



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ARCHITECTURE & BUILT ENVIRONMENT

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ARCHITECTURE

EAR 2203: BUILDING ENVIRONMENT SCIENCE I

(THERMAL DESIGN)

END OF SEMESTER EXAMINATION

YEAR TWO SEMESTER I

SERIES: APRIL 2022

TIME: 2 HOURS

DATE: Pick Date 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 FIVE common pollutants found in room air. (15 marks)
- b) When determining the orientation and design of a building; it is important to research on the local climate. Explain FIVE areas of study for the research. (15 marks)

QUESTION TWO (15 MARKS)

Explain FIVE ways human beings lose heat to the environment.

QUESTION THREE (15 MARKS)

With the aid of sketches; explain FIVE **movable** shading devices.

QUESTION FOUR (15 MARKS)

- a) Define the following terminologies
 - i. Light well (2 marks)
 - ii. Glare (2 marks)
 - iii. Ventilation (2 marks)
 - iv. Light shelf (2 marks)
 - v. Visible transmittance (2 marks)
- b) With the aid of sketches explain cosine law. (5 marks)

QUESTION FIVE (15 MARKS)

With the aid of sketches explain:

- a) Trombe wall (5 marks)
- b) Solar Chimney (5 marks)
- c) Solar roof (5 marks)