



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)**

BACHELOR OF SCIENCE (BIOLOGY)

BACHELOR OF EDUCATION (SCIENCE)

**SZL 105/6: LABORATORY METHODS AND TECHNIQUES IN ZOOLOGY /
BIOLOGY**

DATE: 12/8/2021

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

1. Answer Question 1 and any other 2 questions
2. Illustrate your answer with clean diagrams wherever appropriate.

1. compulsory

- a) Distinguish between wet and dry laboratories (3 marks)
- b) Explain how to store and use corrosive chemicals in a biology laboratory (3 marks)
- c) Explain any three items found on the label of a museum specimen (3 marks)
- d) Explain how you would calibrate a clinical thermometer (3 marks)
- e) A research student is carrying out an experiment to determine the pH of Sukuma wiki vegetable leaves. She has cut them from the plant using a scalpel blade, and placed individual leaves in manilla bags. The bags are then packaged in a cooler box and transported to the laboratory. Juice is extracted from the leaves by crushing using a mortar and pestle. The juice is collected in a test tube and the test parameter is determined using a pH meter. Use this information to determine:
 - a. The measuring equipment, and (1 mark)
 - b. The general service equipment used. (2 marks)
- f) Explain the principles of supply of laboratory reagents (3 marks)
- g) Differentiate between a delivery note and a dispatch note. (3 marks)

- h) Explain what a laboratory manager is concerned with in a biology laboratory (3 marks)
- i) Explain the use of the following materials in a science laboratory. (3 marks)
 - a. MSDS
 - b. H/E
 - c. PPE
- j) Briefly outline the safety guidelines for dispensing reagent chemicals (3 marks)
- 2. Discuss the features that ensure safety in a wet laboratory (20 marks)
- 3. a) Using examples, discuss how toxins may get into the body when working in a biology laboratory (15 marks)
- b) Briefly discuss when and how to replenish laboratory stock (5 marks)
- 4. a) Discuss how team work is applied in the design of modern science laboratories (12 marks)
- b) Explain the use of any four general stains commonly used in a laboratory (8 marks)
- 5. a) Explain what to check for when receiving back an equipment to the laboratory from an external maintenance and service agent. (10 marks)
- b) Discuss the procedure used in maintenance of laboratory equipment. (10 marks)