

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

DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE

PART V FIRST SEMESTER EXAMINATIONS – DECEMBER 2004
AAR 5102 – BUILDING CONSTRUCTION V

Instructions

Time : 4 Hours

*Answer 3 questions on the A1 sheets provided.
Use pencil or technical pens only
Marks will be awarded for organised and neat drawings.
Do not write your name on the sheets.*

QUESTION 1 (COMPULSORY)

- a) Show the difference between full-plate deck, ribbed deck and hollow pots on inverted beams. [20]
- b) Design a strong room measuring 3m x 5m x 2,8m high. Show the plan and section using appropriate scale. [20]

QUESTION 2

- a) In what way does reinforced concrete differ from prestressed concrete. [10]
- b) The following processes are used for constructing prestressed concrete building parts.
- Induction of stress reinforced steel,
 - Pre-stressing of reinforcement steel,
 - Bring fresh concrete,
 - Curing of concrete.
- i) Which sequence is used for prestressed concrete with qualities of instant binding of steel and concrete? Show in sketch form the simplified process. [10]
- ii) Give two examples where prestressed concrete materials are used in the construction industry. [10]

QUESTION 3

- a) What functional requirements must load bearing outside walls have? [6]
- b) Draw a cavity wall and state the purpose of cavity walls. [6]
- c) How do you reinforce load carrying walls. Show in sketch form? [6]
- d) What function does a ring beam have? [6]
- e) Show in sketch form to appropriate scale, the different positions where a ring beam can be placed on a building [6]

QUESTION 4

- a) Describe using sketches five building construction methods of preventing the spread of fire. [10]
- b) How can the fire resistance of a steel column be increased? Show four solutions in sketch to appropriate scale. [10]
- c) What do you understand by fire resistance of a material? Why does an untreated steel column have a fire resistance of 15 minutes although steel does not burn. [10]