



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ARCHITECTURE & BUILT ENVIRONMENT

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ARCHITECTURE

DIPLOMA IN QUANTITY SURVEYING

EAR 2209: BUILDING SERVICES I (WATER RETICULATION)

SPECIAL & SUPPLEMENTARY EXAMINATION

YEAR TWO SEMESTER TWO

SERIES: JULY 2025

TIME: 2 HOURS

DATE: JULY, 2025

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 (30 MARKS)-COMPULSORY

- a) Define the following terminologies.
 - i. Flow velocity. (2 marks)
 - ii. Water reticulation design manual. (2 marks)
 - iii. Pipe. (2 marks)
 - iv. Valves. (2 marks)
- b) Describe the THREE types of water reticulation systems. (6 marks)
- c) State FOUR factors to consider when selecting a pump. (4 marks)
- d) Explain FIVE key steps involved in the risk management process. (10 marks)
- e) List TWO main sources of water heating. (2 marks)

QUESTION TWO (15 MARKS)

Solar water heating system is a type of hot water distribution system.

- a) Define solar water heating system. (2 marks)
- b) Describe TWO types of solar water heating system. (4 marks)
- c) Describe THREE advantages of a solar heating system. (9 marks)

QUESTION THREE (15 MARKS)

- a) State FIVE design objectives of a water reticulation system. (5 marks)
- b) Describe FIVE keys elements of a water reticulation system. (10 marks)

QUESTION FOUR (15 MARKS)

- a) Define the term hydraulic fall. (1 mark)
- b) Describe SEVEN uses of pumps in hydraulic fall. (14 marks)

QUESTION FIVE (15 MARKS)

- a) Define the term pipe fittings. (2 marks)
- b) State THREE application of pipe fittings. (3 marks)
- c) Explain the function of any FIVE type of pipe fittings. (10 marks)