

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE

PART III END OF SECOND SEMESTER EXAMINATIONS – MAY 2007
AAR 3208 – BUILDING CONSTRUCTION IV

Instructions

Duration: 4 Hours

Answer all questions.

Title blocked A1 sheet

Marks will be awarded to neatly presented work.

You can draw either in pencil or technical pen.

Number all your sheets.

Do not write your name on any sheet.

QUESTION 1

Draw and explain in sketch form the principles involved in the construction of a multi-storey steel building. Your sketches should be to appropriate scales of 1:100; 1:20; 1:10 or 1:5. Details should show dimensions, materials and/or technology.

- (a) Sketch a simple 3 storey office building showing positions of entrance lobby, stairs and a strong room. The floor plans are repetitive so one floor is adequate. Building should be 25m x 12m with a central 2 metre wide interior corridor along the longer side of the building. Draw one simple section with height dimensions. Dimensions of plan should show the main column axis, door and window openings of your choice. [20]
- (b) Show simple front elevation with windows and entrance. [10]
- (c) Show in a simple 3-dimension drawing principles of structural framing of the building against wind forces and earthquakes [10]
- (i) on the perimeter
- (ii) and in the stabilization of core
- [10]
- (d) Detail of a floor to wall junction i.e. where the outside steel wall meets the steel floor [10]

Draw fire details of:-

- (e) fire protection for a double T column and another for fire protection of a castella beam [10]
- (f) Draw a foundation detail of your building i.e. plan, section and 3 dimension presentation. [10]
- (g) Steel strong room construction plan and section [10]
- (h) A glass in (steel frame) 5m long wall with a 900mm wide glass door in (steel frame) is to be used for partitioning the offices.
Draw a plan, section and elevation of the wall. [10]
- (i) Consider an office cell of 5m x 5m floor area. Show a ceiling plan of the office to scale. Draw a sectional detail of how a pressed steel plate or perforated steel plate ceiling is suspended. [10]

Total 100 marks.