

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURE (HONOURS) DEGREE
2010-2011 ACADEMIC YEAR

PART II – FIRST SEMESTER EXAMINATIONS – JANUARY 2011

AAR 2104 – ENVIRONMENTAL DESIGN I

Instructions

Answer question I and any other three

Time: 3 hours

QUESTION 1

Among the environmental design strategies used for thermal control in buildings, siting, building orientation and building morphology could significantly reduce the impact of solar heating on buildings. Using sketches illustrate the application of these strategies in environmental design. [25]

QUESTION 2

Climates can be classified according to certain methods for easier retrieval and use of information.

Compare and contrast the climatic classification systems you have learnt giving their advantages and use in building design? [25]

QUESTION 3

Sketch and write short notes on the following:

- i) Shading devices
- ii) Factors that affect thermal comfort
- iii) Earth-Sun relationship
- iv) Microclimate and Site climate
- v) Bioclimatic chart

[25]

QUESTION 4

Describe five methods that were used in search of the comfort scale that you have learnt. Indicate limitations of the methods and equipment that was used. [25]

QUESTION 5

What are the principal functions of ventilation? [5]

In what ways can an architect design a building with sufficient ventilation and at the same time keep out rain, dust and excessive solar radiation? [20]

QUESTION 6

Describe five types of energy conserving principles and environmental design strategies that you have learnt and explain their application to the Tropics. [25]