

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

DEPARTMENT OF ARCHITECTURE  
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE

PART III FIRST SEMESTER EXAMINATIONS – DECEMBER 2004  
AAR 3108 – BUILDING CONSTRUCTION III

**Instructions**

**Time : 4 Hours**

Answer all questions on the A1 sheets provided.

Q1 to be answered on a *single* A1 sheet.

Use pencil or technical pens only

Marks will be awarded for organised and neat drawings.

Do not write your name on the sheets.

**QUESTION 1**

The Technopark Department at NUST has commissioned the Department of Architecture to design a mechanical workshop measuring 36m by 20m. Internal space requirements of the workshop are that there be as few columns as possible. The structure is to allow only diffused sunlight. The longer facades are to be as follows:

The northern façade being open with steel column (I-section) supports and the other façade being a plain brick wall.

Design and draw a two bay saw-tooth lattice steel roof (under Chromadeck roof sheets) with **valley beam** supporting the internal columns spaced at nine metres (9m) centres. Drawings should show a structural plan, section and two elevations and relevant details, all at **appropriate scales.** (50)

**QUESTION 2**

- a) Scaffolding is an essential component of a contractor's plant and equipment for the construction of multi-storey buildings. Define scaffolding and illustrate with neat sketches any three types of scaffolding associated with construction of multi-storey buildings. (15)
- b) Draw neat sketches showing the two methods applied to make steel fire-proof by encasing it in concrete (10)

**QUESTION 3**

Draw a typical section of a three storey (G+2) building with a basement (asphalt tanking) and a concrete roof slab with a parapet wall showing details of how dampness is prevented within the building. (25)