

INSTRUCTIONS TO CANDIDATES

Answer ALL questions in section A and ANY TWO questions in 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. Describe the use of the following types of microscopes; (6 marks)
 - a. Optical microscope
 - b. Scanning microscope
 - c. STEM
2. State and describe two types of lens defects. (4 marks)
3. Outline the structural differences between plant and animal cells. (4 marks)
4. Distinguish between the following; (8 marks)
 - a. Prokaryotic DNA eukaryotic DNA
 - b. A prokaryote cell wall and a eukaryote cell wall
 - c. A prokaryote ribosome and a eukaryote ribosome
 - d. Smooth ER and rough ER
5. State the mechanism through which the following molecules pass through the cell membrane; (3 marks)
 - a. Glucose
 - b. Water
 - c. Ca^{2+}
6. Briefly describe the general structure of the cell membrane. (4 marks)
7. List and describe four types of staining techniques. (5 marks)
8. Describe the main stages in the cell cycle. (6 marks)

SECTION B: ESSAY QUESTIONS (30 MARKS)

9. Describe how to take good care of and maintain a light microscope. (15 marks)
10. With the aid of a well labeled diagrams, distinguish between eukaryotic and prokaryotic cells. (15 marks)
11. Discuss the various passive and active transport mechanisms across the cell membrane. (15 marks)