



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN APPLIED CHEMISTRY

AES: 4419: RISK ANALYSIS AND ENVIRONMENTAL AUDIT

SPECIAL/ SUPPLEMENTARY EXAMINATIONS

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

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.

Question ONE

- i) Show how risk is calculated and state what the result is used for (3 marks)
- ii) For legal purposes, hazardous wastes are classified according to certain characteristics, give four of such characteristics (4 mark)
- iii) Give the two main components of a risk assessment and explain why the third component is considered as implied? (3 marks)
- iv) State two effects of unmanaged risks to an organization (2 marks)
- v) Name three methods that are used for carrying out the identification of risk (3 marks)
- vi) Give the sub-divisions of pharmacokinetics (4 marks)
- vii) Give four physicochemical characteristics that determine the fate and transport of chemicals in the environment (4 marks)
- viii) What is the purpose and application of the integrated risk management framework (5 marks)
- ix) Explain the term Reference Dose (2 marks)

Question TWO

The first step in the risk management process is the establishment of the context.

- i) State what this entails (5 marks)
- ii) Present the risk analysis framework (5 marks)
- iii) What factors do we consider for risk assessment at a particular site? (5 marks)
- iv) Give the structure of a standard risk assessment report (5 marks)

Question THREE

- i) Give three properties which make substances hazardous (3 marks)
- ii) Give two sources of risk (2 marks)
- iii) Plot the dose-response curve and explain how such a curve is generated (8marks)
- iv) Define the term “flash-point” and give the major classes of ignitable materials (7marks)

Question FOUR

- i) Uncertainty is an inherent feature of risk analysis. Explain this statement, and state why uncertainty must be recognized in risk analysis exercises (8 marks)
- ii) State the purpose of exposure assessment and give its key components (4 marks)
- iii) Briefly explain the physicochemical characteristics that determine the fate and transport of chemicals in the environment (4 marks)
- iv) Give four methods of dealing with risk (4 marks)

Question FIVE

- i) State the conditions for a risk condition to occur (3marks)
- ii) Explain the criteria used in selecting chemicals of concern for studies at a hazardous waste site (9 marks)
- iii) Give the toxicological profiles of benzene and lead (8 marks)