



UNIVERSITY EXAMINATIONS 2018/2019

**SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF PHYSICAL SCIENCES**

**FIRST YEAR SUPPLEMENTARY EXAMINATION FOR THE BACHELOR OF
BACHELOR OF SCIENCE (ANALYTICAL CHEMISTRY)**

SAN 100: CHEMICAL SAFETY AND SECURITY

DATE: 24/7/2019

TIME: 11:00 – 1:00 PM

INSTRUCTIONS:

- The paper consists of **two** sections.
- Section **A** is **compulsory**.
- Answer any **two** questions from section **B**.

QUESTION ONE (COMPULSORY)(30 MARKS)

- a) Explain the following terms:
- i) Chemical safety [1 mark]
 - ii) Chemical security [1 mark]
 - iii) Dual-use chemical [1 mark]
 - iv) Chemicals of concern [1 mark]
- b) State:
- i) The objective of chemical safety controls [1 marks]
 - ii) The objective of chemical security controls [1 marks]
- c) List Four basic reasons for the need to worry about chemical safety and chemical security [2 marks]
- d) Name any four chemicals that have dual-use. [2 marks]

- e)
- i) What is OPCW [1 mark]
 - ii) Describe how OPCW was established [9 marks]
- f) Briefly explain the Five pillars that are employed in chemical security risk assessment program. [10 marks]

QUESTION TWO (20 MARKS)

- a) Briefly explain what is the meaning of a good laboratory practice (GLP) [3 marks]
- b) State the importance of good laboratory practices [4 marks]
- c) List the four basic elements of a good laboratory practice regime and give 2 examples for each element. [6 marks]
- d) Identify and explain ANY seven roles of GLP in chemical security [7 marks]

QUESTION THREE (20 MARKS)

- a) Define the following terms:
- i) Hazard [1 mark]
 - ii) Risk [1 mark]
- b) Identify four laboratory hazards and give two examples for each [8 marks]
- c) State the two classes of chemical toxicity and for each give an example of the possible cause. [4 marks]
- d) State six laboratory safety policies [6 marks]

QUESTION FOUR (20 MARKS)

- a) Explain four main conflicts between safety and security [8 marks]
- b) Describe the constitution of a good physical protection system [3 marks]
- c) Discuss the three critical factors for physical protection system design [9 marks]

QUESTION FIVE (20 MARKS)

- a) **State the meaning** and **explain the purpose** of globally harmonized system. [3 marks]
- b) State ANY Five benefits brought about by the globally harmonized system [5 marks]
- c) Name the classes of hazards addressed by the globally harmonized system [3 marks]
- d) For each of the classes in Q5 c) above, state any three examples [9 marks]