



MERU UNIVERSITY OF SCIENCE & TECHNOLOGY

Qualification: **Diploma In Environmental Science & Technology Level 6**

Unit of Competency: **Introductory Environmental Chemistry**

Unit Code: **SCH 2150**

April 2024

END OF SEMESTER WRITTEN ASSESSMENT

Time: 3 Hours

INSTRUCTION TO CANDIDATES

1. This paper has two sections **A** and **B**
2. You are provided with separate Answer Booklet
3. Marks for each question are as indicated
4. **Do Not Write** on the Question Paper

This paper consists of 3 printed pages

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing

SECTION A [40 Marks]

Answer **all** questions in this section

1. Distinguish between environmental chemistry and atmospheric chemistry (4 Marks)
2. Define the meaning of the following terms;
 - a) Bio amplification (2 Marks)
 - b) Eutrophication (2 Marks)
3. The atmosphere is a mixture of gases that surrounds the Earth. It helps make life possible by providing us with air to breathe, shielding us from harmful ultraviolet (UV) radiation coming from the Sun. Identify **four** regions on the atmosphere (4 Marks)
4. Each of the planets in our solar system has an atmosphere, but none of them have the same ratio of gases or layered structure as Earth's atmosphere. State **four** gases in the atmosphere with their percentage composition (4 Marks)
5. Describe **four** effects of acid rain (4 Marks)
6. Enumerate **four** methods of controlling air pollution (4 Marks)
7. By using a well-drawn figure with a chemical equation, explain the formation of photochemical smog (4 Marks)
8. Describe **four** effects of water pollution on the environment (4 Marks)
9. Highlight **four** principles that form the base of green chemistry (4 Marks)
10. Explain the meaning of the following as used in environmental chemistry;
 - a) Dissolved Oxygen (DO) (2 Marks)
 - b) Biochemical oxygen demand (BOD) (2 Marks)

SECTION B (60 Marks)

Answer any **three** questions in this section

11. Studying environmental chemistry is significant for several reasons, as it provides valuable insights and contributes to addressing various environmental challenges.
 - a) Discuss **five** significances/reasons for studying environmental chemistry (10 Marks)
 - b) Define **five** organic pollutants in the environment (10 Marks)

12. The environment is the totality of the surrounding, comprising of both biotic and non-biotic components.

- a) Discuss the four segments of the environment (8 Marks)
- b) Analyze the following terms (8 Marks)
 - i. Environmental pollutant
 - ii. Contaminants
 - iii. Receptors
 - iv. Environmental sinks
- c) Highlight **four** ways of controlling/minimizing the effects of global warming (4 Marks)

13. There are many different classes and types of environmental pollutants based on their state and nature.

- a) Discuss **four** ways of treating industrial waste water (8 Marks)
- b) By use of examples, define; (6 Marks)
 - i. Air pollution
 - ii. Water pollution
 - iii. Land pollution
- c) Through the aid of a diagram, elaborate the formation of atmospheric ozone (6 Marks)

14. By use of a well labelled diagram, describe the process of;

- a) Acid rain formation (10 Marks)
- b) Greenhouse effect/Global warming (10 Marks)

THIS IS THE LAST PRINTED PAGE

🌀ALL THE BEST🌀