



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ENGINEERING TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

**FIRST YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING**

ENG/0S/CET/CR/08/6/A – MANAGE WATER RESOURCES QUALITY

DURATION: 3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Answer Section A and any Three Questions from Section B.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A - (40 MARKS)

1. Define surface water. (2 marks)
2. Briefly describe surface water sources and common uses. (4 marks)
3. List the **THREE** major types of surface water and provide examples of each. (4 marks)
4. What is water quality? (2 marks)
5. Describe the impact of human activities on water quality providing examples for each. (4 marks)
6. Explain the **TWO** ways in which human activities can modify water quality. (4 marks)
7. What is groundwater? (2 marks)
8. State **FIVE** groundwater management challenges. (5 marks)
9. State **THREE** sustainable solutions to groundwater challenges. (3 marks)
10. What is wastewater? (2 marks)
11. Highlight some common contaminants found in wastewater. (3 marks)
12. Briefly explain **TWO** objectives of wastewater treatment before releasing into the environment. (2 marks)
13. Provide **THREE** sources of wastewater. (3 marks)

SECTION B - (20 MARKS)

QUESTION A

1. What is water quality monitoring? (2 marks)
2. Briefly explain the **THREE** types of monitoring activities. (6 marks)
3. List **FOUR** factors measured to determine the quality of water. (4 marks)
4. Briefly describe **FOUR** indicators of water quality. (4 marks)
5. What are the purposes of water quality monitoring? (4 marks)

QUESTION B

1. Explain **FIVE** challenges associated with managing water quality and the key strategies for addressing the challenges. (10 marks)

2. Give FIVE surface water quality management plans. (5 marks)
3. Discuss the sources of elevated nutrients level in surface water and how they can impact water quality. (5 marks)

QUESTION C

1. Highlight groundwater issues and challenges. (5 marks)
2. Explain FOUR harmful effects of groundwater pollution (8 marks)
3. Describe the objectives of groundwater management initiative launched by the Ministry of Water Resources in India's Government. (4 marks)
4. State THREE characteristics of groundwater. (3 marks)

QUESTION D

1. List the Primary objective of wastewater treatment. (3 marks)
2. Explain the stages of Primary wastewater treatment and outline the typical materials removed during this phase. (4 marks)
3. Describe the Secondary treatment methods used in wastewater treatment. (3 marks)
4. Discuss the various treatment processes for wastewater sludge, explaining the objectives and benefits of each process in managing waste water sludge. (10 marks)