



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS  
2023/2024 ACADEMIC YEAR  
FIRST YEAR FIRST SEMESTER**

**SCHOOL OF NATURAL RESOURCES, ENVIRON-  
METAL STUDIES AND AGRICULTURE  
MASTER OF SCIENCE IN ENVIRONMENTAL  
STUDIES**

**COURSE CODE: SES 831**

**COURSE TITLE: TOXIC SUBSTANCES, HEALTH  
AND CHEMICAL SAFETY**

**DATE: 30/1/2024**

**TIME: 1100-1400 HRS**

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## **INSTRUCTIONS TO CANDIDATES**

Answer Question **ONE** and any other **TWO** questions.

### QUESTION ONE (20 MKS)

- a) Sketch a dose-response graph and interpret the graph **(4mks)**
- b) One of the limitations of dose-response data is that the LD<sub>50</sub> or LC<sub>50</sub> is a single value and does not indicate the toxic effects that may occur at different dose levels. Justify this observation graphically **(4mks)**
- c) Assess synergistic chemicals **(4mks)**
- d) Examine biotransformation of a toxic agent **(3mks)**
- e) One of the actions taken following risk assessment is legislation. Propose some legislation measures that a country can undertake. **(3mks)**
- f) Evaluate hazard assessment **(2mks)**

### QUESTION TWO (15 MKS)

- a) Interpret threshold and non-threshold chemicals **(2mks)**
- b) Argue why exposure limits may not always be completely protective **(4mks)**
- c) Discuss some of the permissible exposure limits set by OSHA **(6mks)**
- d) Describe any three practical clues to chemical exposure **(3mks)**

### QUESTION THREE (15 MKS)

- a) Examine ways of reducing exposure **(6mks)**
- b) Evaluate the sources of radiations that human beings are exposed to on a daily basis. **(6mks)**
- c) How does ribosomal RNA sequencing apply in classification of microbial agents? **(3mks)**

### QUESTION FOUR (15 MKS)

- a) Indirect identification of microorganisms can be done by antibody reactions. Describe the process. **(3mks)**
- b) Describe factors to consider in assessing the risk of biological hazards **(12 mks)**

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