



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

## UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN MICROBIOLOGY/  
BACHELOR OF TECHNOLOGY IN APPLIED CHEMISTRY

ACH4104 : LABORATORY SAFETY AND MANAGEMENT

END OF SEMESTER EXAMINATION

PAPER 1

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: 8 May 2016**

### Instructions to Candidates

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of five questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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### Question one

- a)
  - i. Define first aid? (2 marks)
  - ii. Define chemical hazards? (2 marks)
- b)
  - i. Outline THREE prudent practices in chemical safety guidelines. (6 marks)
  - ii. Give FOUR types of fire extinguishers and the type of fire they are effective against. (4 marks)

- c) State the FOUR materials that are suitable for the construction of bench tops in a chemical laboratory. (4 marks)
- d) Briefly discuss:
  - i. Alpha radiation.
  - ii. Beta radiation.
  - iii. Gamma and x-ray radiation (6 marks)
- e) State SIX examples of laboratory ware. (3 marks)
- f) Give 3 items that should be recorded in the laboratory notebook. (3 marks)

### Question two

- a) Briefly discuss the applications of isotopic tracers in:
  - i. Chemical research (6 marks)
  - ii. In industry
- b) Discuss THREE items in good laboratory practices/ laboratory best practices. (9 marks)
- c)
  - i. Define laboratory information system (LIMS). (2 marks)
  - ii. Give THREE functions of LIMS. (3 marks)

### Question three

- a)
  - i. Define standard operating procedures (SOPS). (6 marks)
  - ii. Outline the roles of laboratory reports. (6 marks)
- b) In a filing arrangement. Discuss the alphabetic arrangements of names. (8 marks)

### Question four

- a) Outline the FIVE objectives of management by objectives (7.5 marks)
- b) Outline the FIVE advantages of management by objectives (7.5 marks)
- c) Outline FOUR disadvantages of management by objectives (5 marks)

### Question five

- a) Define the term 'molarity'. (3 marks)
- b) Determine the molarity of a solution made by 10g of NaOH in sufficient water to yield 500m/s solution. (5 marks)
- c) List and explain the steps in a sample analysis. (7 marks)
- d) Explain how radioactive isotopes are used to establish the ages of objects (5 marks)