



THE CO-OPERATIVE UNIVERSITY OF KENYA

END OF SEMESTER EXAMINATION DECEMBER -2022

**EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN DISASTER RISK
MANAGEMENT AND SUSTAINABLE DEVELOPMENT**

UNIT CODE: CODM 2405

UNIT TITLE: HAZARDOUS MATERIALS AND WASTE MANAGEMENT

DATE: FRIDAY, 23RD DECEMBER, 2022

TIME: 2:00 PM – 4:00 PM

.....

INSTRUCTIONS:

SECTION A: Answer all question in this section

QUESTION ONE

- a) Define the following terms
 - i. Solid waste
 - ii. Heavy metal
 - iii. LD₅₀
 - iv. Toxicity
 - v. Incineration
- b) Briefly, explain the difference between **Mutagen** and **Teratogens**, giving examples. **(5 Marks)**
- c) Name any SIX examples of *heavy metals* in the environment. **(3Marks)**
- d) Name THREE factor that affect/influence toxicity of pollutants in the environment. **(3Marks)**
- e) Using a diagram, outline the key components of an Integrated Solid Waste Management (ISWM) system. **(6 Marks)**
- f) Convert the following ratios of concentration into ppm **(4 Marks)**
 - i. 0.5mg/l
 - ii. 50kg/kg
- g) Highlight Four categories of medical hazardous wastes **(4Marks)**

SECTION B: Answer any other two questions from this section

QUESTION TWO

- a) Outline and discuss 10 major Factors to consider when selecting waste collection and transportation vehicles in a less developed country. **(10 Marks)**
- b) Outline and explain the key environmental and social factors to consider when selecting and planning a sanitary landfill site for a city. **(10 Marks)**

QUESTION THREE

- (a) With examples, define Hazardous waste (4 Marks)
- (b) With examples, describe toxicity and environmental effects of any FOUR trace elements (16 Marks)

QUESTION FOUR

- (a) Giving examples, Explain the management strategies for the following wastes
 - i. Radioactive waste (10 Marks)
- (b) E-Waste and give examples. (10 Marks)