**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**
FACULTY OF THE BUILT ENVIRONMENT

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

PART I – END OF FIRST SEMESTER EXAMINATIONS – JANUARY 2008
**BAR 1104/1108– INTRODUCTION TO MATERIALS AND CONSTRUCTION I/ INTRODUCTION TO CONSTRUCTION MATERIALS I**

***Instructions*** ***Time :*** ***3 Hours***

***Answer ANY FOUR Questions.***
***All Questions Carry Equal Marks.***

## QUESTION 1

a) Concrete combines well with steel to act against forces. Illustrate with the aid of sketches the following types of reinforcement:
   i) round mild steel bars
   ii) mesh fabric
   iii) expanded metal
   (15)

b) Provide neat isometric sketches of clay bricks showing their visual properties (10)

## QUESTION 2

a) What are the necessary checks that have to be carried out to ensure that the following materials will give the best result when used for concrete:

   i) cement
   ii) sand
   iii) stone
   iv) water (20)

b) Differentiate between nominal sizes and actual sizes of bricks. (5)

**QUESTION 3**

a) Illustrate with the aid of a flow diagram the manufacturing processes of clay bricks (20

b) Cement may be manufactured using either the dry or wet systems. Explain the main difference between the two processes. (5)

**QUESTION 4**

a)

i) Define efflorescence, what causes it and how can it be over-comed. (5)

ii) What are the main disadvantages of using smooth sand for mortar? (5)

b) Briefly describe three ways of curing newly laid concrete. (15)

**QUESTION 5**

a) What determines the methods of casting concrete products or structures? Compare and contrast these methods. (20)

b) Write brief notes on properties of clay bricks. (5)