

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE

PART V – END OF FIRST SEMESTER EXAMINATIONS – JANUARY 2008
BAR 5102 – BUILDING CONSTRUCTION V

Instructions

Duration: 3 Hours

Answer all Questions.

Each Question carries 25 marks.

Total Marks: 100

Question One

- a) Clearly illustrate a composite concrete hollow floor system and explain its design requirements mentioning four of its advantages over in-situ cast concrete slabs.
(14 marks)
- b) Clearly illustrate how you would protect a timber or steel column from fire in a factory building.
(6 marks)
- c) Illustrate the difference between a one pin and two pin steel portal frames.
(6 marks)
- d) What is the advantage of using steel portal frames over laminated timber portal frames?
(4 marks)

Question Two

- a) Jointing and sealants are designed to provide a complete water tight barrier in the form of a single joint towards the panel face. The main sealant joint types for use with concrete are poly-sulphide and acrylic used for highly profiled units such as parapet panels. In light of the above statement illustrate how these joints are fixed at a junction of a concrete cladding panel and a column listing two other requirements of joints and sealants in claddings.
(10 marks)
- b) Define a curtain wall and illustrate its difference with claddings. (5marks)
- c) Clearly discuss and illustrate the difference between pre and post tensioned concrete mentioning two uses of each. (10 marks)
- d) State three advantages and two disadvantages of either pre or post tensioned concrete over in-situ cast concrete. (5 marks)

Question Three

- a) Given that the structural walls to carry a roof have exceeded the structural gable height, illustrate a type of roof structure that would compensate for that at the same time creating habitable roof spaces. Clearly label all the components making up the roof members. *(10 marks)*
- b) Outline any five structural requirements for roof design. *(5 marks)*
- c) Outline and illustrate the difference between a steel girder north light and south light. *(5marks)*