



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BTAC

ACH 4207 : ENVIRONMENTAL CHEMISTRY

Special/ Supplementary Examination

SERIES: APRIL 2017

TIME: 2 HOURS

DATE: Pick Date Apr 2017

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Answer question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

(a) Write succinct notes on each of the following:

- (i) Mutagens (2 marks)
- (ii) Carcinogens (2 marks)
- (iii) Teratogens (2 marks)

(b) Name and briefly describe the five segments of the environment (5 marks)

(c) What is a toxic chemical? (1 mark)

Write notes on toxic chemicals and laboratory safety with respect to:

- (i) Types of major hazards (4 marks)
- (ii) Classification of damage (2 marks)
- (iii) Acute and Chronic toxicity (2 marks)
- (iv) Routes of chemical entry in to the body (4 marks)

(d) Write notes on the origin and effects of Acid Rain. (4 marks)

Question TWO

- (a) With the aid of diagrams, describe the following methods for water purification:
 - (i) Ultrafiltration (5 marks)
 - (ii) Ion exchange (5 marks)
- (b) With the aid of diagrams describe the following devices for collection of particulates:
 - (i) Baghouse filter (5 marks)
 - (ii) Electrostatic precipitator (5 marks)

Question THREE

- (a) Write succinct notes on each of the following:
 - (i) The Troposphere (5 marks)
 - (ii) The Stratosphere (5 marks)
 - (iii) The Ionosphere (5 marks)
- (b) Tabulate the effects of pollutant gases and particulates on human health? (5 marks)

Question FOUR

Write notes on the following Environmental disasters:

- (a) The Minamata disease (5 marks)
- (b) The Iraq poison grain disaster (5 marks)
- (c) The Three Mile Island accident (5 marks)
- (d) The Bhopal Gas Tragedy (5 marks)

Question FIVE

- (a) Name and comment on the three Origin of Life Hypotheses (6 marks)
- (b) With the aid of an annotated diagram, describe the Miller – Urey experiment on Biochemical origin of life (14 marks)