
CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS
RESIT/SPECIAL EXAMINATIONS**

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE

CHEM 101: LABORATORY SAFETY AND SECURITY

STREAMS:

TIME: 2 HOURS

**DAY/DATE: THURSDAY 26/07/2018
P.M**

11.30 A.M – 1.30

INSTRUCTION:

- **Answer question one and any other two questions**

QUESTION 1 (30MARKS)

a. Write short notes on the following:

- i) Culture of laboratory safety (2marks)
- ii) Responsibility and accountability of laboratory safety (2marks)
- iii) Laboratory security (2marks)

b. Write short notes on the following major elements of environmental health and safety management system.

- i) Planning
 - ii) Management commitment (8marks)
- c. Define the chemical hygiene plan and give 4 topics to be included in the CHP (3marks)
- d. Give 4 duties of the chemical hygiene officer (4marks)
- e. Give 4 general laboratory safety rules (4marks)
- f. List four items to be included in a laboratory inspection program (4marks)
- g. List the contents of a laboratory survival kit (1mark)

QUESTION 2 (20 MARKS)

- a. Discuss briefly the laboratory priorities during an emergency (3marks)
- b. Give four ways of communication during an emergency (3marks)
- c. Discuss the effects of long-term power loss (3marks)
- d. Explain the following terms i) Flash point ii) Pyrophoric chemicals (4marks)
- e. Give three strategies for handling flammable materials (3marks)
- f) Discuss briefly the four routes of exposure to chemicals in the lab (4marks)

QUESTION 3 (20 MARKS)

1. Define the following terms:

- i) corrosives ii) Irritants iii) Sensitizers iv) Carcinogens v) Acute toxicantsvi) Asphyxiantsvii) Neurotoxins viii) Globally harmonized system for hazard communication ix) Ergonomic hazardsx) Green chemistry (10 marks)

2. Explain the following terms;

- i) Dose-response relationship ii) Control banding (4marks)

3. Give three risks to laboratory security (3marks)

4. Give three emergency procedures for handling fire burns (3marks)

QUESTION 4 (20 MARKS)

6. Give four strategies to prevent and minimize waste (4marks)

7. Give four requirements and limitations for stockrooms and laboratories (4marks)

8. Give four i) Basic storage guidelines (2marks)

ii) General precautions when storing compressed gas cylinders (2marks)

9. Give four fundamental principles when working with chemicals (2marks)

10. List four housekeeping rules (2marks)

11. Explain the four biosafety levels (4marks)