

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

**DEPARTMENT OF ARCHITECTURE  
BACHELOR OF ARCHITECTURE (HONOURS) DEGREE**

**PART I - FIRST SEMESTER EXAMINATIONS – DECEMBER 2006  
AAR 1104 – INTRODUCTION TO MATERIALS AND CONSTRUCTION I/  
AAR1108 INTRODUCTION TO CONSTRUCTION MATERIALS I**

**Instructions**

*Answer ANY FOUR questions.*

*All Questions Carry Equal Marks.*

**Time: 2 hours**

**Question 1**

- a) Discuss briefly manufacture of cement. (12)
- b) Briefly discuss the role of the following compounds in cement:
- i) Tricalcium aluminate
  - ii) Tetra-calcium alumino-ferrite
  - iii) Tricalcium silicate
  - iv) Dicalcium silicate (8)
- c) Briefly explain storage of cement at site. (5)

**Question 2**

- a) Briefly explain the methods used to manufacture concrete by Arbitrary (Volume) Method and Trial Mix Method. (15)
- b) Discuss how workability of concrete can be controlled by the slump test method at site. (5)
- c) How can one test compressive strength on prepared concrete? (5)

**Question 3**

- a) Briefly explain the processes involved in the manufacturing of clay bricks at McDonald Bricks in Bulawayo. Use Illustrations were possible. (15)
- b) Using illustrations explain what nominal size and actual size of a brick are. (5)
- c) Briefly explain how mortar adhesiveness is measured. (5)

**Question 4**

- a) Which steps would you take in assisting Ms L. Kan of Selbourne Park knowing the type and amount of paint she requires for the walls and ceiling of her newly built house? (15)
- b) How is sandstone used as a building material? State its properties and give examples where it has been used in Bulawayo. (10)

**Question 5**

- a) Which specifications are required before paint is purchased? (5)
- b) Write brief notes on properties of clay bricks. (5)
- c) Give examples of at least three pain defects which you noted in your survey and state possible causes as well as recommendations. (15)