



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
Department of BUILDING & Civil engineering
UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING
ECV 4515 : WATER RESOURCES 1

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: JULY 2025

TIME: 2 HOURS

PAPER B

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.

QUESTION ONE (COMPULSORY) 30 Marks

- a) Explain the factors to consider when selecting a site for water reservoir
(10 marks)
- b) Outline the potential solutions in the challenges of water resources management
(6 marks)
- c) Sketch the following types of spillways
 - i) Ogee
 - ii) Chute
 - iii) Shaft
 - iv) Siphon (4 marks)
- d) Sketch a section of a dam and indicate the storage zone and sluice way
(6 marks)
- e) State four roles of NEMA in water resources (4 marks)

ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 Marks)

- a) Explain the term trap efficiency of reservoir in water resources (6 marks)

- b) Explain the removal of sediments in reservoirs (4 marks)
- c) Water Law is an essential tool in water resource, explain (6 marks)
- d) Differentiate perched aquifer from confined aquifer (4 marks)

QUESTION THREE (20 Marks)

- a) Sketch and outline the following
 - i) Radial gate
 - ii) Drum gate (6 marks)
- b) Explain the procedure of determining reservoir capacity by mass curve method (10 marks)
- c) Outline Integrated Water Resources Management(IWRM) (4 marks)

QUESTION FOUR (20 Marks)

- a) Explain ground water recharge (6 marks)
- b) State four advantages of water reservoirs (4 marks)
- c) Outline the following
 - i) Specific yield
 - ii) Aquifer
 - iii) Name three aquifers in Kenya
 - iv) Watershed
 - v) Water resource management(WRM) (6 marks)
- d) State four side effects of dams as water impounding structure (4 marks)

QUESTION FIVE (20 Marks)

- a) Explain the importance of new technologies in water resource management (6 marks)
- b) Explain the main strategies in water resources (4 marks)
- c) Name the mode of failures in both gravity and earth dams (4 marks)
- d) Sketch the following un controlled spillways
 - i) Chute
 - ii) Shaft
 - iii) Ogee (6 marks)

