

CHUKA



UNIVERSITY

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**UNIVERSITY EXAMINATIONS**  
**EXAMINATION FOR THE AWARD OF DEGREE OF**  
**BACHELOR OF SCIENCE IN BIOTMEDICAL TECHNOLOGY**

**BMET 423: TOXICOLOGY AND ENVIRONMENTAL PHYSIOLOGY**

**STREAMS: BSC (BMET)**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 03/12/2019**

**8.30 AM – 10.30 AM**

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**INSTRUCTIONS:**

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

**Question 1 (Compulsory) (30 marks)**

- a) Outline 5 factors that influence a toxicity in a living organism. (5 marks)
- b) Describe 4 differences between acute and chronic toxicity. (4 marks)
- c) Outline 6 factors which confer the difference in response to a toxicant in a population (individual susceptibility). (6 marks)
- d) (i) Explain why a point source of pollution easier to identify than a non-point source of pollution?  
(ii) Briefly describe four processes by which environment reduce worst effects of many pollutants. (5 marks)
- e) Discuss five applications of the knowledge in toxicology (5 marks)
- f) Highlight five medical importance of detoxification. (5 marks)

**Question 2 (20 marks)**

- a) Using suitable flowchart, describe the fate and effects of toxicants in the body. (10 marks)
- b) (i) What is pollution biomarker? (1 mark)

(ii) Discuss the three types of biomarkers (9 marks)

**Question 3 (20 marks)**

a) Discuss the detoxification reactions involving conjugation. (10 marks)

b) (i) Define toxicodynamics. (1 mark)

(ii) Using a suitable diagram, describe reaction types between a toxicant and target molecule, and indicate possible outcomes of this interaction. (10 marks)

**Question 4 (20 marks)**

a) (i) Describe the dose response relationship of a xenobiotic. (2 marks)

(ii) By use of dose response curve, describe NOEL, LOEL, LD50 and potency. (8 marks)

b) Describe the various membrane transport of xenobiotics including their characteristics. (10 marks)

