



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

BUILDING CONSTRUCTION III

AAR 3108

Examination Paper

December 2016

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 on an A1 sheet/s of paper

MARK ALLOCATION

QUESTION	MARKS
1.	15
2.	20
3.	30
4.	20
TOTAL	100

Question 1

- a. Describe the characteristics of the 3 main soil types that can be encountered on a site and relate the phenomena of settlement in each case. (6)
- b. With clearly labelled sketches, describe the components of the typical foundation system suitable for the soils types above. In each case illustrate how these foundation systems work to bring stability to the structure. (9)
- c. You have been commissioned to design a 4 storey multifunction structure with a basement measuring 60m x 12m on a waterlogged site. At appropriate scales, show the ground floor plan, cross section, foundation details, junction details, waterproofing details. (15)

Question Two

Write notes and illustrate with clearly labelled sketches explain the following;

- a. Scaffolding
- b. Underpinning
- c. shoring [30]

Question 3

Explain with detailed sketches how you would execute the following operations to an existing public building located in the CBD;

- a. Construction of a new basement.
- b. Construction of an additional upper floor to the building without any obstruction to the ground floor operations.
- c. Introduction of a fire escape
- d. Extending a room to the single storey portion with a heaped roof [20]

Question 4

- a. What is meant by the term formwork and what are the qualities of good formwork?
- b. With neat sketches, describe the various types of formwork [20]