NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF ARCHITECTURE AND QUANTITY SUREVYING

DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE

PART II SECOND SEMESTER EXAMINATIONS - MAY 2003
AAR 2202 – BUILDING CONSTRUCTION II

INSTRUCTIONS **Time: 3 Hours**

1. There are Six Questions altogether; two Questions in section A and four in Section B.
2. You are required to answer any one question from Section A and any three questions from Sections B.
3. All answers must be clearly illustrated and annotated.
4. All questions carry equal marks.

SECTION A

1. A building's roof is its first line of defence against the elements, especially rain and solar heat.

   (a) How is this fact adequately considered in the design and construction of a flat concrete roof in Zimbabwe?
   (b) In what circumstances are the following required in flat roof design and construction:

   - Vapour retarder
   - Solar slabs/thermotiles
   - Topside roof vents

2. The Protected Membrane Roof (PMR) is a viable alternative to the traditional practice of locating the lightweight concrete roof insulation between the structural deck and the membranes; - discuss, highlighting the pros and cons of the two practices.

SECTION B

3. Using the case of the Students' Hostel project at NUST,

   a) Describe the setting out and construction of a reinforced concrete spiral staircase.

b) Proffer justifications for the differences in design parameters and bye-laws for the domestic and institutional staircases.

4. a) The benefits of building cladding technology can best be realized in prefab construction; discuss.

b) Clearly explain the underlying principles for moisture tight construction in external wall cladding.

5. a) Out of the 10% of the estimated total cost for normal floor, wall, roof and ceiling finishes in a domestic building, wall finishes alone consume about 6%. Suggest effective ways of reducing the cost of wall finishes without necessarily reducing quality.

b) On the bases of the functions of building finishes explain the factors which influence the choice of type and technology of wall finishes.

6. a) What distinguishing features characterize the construction of the timber railed door and the ledged and braced door?

b) Illustrate the hanging details of a half-timber external flush door using a steel frame if the door opens towards the inside of the building.