

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**FACULTY OF THE BUILT ENVIRONMENT**  
**BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE**  
**PART I FIRST SEMESTER EXAMINATIONS – DECEMBER 2011**  
**BUILDING CONSTRUCTION I - AQS 1110**

Time: 3 Hours

Total Marks: 100

***Instructions:***

- (1) The paper has three printed pages
  - (2) All questions carry equal marks
  - (3) Answer any four questions
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**Question One**

- (a) Explain any two underground soil exploration methods that can be used where undisturbed samples are needed. (10 marks)
- (b) Furnish procedural details of any two of the following in-situ soil tests:
  - (i) Standard penetration test
  - (ii) Vane test
  - (iii) Plate bearing test (10 marks)
- (c) Describe in detail the basic requirements of a well-designed foundation. (5 marks)

**Question Two**

Attached is a site plan for a site located in the CBD where a proposed six (6) storey office block is to be constructed. You are required to develop a site establishment plan, justifying the position of each of the following for maximum efficiency during construction:

- (i) Hoarding and / or Fencing
- (ii) Crane position
- (iii) Entrance and Exit
- (iv) Site offices
- (v) Batch plant
- (vi) Coarse and fine aggregates
- (vii) Sign board
- (viii) Service lines
- (ix) Cement storage room
- (x) Bricks
- (xi) Toilets and rest rooms
- (xii) Storage space for other materials (25 marks)

### **Question Three**

- (a) Briefly describe different floors belonging to the “stone group” category. (12 marks)
- (b) What are the important considerations involved in the construction of cavity walls for the prevention of rain water penetration? (8 marks)
- (c) Explain the following terms:
  - (i) party wall
  - (ii) partition wall
  - (iii) panel wall
  - (iv) Retaining wall
  - (v) Separating wall (5 marks)

### **Question Four**

- (a) Draw a fully labelled longitudinal in-situ concrete stair flight. (a single lower flight with a landing) (10 marks)
- (b) Considering the flight you have shown above illustrate the formwork details that would be required for the same flight. (10 marks)
- (c) Critique in-situ concrete stairs for precast concrete stairs. (5 marks)

### **Question Five**

- (a) Illustrate any six (6) basic forms of roofs. (12 marks)
- (b) Briefly explain the different loads to be considered in the design of roofs. (8 marks)
- (c) Sketch five (5) types of trusses that can be fixed on a roof span of 12-15m. (5 marks)