

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT OF ENVIRONMENT

DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURE (HONOURS) DEGREE

PART II – END OF FIRST SEMESTER EXAMINATIONS – JANUARY 2008
BAR 2104 – ENVIRONMENTAL DESIGN I

Instructions

Time: 3 hours

Answer question I and three other questions only (Include relevant sketches).

Question 1

Among the environmental design strategies used for thermal control in buildings. Sitting, Building orientation, and Building morphology could significantly reduce the impact of solar heating on buildings. Discuss the application of these strategies in building design. (25)

Question 2

Describe with the aid of diagrams the effect of global climatic factors climate and building design. (25)

Question 3

What is the role of environmental design in architectural design? (25)

Question 4

- a) Explain the design of shading devices and their effect considering the different positions of the sun in relation to the rotating earth. (15)
- b) Explain thermal comfort influencing factors using the Bioclimatic chart and their effect on building design. (10)

Question 5

The choice of building materials, especially for the external building envelope, greatly affects the flow of heat into the Buildings. This is so because materials vary in their properties that determine heat flow. As such, building materials have to be chosen for the particular climatic environment.

- a) List the thermo physical properties of building materials that are important to their thermal performance in buildings. (5)
- b) Discuss the significance of climate in relation to the correct use of building materials. (20)