NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

BUILDING CONSTRUCTION IV

AAR 3208

Examination Paper

May 2017

This examination paper consists of 2 pages

Time Allowed: **4 hours**

Total Marks: **100**

Special Requirements: **A1 DRAWING BOARDS, A1 PLAIN SHEETS, MASKING TAPE.**

Examiner's Name: **E. MUNAKU**

INSTRUCTIONS

1. Answer ALL questions
2. Answer question 1 & question 2 on the A1 sheet/s of paper provided

MARK ALLOCATION

QUESTION	MARKS
1.	**50**
2.	**25**
3.	**25**
TOTAL	**100**

QUESTION 1

You have been asked to design a multi-storey building in the CBD measuring 24m x 40m. The building is to have 12 floors. Ground and first floor are to be used for retail functions and the top floors as office space. The Building must have 2 basement levels for parking. The client has requested for an atrium with a skylight at the roof and a cantilevered canopy on the roadside for pedestrians.

a. At a scale of 1:100 draw the ground floor plan and typical office floor plan, showing structural system and services like staircases, lifts and ablutions (20)

b. Show the transverse section (1:50) and provide details for
   - I. Composite floor slab used in the building showing all components (6)
   - II. Concealed suspended ceiling fixing detail (6)
   - III. Internal aluminum frame office partitions (6)
   - IV. Exterior wall cladding system (6)
   - V. Roof system with skylight and rain water disposal (6)

QUESTION 2

a. Produce drawings for a double storey steelwork flea market measuring 12m x 36m. (10)
b. Show the following
   - i. steel column bases (3)
   - ii. Semi rigid and rigid beam to column connections (3)
   - iii. Column braces (3)
   - iv. Floor system details (3)
   - v. Beam to beam connections (3)

QUESTION 3

a. Give a detailed account of the structural design of the *Burg Khalifa, DUBAI* (10)
b. Draw sketches to illustrate the following:

   - i. Form design and structural principle (3)
   - ii. Foundation system (3)
   - iii. Typical structural plans (6)
   - iv. Equipment used in construction (3)