



STUDENT NUMBER

CENTRE NUMBER

HIGHER SCHOOL CERTIFICATE EXAMINATION

2000

INDUSTRIAL TECHNOLOGY

2 UNIT

SECTION II

BUILDING AND CONSTRUCTION INDUSTRIES

*Total time allowed for Sections I and II—One hour and a half
(Plus 5 minutes reading time)*

DIRECTIONS TO CANDIDATES

- Write your Student Number and Centre Number at the top right-hand corner of this page.
- Where appropriate, show all working for solutions neatly and clearly.
- You may use Board-approved drawing instruments and calculators.

Section II—Building and Construction (15 marks)

- Question 4 is **COMPULSORY**.
- Attempt **TWO** questions from Questions 5, 6, and 7.
- Answer the questions in the spaces provided in this paper.

MARKER'S USE ONLY

Question				
4				
5				
6				
7				

SECTION II—BUILDING AND CONSTRUCTION

(15 Marks)

QUESTION 4 This question is **COMPULSORY**. (5 marks)

A pair of driveway gates hinged to sandstone pillars is shown in Figure 1.

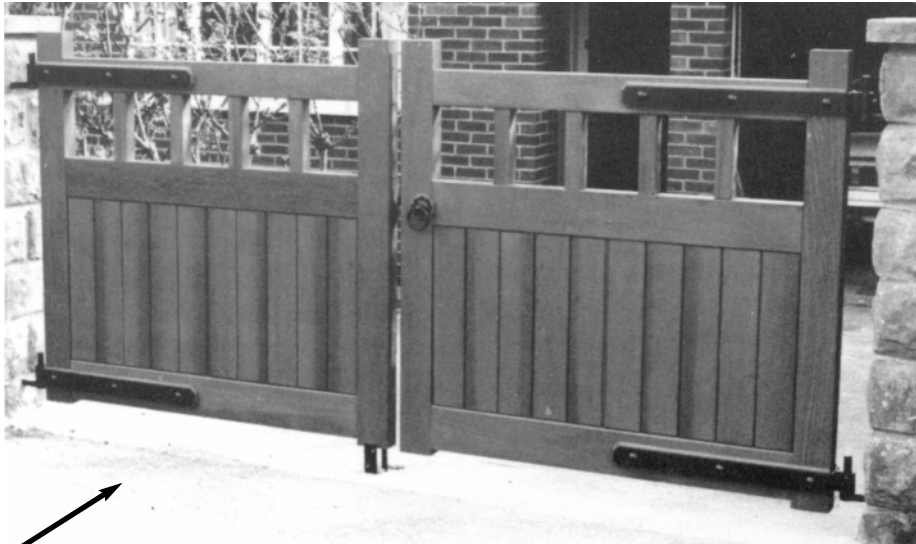


FIG. 1

- (a) Draw an accurate orthogonal sketch, in proportion, of a view of the gates shown in the direction of the arrow. The sandstone pillars are shown below.



QUESTION 4 (Continued)

(b) Calculate the total cost of installing the driveway gates if the costs are as follows:

<i>Item</i>	<i>Item cost</i>	<i>Total cost</i>
Gates	\$350 each	
Hinges	\$22 each	
Nuts,bolts, washers	\$3 per set	
Handle and latch (unit)	\$15.50	
Labour — 4 hours	\$40 per hour	
TOTAL COST		

Total cost \$.....

(c) (i) Suggest a suitable timber to use for the gates.

.....

(ii) List THREE characteristics of the timber named in part (i) that make it suitable for use for the gates.

1

2

3

(d) The hinges for the gates are attached to the sandstone pillars. With the aid of labelled sketches, indicate a method for attaching the hinges to the pillars.

Attempt TWO questions from Questions 5, 6, and 7.

QUESTION 5 (5 marks)

The owners of a block of land wish to build a family home. They have approached an architect to design the house for them.

- (a) When designing the house, the architect must consider many aspects of the site. Name TWO of these aspects and explain how they will affect the design of the house.

Aspect 1

Explanation
.....
.....

Aspect 2

Explanation
.....
.....

- (b) Outline the procedure the owners must follow to gain building approval before building work can commence.

.....
.....
.....
.....
.....
.....

- (c) For a house to be built successfully, care must be taken with the building of the foundation. Outline THREE building problems that may occur if the foundation is faulty.

- (i)

- (ii)

- (iii)

QUESTION 5 (Continued)

(d) Figure 2 shows a section through the block of land on which the house is to be built.

- (i) Complete the diagram showing how the cleared site would be set out for the concrete slab.

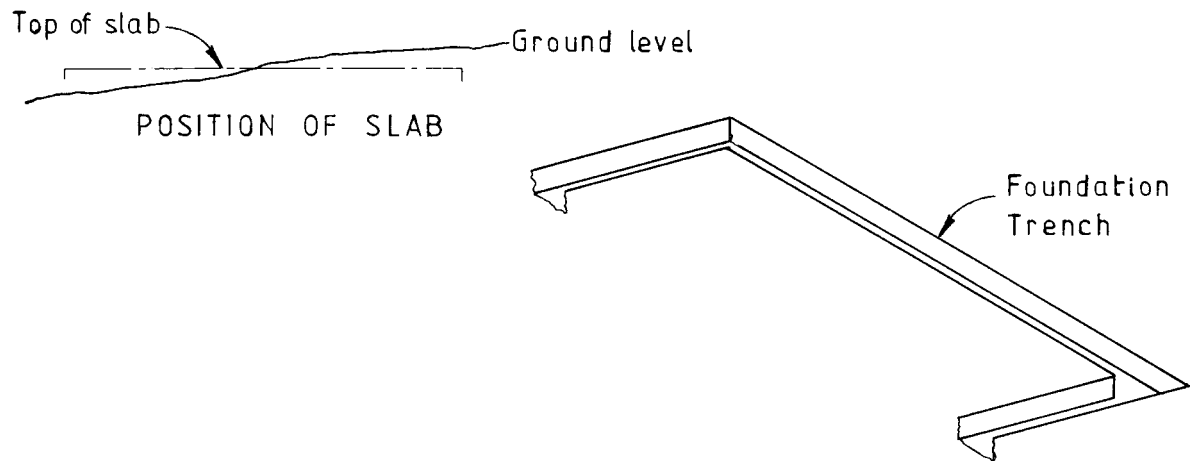


FIG. 2

- (ii) With the aid of labelled sketches, show how you would set out a 90° corner on the building site.

QUESTION 5 (Continued)

(e) What is *reinforced concrete*?

.....
.....

(f) Complete the sketch in Figure 3, showing the section through the foundation and floor slab of the house. Label all parts.

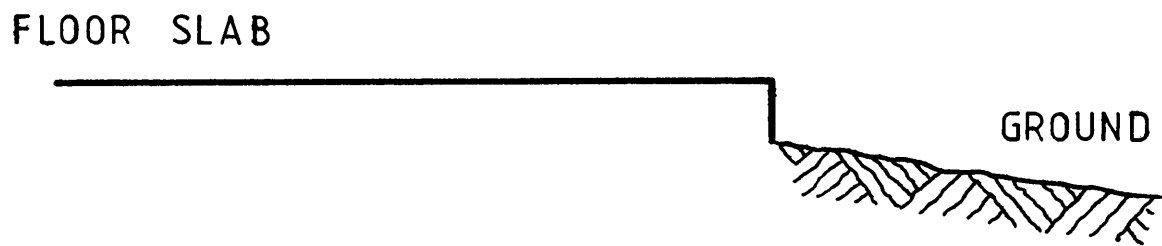


FIG. 3

Attempt TWO questions from Questions 5, 6, and 7.

QUESTION 6 (5 marks)

Timber is used extensively as a structural material.

- (a) List FOUR advantages and FOUR disadvantages of using timber as a structural material.

Advantages

- (i)
- (ii)
- (iii)
- (iv)

Disadvantages

- (i)
- (ii)
- (iii)
- (iv)

- (b) Name TWO methods that are used to identify structural timber in a timber yard.

Method 1

Method 2

Question 6 continues on page 8

QUESTION 6 (Continued)

(c) With the aid of sketches, explain the difference between the following building constructions.

(i) Timber-frame construction

(ii) Brick-veneer construction

(iii) Brick cavity construction

QUESTION 6 (Continued)

(d) During the erection of a building, what is the purpose of incorporating the following items?

(i) Air vents

.....
.....

(ii) Ant capping

.....
.....

(iii) Flashing

.....
.....

(e) (i) Explain the following terms:

1 Wall cladding;

.....
.....

2 Wall lining.

.....
.....

(ii) List FOUR properties of wall cladding.

1
2
3
4

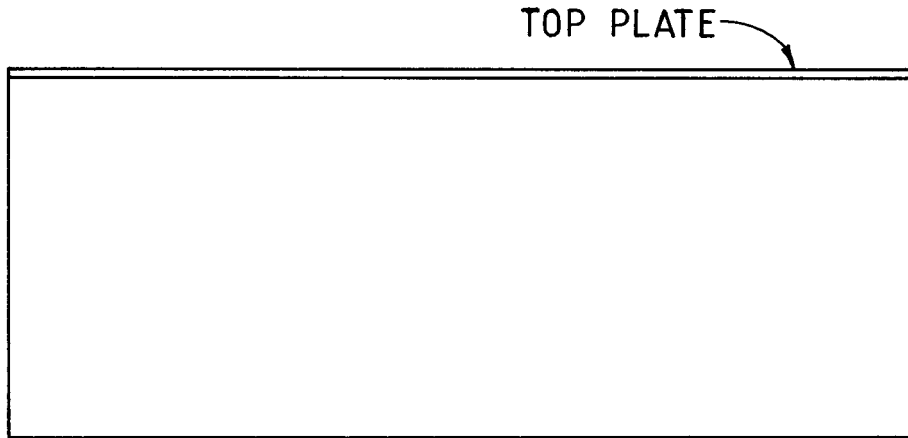
(iii) List THREE materials used for wall cladding.

1
2
3

Attempt TWO questions from Questions 5, 6, and 7.

QUESTION 7 (5 marks)

- (a) The outline of a timber-frame wall is shown. The wall will have a door and window when it is completed.
 - (i) Complete the sketch of the frame, showing all structural members.
 - (ii) Label all parts.



- (iii) Describe the process of making house frames in a framing factory.
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 -
 -
 -
- (iv) Explain THREE advantages of factory-made roof trusses over roof trusses made on site.
 - 1
.....
 - 2
.....
 - 3
.....

QUESTION 7 (Continued)

- (b) (i) Why is it important to have a damp course membrane between a floor slab and the timber-frame wall shown in part (a)?

.....

- (ii) Name TWO materials commonly used for a damp course membrane.

1

2

- (c) Name and sketch THREE different types of roof construction.

Roof type 1

Name

Roof type 2

Name

Roof type 3

Name

QUESTION 7 (Continued)

(d) In the construction of a building, state where each of the following items is used, and indicate their purpose.

(i) Stud

Where used

Purpose

.....

(ii) Sill

Where used

Purpose

.....

(iii) Lintel

Where used

Purpose

.....

(iv) Fascia

Where used

Purpose

.....

(v) Brace

Where used

Purpose

.....

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