

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

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

PART II – END OF FIRST SEMESTER EXAMINATIONS – JANUARY 2008

**BAR 2102 –**

**Instructions**

**Duration: 3 Hours**

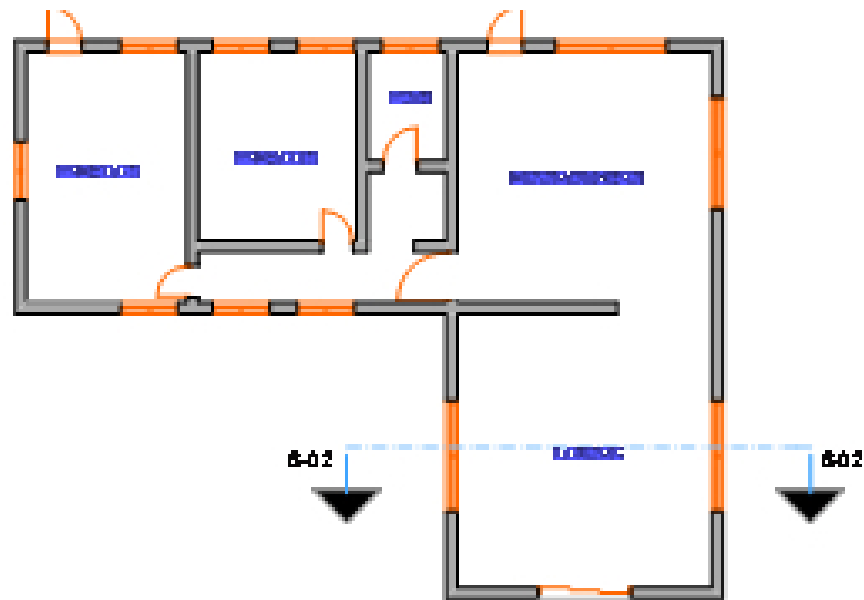
*Answer any THREE Questions.*

**Question One**

- a) Outline five requirements for load bearing walls (5 marks)
- b) Clearly differentiate between masonry and monolithic walls giving two types of materials used in each. (5 marks)
- c) Illustrate typical details on how rain water and dampness can be prevented on chimneys, clearly label your diagrams. (10 marks)
- d) Listed below are materials used in wall construction; give two advantages and disadvantages of each over the other.
- Sand and cement blocks
  - Stone
  - Timber
- (6 marks)
- e) Illustrate cross wall construction in plan and mention one of its advantages. (4 marks)

**Question Two**

- a) For the given plan below insert a roof plan with the following specifications; *a combined gable and hip roof, 800mm roof eaves, and label the valley, hip, gable, and ridge and indicate the possible positions for rain water gutters and down pipes.* (8 marks)



- b) Draw a typical truss detail through section cut S-01. (4 marks)
- c) Illustrate and label a section cut through a concrete roof slab with a parapet wall (4 marks)
- d) Illustrate the difference between a steel girder north light and south light. (4 marks)

### **Question Three**

- a) List six structural requirements for chimneys. (6 marks)
- b) Clearly illustrate a typical chimney detail and denote the following; heath, fireplace, throat, fire back, flue, flue linings. (6 marks)
- c) A timber suspended upper floor when built around a fireplace consists of different members amongst which are; joists, trimmed joists, herringbone strutting. By means of diagram illustrate these giving the relevant size of sections where necessary (8 marks)

### **Question Four**

- a) You are a contracts manager and your company has been commissioned to build a supermarket with four floors of office space above. Write brief notes on how you would handle the following;

- Site clearing and trial pits (2 marks)
- Fencing /hoarding (2 marks)
- Accommodation and site storage (2 marks)
- plant and equipment (2 marks)
- site health and welfare arrangements (2 marks)

b) What are the three steps of foundation design procedure that you would consider? (3 marks)

c) Given that some parts of the foundations require pile foundations, explain why you would opt or precast concrete piles over in-situ cast concrete piles. (3 marks)

c) What is the difference between an end bearing pile and friction pile? Illustrate your answer. (4 marks)

### **Question Five**

a) Explain and illustrate the difference between pre and post tensioned concrete giving two examples of uses for each. (10 marks)

b) Illustrate how concrete roofing tiles can be fixed on a load bearing wall as claddings. (10 marks)