

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY  
FACULTY OF ARCHITECTURE AND QUANTITY SURVEYING  
DEPARTMENT OF ARCHITECTURE  
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE  
PART II FIRST SEMESTER EXAMINATIONS - DECEMBER 2002  
AAR 2102 BUILDING CONSTRUCTION I

**Instructions**

**Time:** 3 Hours

1. From the five questions, answer Question 1 and THREE others.
2. All questions carry equal marks.
3. Use well annotated diagrams to illustrate your answers.

**QUESTION 1 - Compulsory**

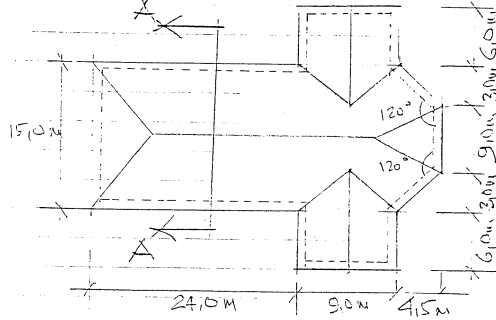


Fig Q. 1 - Roof Plan (Not to scale) - illustrates the roof plan of a Church Building. Assuming the cladding material is corrugated aluminium sheets:

- a) Draw out a suitable setting out scheme for the timber rafters and purlins, specifying all necessary dimensions and cross-sections of the trusses.
- b) Draw Section AA through the roof to expose the truss system, assuming a roof overhang of 45cm all round and timber fascia board.

**QUESTION 2**

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- a) Discuss the pros and cons of the precast and in-situ construction methods using cases of the building industry in developed and less developed countries.
- b) Describe the process of construction of a light weight r.c. upper floor slab of a building using the in-situ method.

**QUESTION 3**

- a) Use appropriate sketch drawings to illustrate the bonding method for an external load bearing brick wall. Also sketch a non-load bearing brick (infill) wall between the reinforced concrete columns of a two storey building.
- b) Discuss the advantages of the English Bond in brick wall construction.

**QUESTION 4**

- a) Describe the raft and deep strip foundations.
- b) With the help of two separate drawings OR one combined drawing, illustrate the differences in structure between raft foundations for lightly loaded and heavily loaded buildings on poor soils.
- c) What subsoil conditions necessitate the use of deep strip and raft foundations?

**QUESTION 5**

- a) What basic principles guide the design and construction of a suspended timber floor?
- b) Draw a typical section through a basement floor space of a building to illustrate how moisture penetration and underground water incursion can be prevented.

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