



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)**

END OF SEMESTER EXAMINATION

YEAR ONE SEMESTER II

SERIES: APRIL 2022

TIME: 2 HOURS

DATE: Pick APRIL 2022

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) Explain the **TWO MAIN** climatic factors to be analysed when designing a Mixed Use Development in Mombasa. (10 marks)
- b) The density and size of the built area affect the degree to which the microclimate can be modified. Explain. (10 marks)
- c) Moisture can be a liability if it comes in the form of humidity, causing such stickiness that one cannot evaporative cool. Highlight the strategies to reduce the discomfort of high humidity. (5 marks)
- d) Explain your understanding of Bio Climatic Chart. (5 marks)

QUESTION TWO (20 MARKS)

Discuss the different measures that need to be put in place in the design and management of the built environment to combat climate change for both developed countries and developing countries. (20 marks)

QUESTION THREE (20 MARKS)

Explain the modern requirements for designing urban layouts and external spaces in response to the different global climates (20 marks).

QUESTION FOUR (20 MARKS)

The East African Community with the aid of World Bank has commissioned “East African Architects” a Multi - disciplinary Practice based in Kenya to design schools across the region. You are an intern in this firm, explain the design strategies to considered for the different climates. (20 marks)

QUESTION FIVE (20 MARKS)

Using a suitable example of a climate responsive building within East Africa, discuss the passive design strategies employed to ensure the building works without the need of mechanical systems. (20 marks)