



Province of the
EASTERN CAPE
EDUCATION



NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2022

**CIVIL TECHNOLOGY: WOODWORKING
(EXEMPLAR)**

MARKS: 200

TIME: 3 hours

This paper consists out of 15 pages, including 2 answer sheets.

REQUIREMENTS

1. Drawing instruments
2. A non-programmable calculator
3. ANSWER BOOK

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX questions: THREE questions are generic and THREE questions are subject specific.
2. Answer ALL the questions.
3. Answer each question as a whole. Do NOT separate subsections of questions.
4. Start the answer to EACH question on a NEW page.
5. Do NOT write in the margins of the ANSWER BOOK.
6. You may use sketches to illustrate your answers.
7. Write ALL calculations and answers in the ANSWER BOOK or on the attached ANSWER SHEETS.
8. Use the mark allocation as a guide to the length of your answers.
9. Make drawings and sketches in pencil, fully dimensioned and neatly finished off with descriptive titles and notes to conform to the *SANS/SABS Code of Practice for Building Drawings*.
10. For the purpose of this question paper, the size of a brick should be taken as 220 mm x 110 mm x 75 mm.
11. Use your own discretion where dimensions and/or details have been omitted.
12. Answer QUESTIONS 2.7 and 6.6 on the attached ANSWER SHEETS, using drawing instruments where necessary.
13. Write your NAME on all ANSWER SHEETS and hand them in with your ANSWER BOOK, whether you have answered the question or not.
14. Drawings in the question paper are NOT to scale due to electronic transfer.
15. Google Images was used as the source of all photographs and pictures.

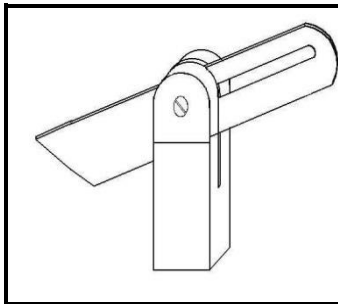
QUESTION 1: SAFETY AND MATERIALS (GENERIC)

- 1.1 What type of boot is compulsory to wear when working with cement or concrete? (1)
- 1.2 Under what circumstances will the following personal protective equipment be used:
- 1.2.1 Safety glasses (1)
- 1.2.2 Earplugs (1)
- 1.3 Briefly motivate why loose hanging clothes must be avoided when working on machines. (2)
- 1.4 Describe the safety precaution that is applicable with the following hand tools:
- 1.4.1 Hammer heads (1)
- 1.4.2 Sawing equipment (1)
- 1.4.3 When carrying chisels (1)
- 1.5 Briefly motivate why a concrete mixer with a petrol engine may only be used in the open air (outside). (2)
- 1.6 Name TWO requirements for the storing of cement. (2 x 1) (2)
- 1.7 Why should warning signs be shown where workers are busy with overhead work? (1)
- 1.8 Name FOUR requirements for storing of hazardous material in the workplace. (4 x 1) (4)
- 1.9 Name the THREE ingredients needed to mix screed. (3 x 1) (3)
- 1.10 Name THREE uses for screed. (3 x 1) (3)
- 1.11 Briefly motivate why coarse aggregate should not be used in a mortar mixture. (1)
- 1.12 Identify the type of board product that will be used for the following work:
- 1.12.1 Backs of cupboards (1)
- 1.12.2 Formwork for concrete (1)
- 1.13 Briefly describe the difference between *stock bricks* and *face bricks*. (2)
- 1.14 Name TWO uses of cast iron. (2 x 1) (2)

[30]

QUESTION 2: EQUIPMENT, TOOLS AND GRAPHICS (GENERIC)

- 2.1 Briefly motivate why the round shovel is not effective to squarely finishing-off foundation trenches. (1)
- 2.2 Name THREE hand tools that can be used to dress cut bricks. (3 x 1) (3)
- 2.3 Identify the tool that will be used for the following work:
- 2.3.1 Carrying of plaster so that it can be applied to a wall (1)
- 2.3.2 Scraping or floating plastered walls (1)
- 2.3.3 Creating a rounded edge along external corners (1)
- 2.3.4 Touching up of small areas (1)
- 2.4 Briefly describe the difference in using a rip saw and a cross-cut saw. (2)
- 2.5 Name the tools in FIGURES 2.5.1 to 2.5.3 below and name ONE use of each.

**FIGURE 2.5.1****FIGURE 2.5.2****FIGURE 2.5.3**

(3 x 2) (6)

- 2.6 Answer the following questions in regard to the construction machine in FIGURE 2.6.

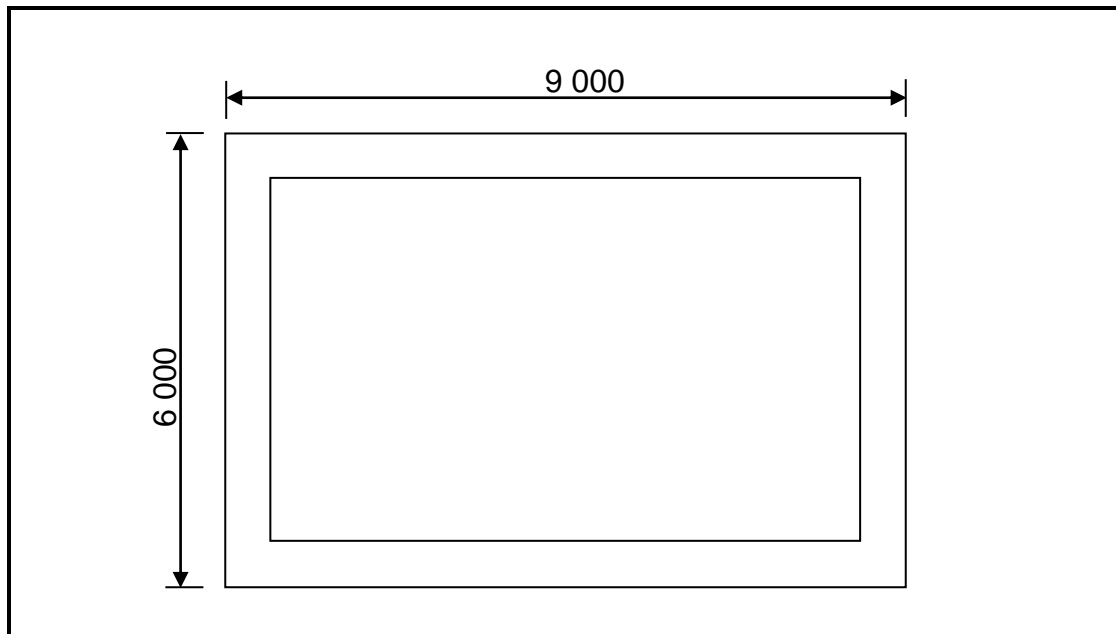
**FIGURE 2.6**

- 2.6.1 What is this tool called? (1)
- 2.6.2 Describe the purpose of this machine. (1)

- 2.7 FIGURE 2.7 on ANSWER SHEET 1 shows the isometric view of a T-junction of a half brick wall in stretcher bond.
Use ANSWER SHEET 1 and draw the front view of the brick wall on scale 1 : 10. (13)
- 2.8 Describe the purpose of detail drawings. (2)
- 2.9 Name THREE detail that must be shown on a site plan. (3 x 1) (3)
- 2.10 Make neat sketches of how the following symbols will be illustrated on a floor plan.
- 2.10.1 Water closet (2)
- 2.10.2 Hot-water cylinder (2)
- [40]**

QUESTION 3: QUANTITIES, JOINING AND GRAPHICS (GENERIC)

- 3.1 FIGURE 3.1 shows a foundation strip for a building.
The foundation is 600 mm wide and 200 mm thick.
A concrete mix of 1 : 4 : 4 is used.

**FIGURE 3.1**

- 3.1.1 Determine the centre line of the foundation. (5)
- 3.1.2 Determine the volume of concrete needed. (3)
- 3.2 A one brick wall of 1,2 m high and 12 m long must be constructed.
Determine the amount of bricks needed.
Show ALL calculations. (5)
- 3.3 Describe the application process of PVC adhesive, when joining PVC pipes. (4)
- 3.4 Identify the following statements as TRUE or FALSE. Only write 'true' or 'false' next to the question number in the ANSWER BOOK.
- 3.4.1 Contact glue is rubbery. (1)
- 3.4.2 Contact glue is applied to one side of the area to be bonded. (1)
- 3.4.3 Contact glue must be applied at least 5 mm thick. (1)
- 3.4.4 Silicone is heat resistant. (1)
- 3.4.5 Silicone has a low toxicity. (1)
- 3.5 Name TWO safety precautions when using epoxy. (2 x 1) (2)
- 3.6 Make a neat sketch of a standard building practise north arrow. (2)

3.7 Describe the position of the north arrow on a drawing sheet. (2)

3.8 Identify the following drawing symbols:

3.8.1  (1)

3.8.2  (1)
[30]

QUESTION 4: CASEMENTS, DOORS, WALL PANELLING AND JOINING (SPECIFIC)

Start this question on a NEW page.

- 4.1 Study FIGURE 4.1 below which shows the inside bottom corner of a framed ledge and braced door.

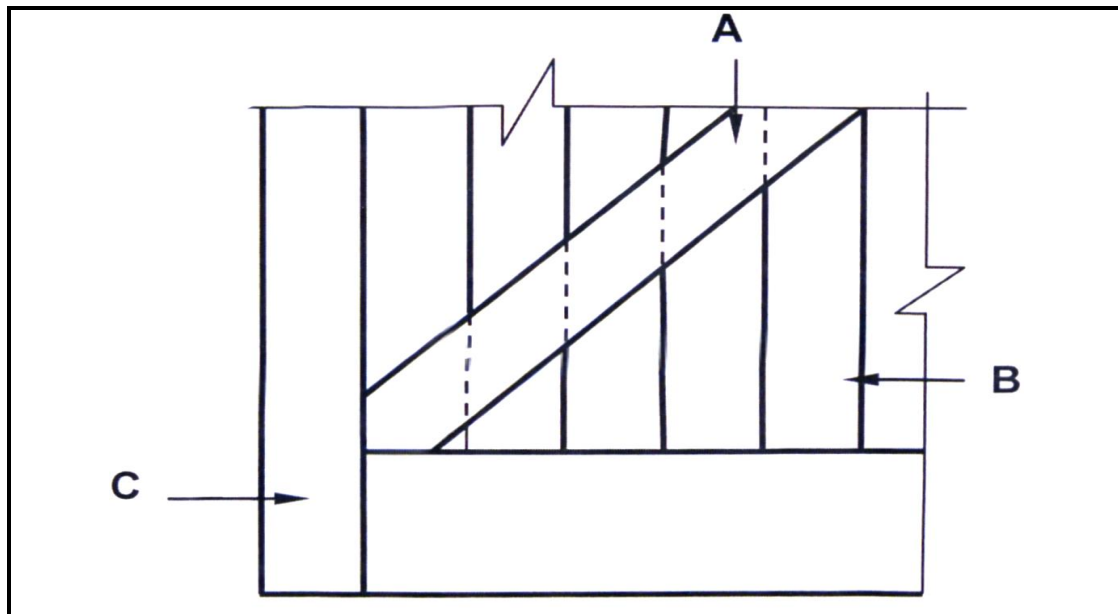
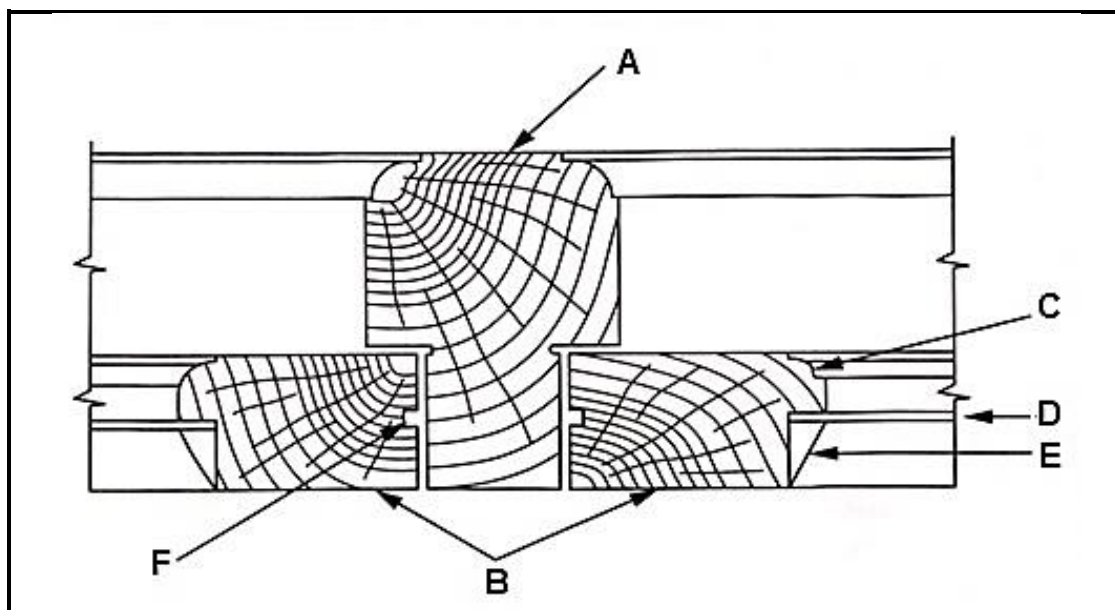


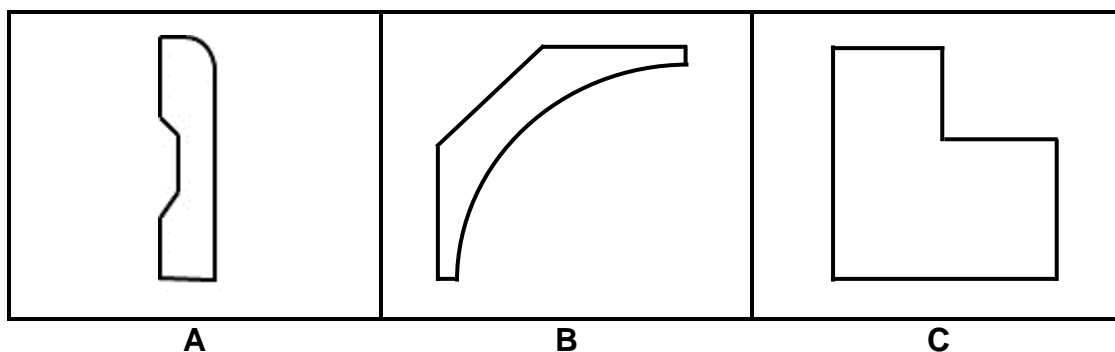
FIGURE 4.1

- 4.1.1 Identify parts **A** to **C**. (3)
- 4.1.2 What is the purpose of the two braces on the door? (2)
- 4.1.3 Give a reason why stub mortise and tenon joints are preferred on the frame members of the door. (1)
- 4.2 Name the safety equipment you will use to protect your eyes when using an electric drill. (1)
- 4.3 Name ONE joint that may be used to join the stiles to the top rail of a door. (1)

- 4.4 FIGURE 4.4 below shows a vertical section through a certain part of a double casement window. Study the picture and answer the questions that follow.



- 4.4.1 What is the function of **F**? (2)
- 4.4.2 Identify parts **A** to **E**. (5)
- 4.5 Give THREE reasons for the use of wall panelling. (3)
- 4.6 Identify the following mouldings **A–C**:



(3 x 1) (3)

- 4.7 Name ONE method to fix a shelf to a wall. (1)
- 4.8 What is the function of a lug on a metal doorframe? (2)
- 4.9 Draw a neat drawing in good proportion on how to fix the battens at the bottom of the framed ledged and braced batten door. (6)

[30]

QUESTION 5: CENTERING, FORMWORK AND SHORING (SPECIFIC)

5.1 FIGURE 5.1 below shows a horizontal section through a square column.

Study FIGURE 5.1 and identify parts **A** to **D**. Write only the answer next to the letter (A–D) in the ANSWER BOOK, for example Column.

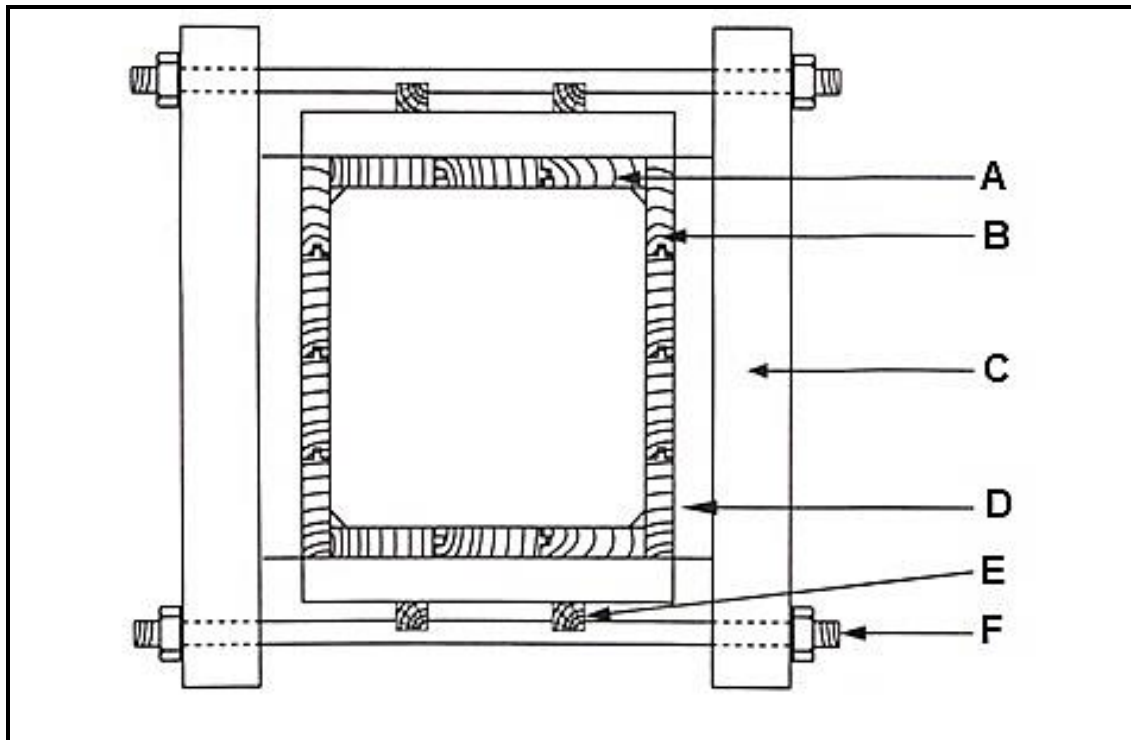


FIGURE 5.1

5.1.1 Identify parts **A** to **D**. (4)

5.1.2 Explain the function of **E**. (1)

5.1.3 Give the name and purpose of part **F**. (2)

5.2 Explain the following:

5.2.1 The purpose of shoring (5)

5.2.2 Raking shore (1)

5.3 Describe the function of the following components of flying shore:

5.3.1 Needles and cleats (1)

5.3.2 Raking struts (1)

- 5.4 FIGURE 5.4 below shows a pictorial view of the construction detail underneath a centre of an arch. Study the picture and answer the questions that follow.

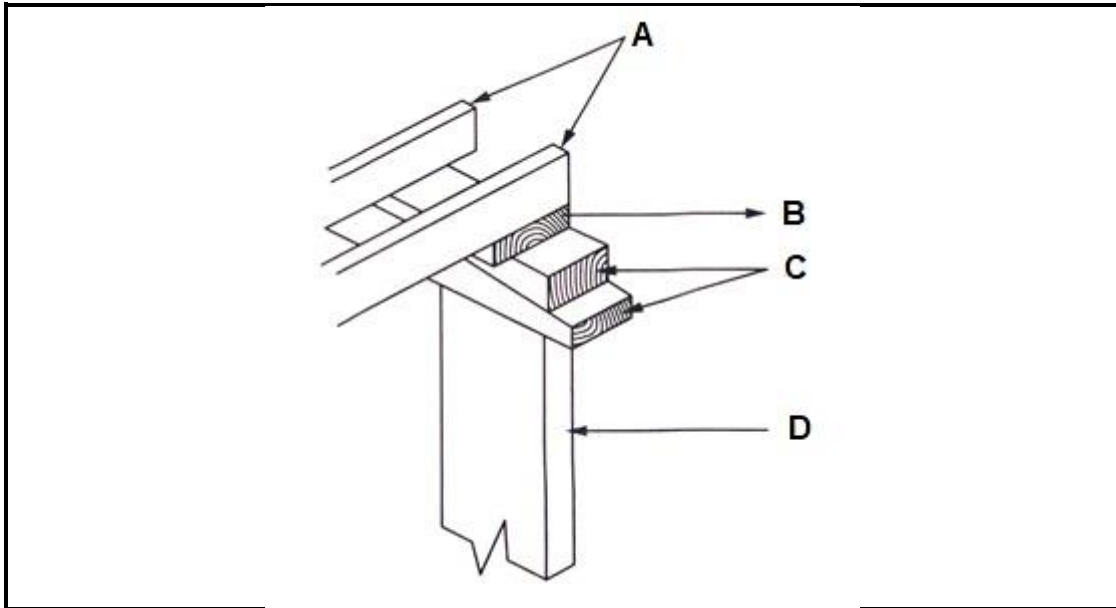


FIGURE 5.4

- 5.4.1 Identify parts **A** to **D**. (4)
- 5.4.2 Explain ONE use of **A** as shown in FIGURE 5.4. (1)
- 5.5 Explain what *centring* is. (4)
- 5.6 Name the requirements for a centre. (6)
- [30]**

QUESTION 6: CENTERING, FORMWORK, SHORING, IRONMONGERY, CEILINGS AND SUSPENDED FLOORS (SPECIFIC)

- 6.1 Discuss the difference between *formwork* and *striking*. (2)
- 6.2 What kind of treatment will you apply to the timber parts of formwork and why would you do that? (3)
- 6.3 Name TWO board products that you can use for the sides of formwork. (2)
- 6.4 Name the function of the following components of a ceiling:
- 6.4.1 Brandering (2)
- 6.4.2 Cover strips (2)
- 6.5 Explain the layout of a ceiling for a room. (3)
- 6.6 FIGURE 6.6 on ANSWER SHEET 2 shows the vertical view of a wall, sole plate and soffit shutter board for a floor slab. Complete the drawing and show all the different parts on a scale of 1 : 20. (10)
- 6.7 Describe what the purpose of folding wedges are in the erection process of a floor slab. (2)
- 6.8 Explain the purpose of yokes in the formwork process for a square column. (2)
- 6.9 Identify whether the following are TRUE or FALSE. Write only the word 'true' or 'false' next to the question numbers (6.9.1–6.9.4) in the ANSWER BOOK.
- 6.9.1 Shoring is a permanent construction that can be used to support a wall. (1)
- 6.9.2 Raking shores are used on top of foundations excavations to support it. (1)
- 6.9.3 Flying shores are used to provide support between two walls next to adjacent buildings. (1)
- 6.9.4 The wall plate provides a supporting surface for the shore and bracing and is fixed to the wall. (1)

6.10 Identify the hinge and the different parts **A** to **E** in FIGURE 6.10.

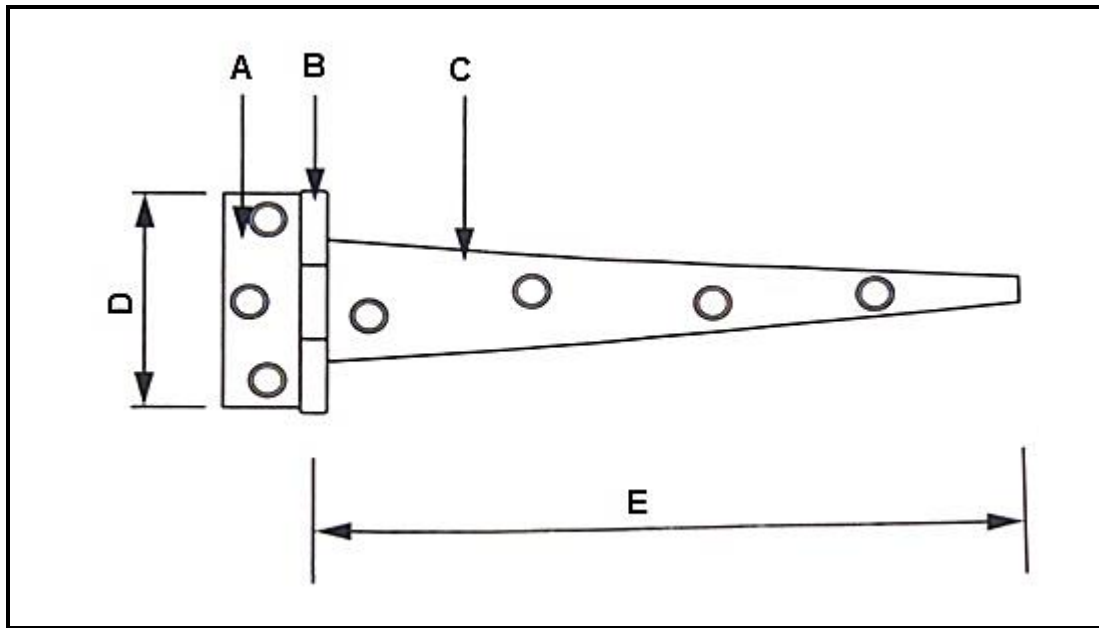


FIGURE 6.10

(6)

6.11 What is the purpose of the open space underneath the suspended timber floor?

(2)

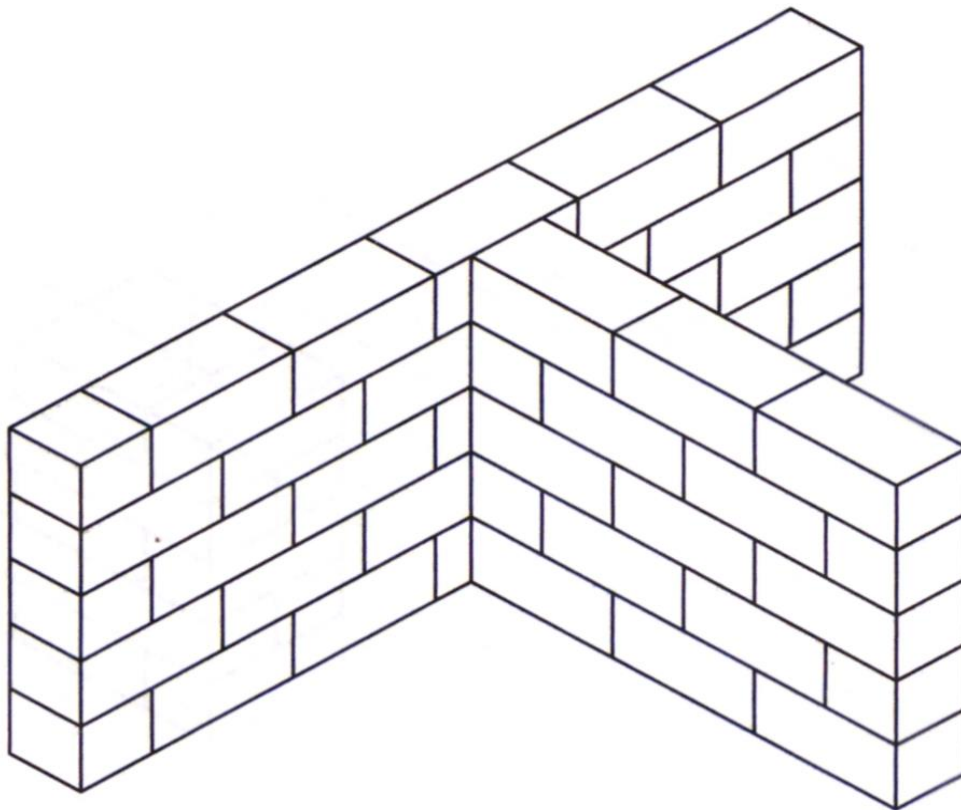
[40]

TOTAL: 200

ANSWER SHEET 1	WOODWORKING CIVIL TECHNOLOGY	NAME: _____
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- 2.7 FIGURE 2.7 on ANSWER SHEET 1 shows the isometric view of a T-junction of a half brick wall in stretcher bond.
Use ANSWER SHEET 1 and draw the front view of the brick wall on scale 1 : 10.

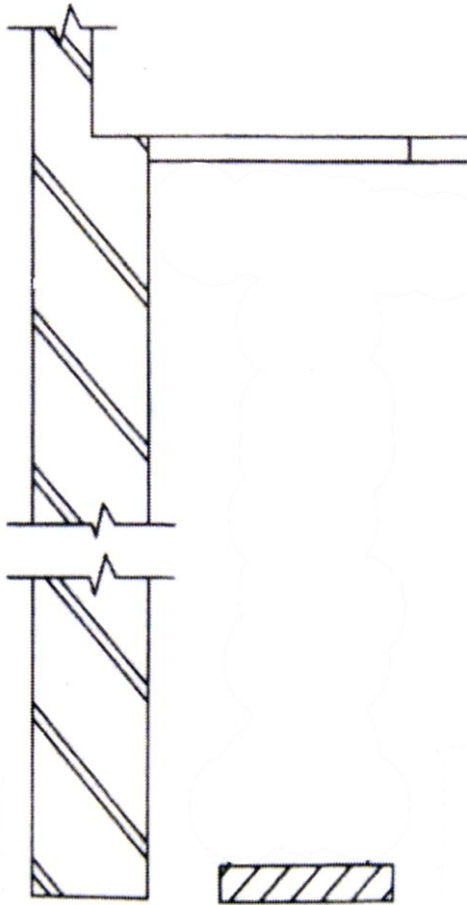
(13)

**FIGURE 2.7**

T-junction	4	
Brick sizes / Scale	3	
Height and length	2	
Stretcher bond	2	
Line work / Neatness	2	
TOTAL:	13	

ANSWER SHEET 2	WOODWORKING CIVIL TECHNOLOGY	NAME: _____
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- 6.6 FIGURE 6.6 on the ANSWER SHEET 2 shows the vertical view of a wall, sole plate and soffit shutter board for a floor slab. Complete the drawing by and drawing all the parts for the formwork supports on a scale of 1 : 20. (10)



Wedges	2	
Props	2	
Cross-bearers	2	
Bearer	2	
Scale	2	
TOTAAL:	10	