

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

**FACULTY OF THE BUILT ENVIRONMENT
DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE**

**PART I EXAMINATIONS – JANUARY 2008
AAR 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)