



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ARCHITECTURE & BUILT ENVIRONMENT

UNIVERSITY EXAMINATION FOR:
BACHELOR OF ARCHITECTURAL STUDIES/BACHELOR OF
ARCHITECTURE

EAR 4108: PHYSICAL ENVIRONMENT II (CLIMATE &
ARCHITECTURE)

SPECIAL & SUPPLEMENTARY EXAMINATION

YEAR ONE SEMESTER II

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.

Mobile phones are not allowed in the examination room.

QUESTION ONE (30 MARKS)-COMPULSORY

- a) With the aid of sketches, explain the **TWO** ways of achieving natural ventilation in hot arid and hot humid climates. (10 marks)
- b) Describe urban heat island effect. (5 marks)
- c) Explain any **TWO** carbon sinks in urban areas. (6 marks)
- d) Describe any **THREE** climatic factors that must be analysed in the design of passive buildings. (9 marks)

QUESTION TWO (20 MARKS)

Explain any **FOUR** factors in Architecture that impact the environment negatively leading to climate change. (20 marks)

QUESTION THREE (20 MARKS)

With the aid of examples, discuss the effects climate change. (20 marks)

QUESTION FOUR (20 MARKS)

You have been engaged by the World Bank to undertake a design competition dubbed “The Classroom”. With the aid of sketches, explain the Climate Responsive Design Guidelines for Tropical Climate evident in Kenya. (20 marks)

QUESTION FIVE (20 MARKS)

Explain the recommended street and urban layout design strategies in response to the climates in Kenya. (20 marks)