



**TECHNICAL UNIVERSITY OF MOMBASA**

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**FACULTY OF APPLIED AND HEALTH SCIENCES**

**DEPARTMENT OF PURE & APPLIED SCIENCES**

**UNIVERSITY EXAMINATION FOR:**

**BTAC**

**ACH 4207 : ENVIRONMENTAL CHEMISTRY**

**SPECIAL/ SUPPLIMENTARY EXAMINATIONS**

**SERIES: SEPTEMBER 2018**

**TIME: 2 HOURS**

**DATE:** Pick Date Sep 2018

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

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

**Do not write on the question paper.**

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**Question ONE**

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

- (i) Troposphere
- (ii) Mesosphere
- (iii) Aerosols
- (iv) Peroxyacetyl nitrite

**(2 marks each)**

(b) Define and give examples of: (i) biotic, (ii) abiotic **(4 marks)**

(c) Describe two problems that occur due to the long-term usage of large amounts of synthetic fertilizers by farmers **(4 marks)**

(d) Write equations for the five-step mechanism by which chlorine destroys ozone. **(6 marks)**

(e) What are principal health effects of the following inorganic chemicals:

- (i) Arsenic
- (ii) Barium
- (iii) Thallium
- (iv) Chromium
- (v) Fluoride
- (vi) Lead
- (vii) Mercury
- (viii) Selenium

(ix)

**(1 mark each)**

## **Question TWO**

Draw annotated diagram of:

(a) The following methods of water purification:

(i) Ion Exchange **(5 marks)**

(ii) Activated charcoal adsorption **(5 marks)**

(b) The following devices for control of particulates in air generated by human activity:

(i) Settling chamber **(5 marks)**

(ii) Centrifugal separator **(5 marks)**

(b) Describe, with the aid of diagrams where need be, the following methods of water purification:

## **Question THREE**

Write succinct notes on the Advantages and Disadvantages of the following waste disposal methods:

(a) Ocean dumping

(b) Sanitary landfill

(c) Incineration

(d) Open dumping

(e) Recycling

**(4 marks each)**

## **Question FOUR**

Draw annotated diagram of:

(a) The following methods of water purification:

(i) Ultrafiltration; (5 marks)

(ii) Electro dialysis (5 marks)

(c) The following devices for control of particulates in air generated by human activity:

(i) Baghouse filter (5 marks)

(ii) Electrostatic precipitator (5 marks)

## **Question FIVE**

Write essays on **ANY TWO** of the following :

(a) the seveso tragedy (10 marks)

(b) Thalidomide (10 marks)

© The Minamata tragedy (10 marks)