



KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

FOURTH YEAR FIRST SEMESTER
MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF CHEMISTRY

COURSE CODE: SCH 416

COURSE TITLE: CHEMICAL TOXICOLOGY AND MANAGEMENT
DURATION: 2 HOURS

DATE: 18/05/2022

TIME: 9:00AM-11:00AM

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
 - Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of 3 printed pages  Please Turn Over

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Question one (Compulsory) (30 Marks)

- (a) Define the following terminologies as used in toxicology;
 - (i) Toxicity (1)
 - (ii) Toxicant (1)
 - (iii) Pollutant (1)
 - (iv) Hazard (1)
- (b) List four factors that must be considered in the collection of municipal solid waste (4)
- (c) State the three different forms of oxides of nitrogen that are found in the atmosphere (3)
- (d) Distinguish between point sources and non-point sources of toxic chemicals as used in chemical toxicology (4)
- (e) State three problems associated with analytical methods in determining chemical speciation in a system (3)
- (f) State and explain four types of chemicals found in the environment (4)
- (g) State the effect of the following toxic chemicals on human health (i) lead (ii) mercury (iii) Arsenic (iv) Cadmium (4)
- (h) List four various methods used in controlling oxides of sulfur, nitrogen and carbon (4)
- (i) State the classification of municipal solid wastes (2)

Question Two (20 Marks)

- (a) Describe five effects of air pollution on the environment and human health (5)
- (b) State the effect of the following toxic chemicals on human health (5)
 - (i) Asbestos (ii) Benzene (iii) Tobacco smoke (iv) Aflatoxins (v) Sulphur dioxide
- (c) With suitable examples, explain the following types of wastes as used in garbage management (10)
 - (i) biodegradable waste (ii) non- biodegradable waste (iii) recyclable (iv) non- recyclable (v) E- waste

Question Three (20 Marks)

- (a) State two sources of toxic chemicals in the environment (2)
- (b) Assume you are employed by Bungoma County Government, in the department of waste management, explain four reasons why the administration should manage the waste properly (10)
- (c) Discuss five categories of waste wastes according to their origin and type (8)

Question Four (20 Marks)

- (a) Describe in details the various control methods of gaseous pollutants for oxides of S, C, and N (10)

- (b) List four pollutants designated under clean air act and identify the major sources of health effects (10)

Question Five (20 Marks)

Discuss the biochemical effects of the following toxic chemicals (20)

- (a) Lead
- (b) Ozone
- (c) CO
- (d) Oxides of Nitrogen
- (e) Photochemical smog