



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF PURE AND APPLIED SCIENCE

DEPARTMENT OF APPLIED SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2017/2018 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR BSC
ANALYTICAL CHEMISTRY**

ACH104 SAFETY METHODS IN THE LABORATORY

DURATION: 2 HOURS

DATE: 18TH APRIL, 2018

TIME: 2.00 – 4.00 P.M.

Instructions to Candidates:

1. Answer **Section A** and **Any Other Two** questions in **Section B**.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A – ANSWER ALL QUESTIONS IN THIS SECTION (30 Marks)

QUESTION ONE

- a) i) Define the term laboratory protocol. (1 Mark)
ii) Explain any three (3) good laboratory practices. (9 Marks)
- b) Explain how the following equipments/clothing are used in the laboratory to provide safety
- i. Face Shields (2 Marks)
 - ii. Fume hood (4 Marks)
 - iii. Pipette filler (2 Marks)
- c) Explain the use of any three (3) contents/items of a first aid box. (3 Marks)
- d) Differentiate the four (4) classes of fires common in the laboratory. (4 Marks)
- e) Describe the contents of a standard reporting accident format used in a chemical laboratory. (3 Marks)
- f) Explain how an accident victim is disposed. (2 Marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) Explain the precautions necessary when handling the following laboratory chemicals
- i. Corrosive chemicals (3 Marks)
 - ii. Fuming chemicals (3 Marks)
 - iii. Flammable Chemicals (3 Marks)
- b) Explain the dangers associated with the following laboratory operations
- i. Distillations (3 Marks)
 - ii. Extractions (3 Marks)
 - iii. Centrifugation (2 Marks)
 - iv. Electrical equipments (3 Marks)

QUESTION THREE (20 MARKS)

- a) Explain any four (4) ways in which chemicals may enter into our bodies. (8 Marks)
- b) Describe how to inspect any three (3) safety areas in a chemical laboratory. (9 Marks)
- c) Explain any three (3) ways of preventing fire from occurring in a laboratory. (3 Marks)

QUESTION FOUR (20 MARKS)

- a) Explain any four (4) safety laboratory features (8 Marks)
- b) Describe by giving examples the danger associated with the following chemicals
 - i. Acids (?? Marks)
 - ii. Bases (?? Marks)
- c) Describe the storage and transportation of helium liquid gas a cryogenic substance. (4 Marks)
- d) Explain the necessary laboratory emergency preparedness. (3 Marks)