



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2020

**CIVIL TECHNOLOGY: WOODWORKING
(EXEMPLAR)**

MARKS: 200

TIME: 3 hours

This question paper consists of 18 pages, including 4 answer sheets.

REQUIREMENTS:

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

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 4.1, 4.3, 6.6 and 6.10 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.

QUESTION 1: SAFETY AND MATERIALS (GENERIC)

Start this question on a NEW page.

- 1.1 What type of personal protective clothing is compulsory to wear on a building site at all times? (1)
- 1.2 Why should you remove your tie when you are operating machines with moving parts? (1)
- 1.3 Identify the following statements as TRUE or FALSE.
- 1.3.1 Two operators are allowed to operate a machine at the same time. (1)
- 1.3.2 Petrol engines may be used inside the workshop. (1)
- 1.3.3 Carry tools with sharp points facing downwards. (1)
- 1.3.4 Non-slip footwear is compulsory when you operate machinery. (1)
- 1.4 Answer the following questions with regard to the storing of materials on site.
- 1.4.1 What can materials be placed on if they cannot be stored directly onto the floor? (1)
- 1.4.2 Why should heaps of sand and stone be covered with plastic? (1)
- 1.4.3 Why should there be dividing walls to separate sand and stone? (1)
- 1.5 Calculate the maximum width of the stacked material if the stack is 1 800 mm high. (Show calculations.) (2)
- 1.6 What is the difference between unreinforced concrete and reinforced concrete? (1)
- 1.7 Name ONE purpose of coarse aggregate in a concrete mixture. (1)
- 1.8 What type of material increases the plasticity of mortar mixtures? (1)
- 1.9 What type of material is used as a levelling layer on concrete floors? (1)
- 1.10 Name the TWO main groups into which wood can be divided. (2 x 1) (2)
- 1.11 Name ONE use of plywood. (1)

- 1.12 Identify the following metals as FERROUS or NON-FERROUS:
- 1.12.1 Copper (1)
- 1.12.2 Cast iron (1)
- 1.13 Name ONE use of lead in the building environment. (1)
- 1.14 Name ONE use of stainless steel in the building environment. (1)
- 1.15 Describe in steps how PVC adhesives must be used. (3 x 1) (3)
- 1.16 What is the minimum thickness of a windowpane? (1)
- 1.17 Name TWO uses of translucent glass. (2 x 1) (2)
- 1.18 Name the TWO main groups into which plastic can be divided. (2 x 1) (2)
- [30]**

QUESTION 2: EQUIPMENT, TOOLS AND GRAPHICS (GENERIC)

Start this question on a NEW page.

- 2.1 Why must a spade be oiled lightly when it is not used? (1)
- 2.2 Briefly explain the difference in the uses of the cold chisel and bolster. (2)
- 2.3 Name the tools in FIGURES 2.3.1 to 2.3.3 and name ONE use of each. (6)



FIGURE 2.3.1

FIGURE 2.3.2

FIGURE 2.3.3

(3 x 2) (6)

- 2.4 Answer the following questions with regard to the tool in FIGURE 2.4.



FIGURE 2.4

- 2.4.1 What is this tool called? (1)
- 2.4.2 Briefly explain how this tool will be used during the installation of a doorframe. (2)
- 2.4.3 Name TWO caring measures of this tool. (2 x 1) (2)
- 2.5 Answer the following questions with regard to the tool in FIGURE 2.5.

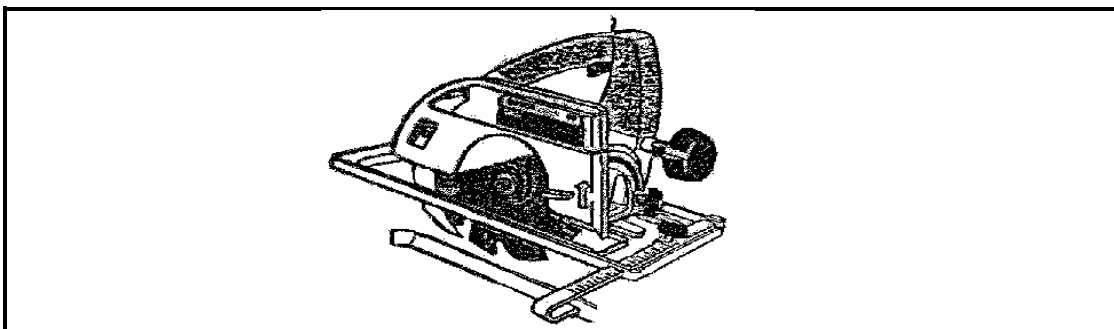


FIGURE 2.5

- 2.5.1 What is this tool called? (1)
- 2.5.2 Name TWO uses of this tool. (2 x 1) (2)

- 2.6 Answer the following questions with regard to the detail drawing in FIGURE 2.6.

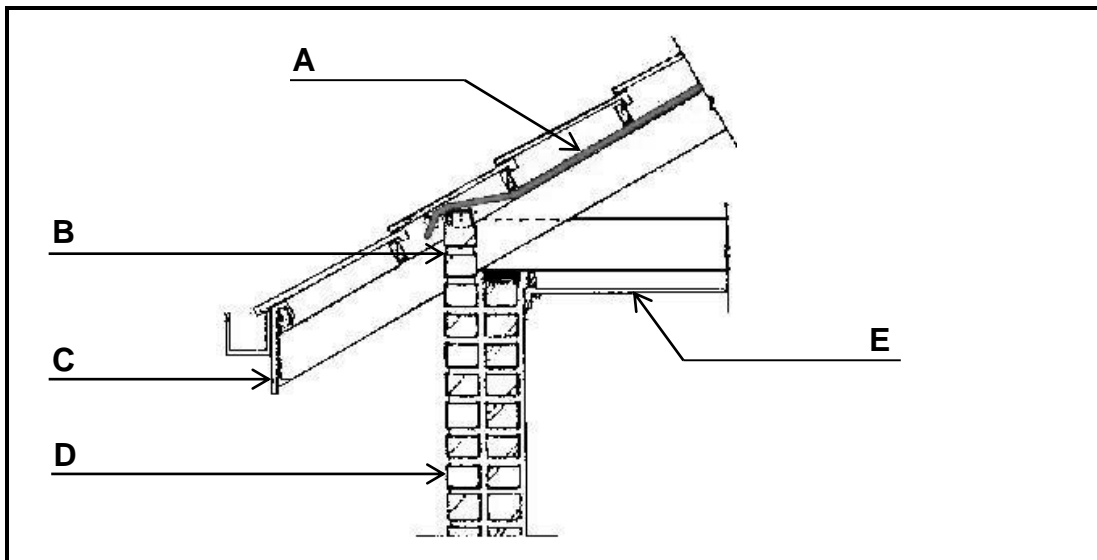


FIGURE 2.6

- 2.6.1 Why are detail drawings drawn on an enlarged scale? (1)
- 2.6.2 Briefly motivate why descriptive notes are included on detail drawings. (2)
- 2.6.3 Which type of eave construction is illustrated in FIGURE 2.6? (1)
- 2.6.4 Name parts **A** to **E**. (5)
- 2.6.5 What is the purpose of part **B**? (1)
- 2.6.6 What is the purpose of part **C**? (1)
- 2.7 Explain the purpose of the control test for floor plan dimensions. (2)
- 2.8 Explain the position, on the drawing sheet for building plans, where the north arrow must be indicated. (2)
- 2.9 On which scale are floor plans usually drawn? (1)
- 2.10 Identify the following abbreviations on elevations of buildings:
- 2.10.1 NGL (1)
- 2.10.2 FFL (1)
- 2.11 Make neat sketches to illustrate the following symbols on floor plans:
- 2.11.1 Window (2)
- 2.11.2 Electricity meter (2)
- 2.11.3 Drain (1)

[40]

QUESTION 3: JOINING AND GRAPHICS (GENERIC)

Start this question on a NEW page.

3.1 Answer the following questions with regard to the plan elevation in FIGURE 3.1.

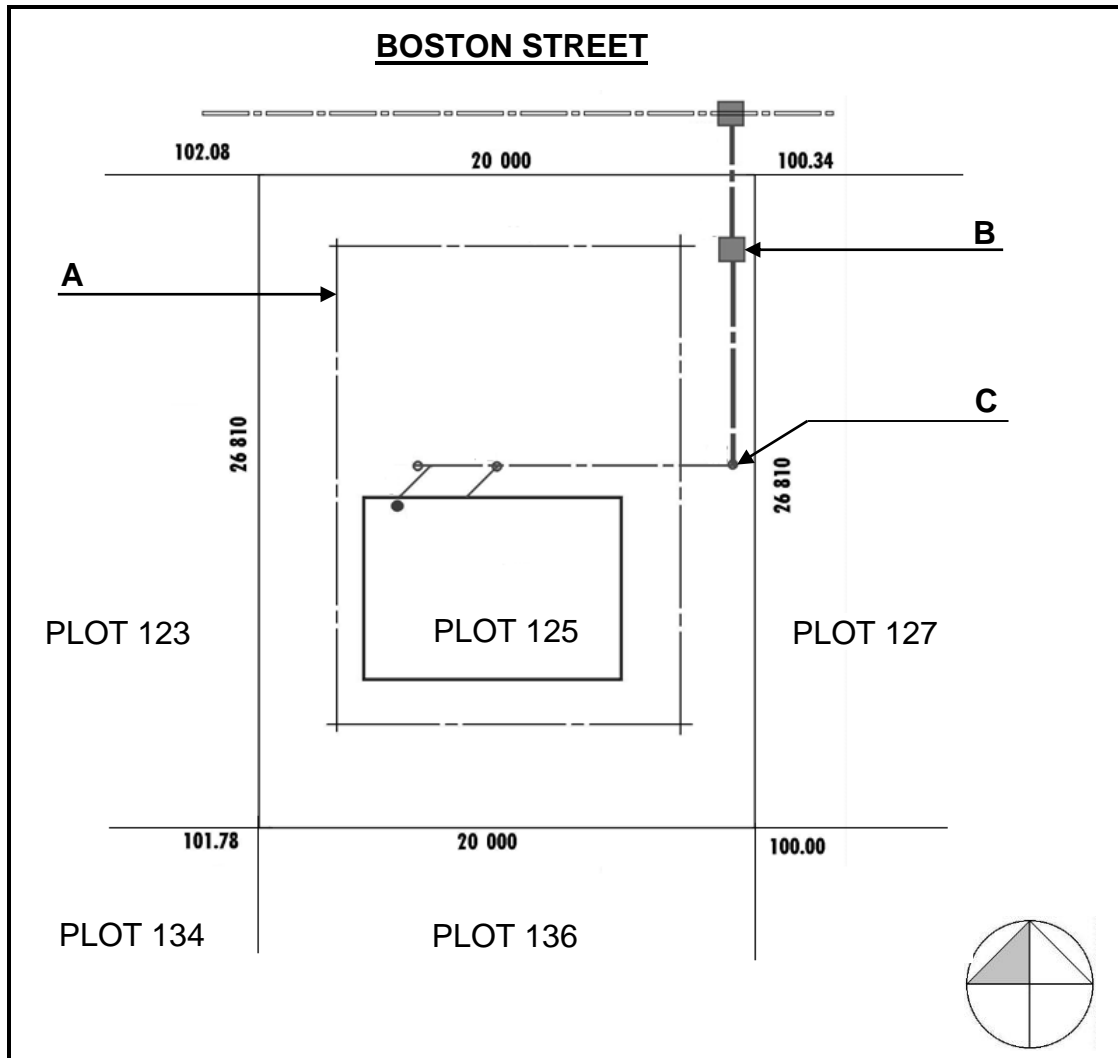


FIGURE 3.1

- 3.1.1 What is the plan elevation called? (1)
- 3.1.2 What is the plot number of the plot at the west side of plot 125? (1)
- 3.1.3 What are the lines at **A** called? (1)
- 3.1.4 Identify the symbols at **B** and **C**. (2 x 1) (2)

- 3.2 Name ONE use of PVC glue. (1)
- 3.3 Which adhesive joining material consists of glue? (1)
- 3.4 Make neat sketches to illustrate the following symbols on a floor plan:
- 3.4.1 Gully (2)
- 3.4.2 Earth (2)
- 3.4.3 Dressed wood (2)
- 3.5 Briefly describe the application steps of PVA adhesive. (3 x 1) (3)
- 3.6 Briefly name THREE precautions when using contact glue. (3 x 1) (3)
- 3.7 Name any FIVE uses of silicone. (5 x 1) (5)
- 3.8 State TWO properties of EACH of the following adhesives:
- 3.8.1 Silicone (2)
- 3.8.2 Contact glue (2)
- 3.8.3 PVA glue (2)

[30]

QUESTION 4: CASEMENTS, GRAPHICS, TOOLS AND EQUIPMENT, DOORS AND WALL PANELLING (SPECIFIC)

Start this question on a NEW PAGE.

- 4.1 FIGURE 4.1 on ANSWER SHEET 1 shows an incomplete section view of a single brick wall. Complete the section view on scale 1 : 10 and show the following parts with symbols and labels:
- 4.1.1 A strip foundation of 700 x 250 mm with the invert level of 400 mm (2)
 - 4.1.2 A single brick wall with a height of 2 700 mm from the floor level and 10 mm plaster work on the outside and inside (3)
 - 4.1.3 The hard core filling of 250 mm (1)
 - 4.1.4 The damp proof course (1)
 - 4.1.5 The blinding layer of 50 mm (1)
 - 4.1.6 The concrete floor slab of 90 mm (1)
 - 4.1.7 A door opening with a height of 2 100 mm (1)
 - 4.1.8 A concrete lintel with a thickness of 70 mm above the door opening (1)
 - 4.1.9 A wall plate of 114 x 38 mm (1)
 - 4.1.10 Show any TWO labels. (2 x 1) (2)

- 4.2 FIGURE 4.2 below shows a vertical section through a certain part of a double casement window with a fanlight. Study the picture and answer the questions that follow.

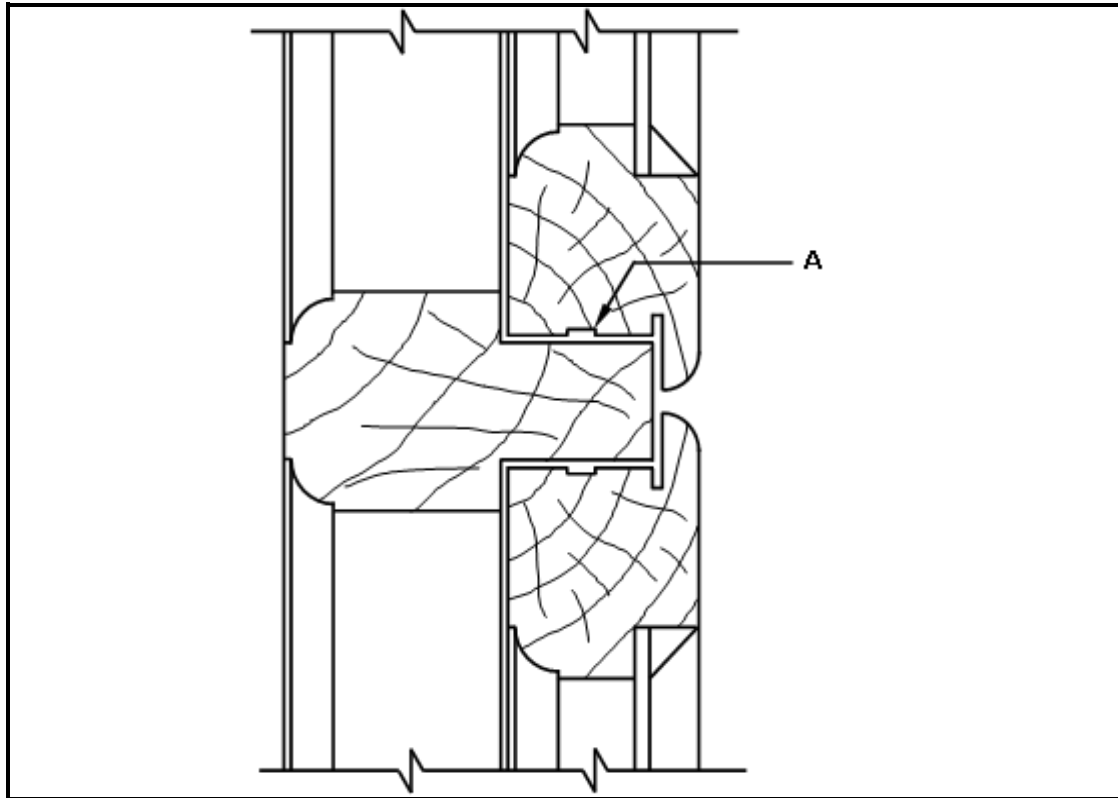


FIGURE 4.2

- 4.2.1 Name THREE timber parts of the casement. (3)
- 4.2.2 Identify A. (1)
- 4.3 Use ANSWER SHEET 2 and draw, in good proportion, a neat sketch of a vertical section through the top part of a wall panel that ends halfway between the ceiling and the floor. (6)
- Use the assessment criteria on the ANSWER SHEET as a guide.
- 4.4 Draw a neat drawing in good proportion of the back view of the framed ledged and braced batten door. (6)

[30]

**QUESTION 5: CENTERING, FORMWORK, SHORING AND MATERIALS
(SPECIFIC)**

Start this question on a NEW page.

5.1 FIGURE 5.1 below shows a horizontal section view through a round column.

Study FIGURE 5.1 and answer the questions that follow.

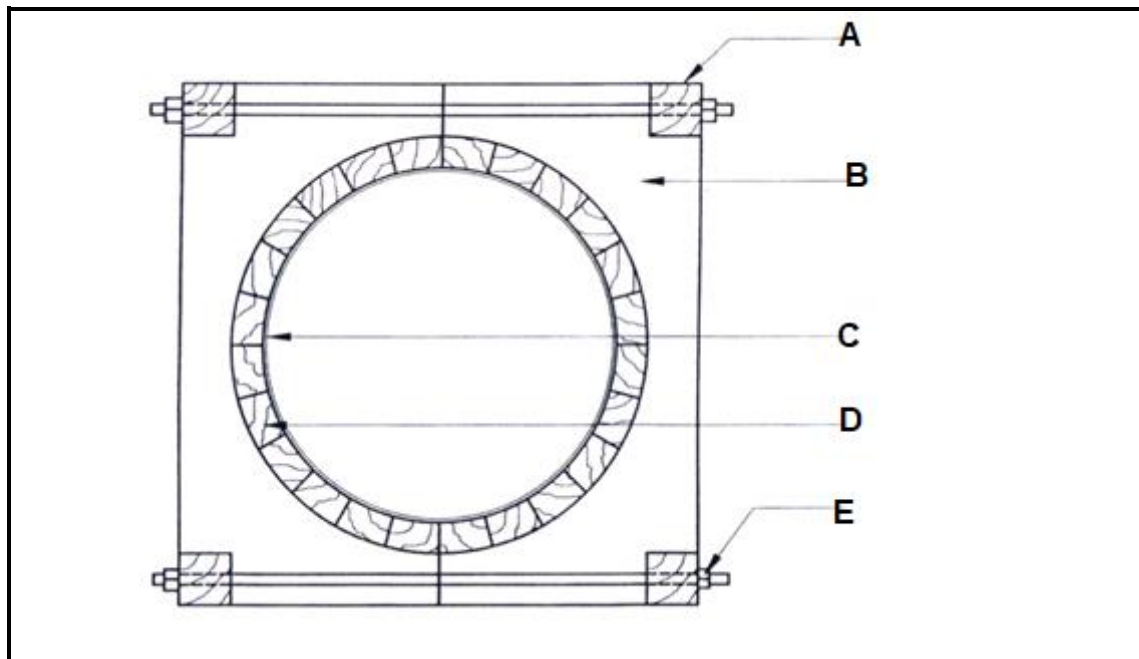


FIGURE 5.1

- 5.1.1 Identify parts **A** to **D**. (4)
- 5.1.2 Explain the function of **E**. (1)
- 5.1.3 Briefly explain the disadvantages of formwork. (2 x 1) (2)
- 5.1.4 Name TWO advantages of board products that you can use for the sides of formwork. (2)
- 5.2 Explain ONE use of the following shores:
 - 5.2.1 Raking shore (1)
 - 5.2.2 Single flying shore (1)
- 5.3 Describe the function of the following components of a raking shore:
 - 5.3.1 Sole plate (1)
 - 5.3.2 Raker/raking strut (1)

5.4 FIGURE 5.4 below shows a left view of the inside detail of the ties, braces and struts.

Study the picture and answer the questions that follow.

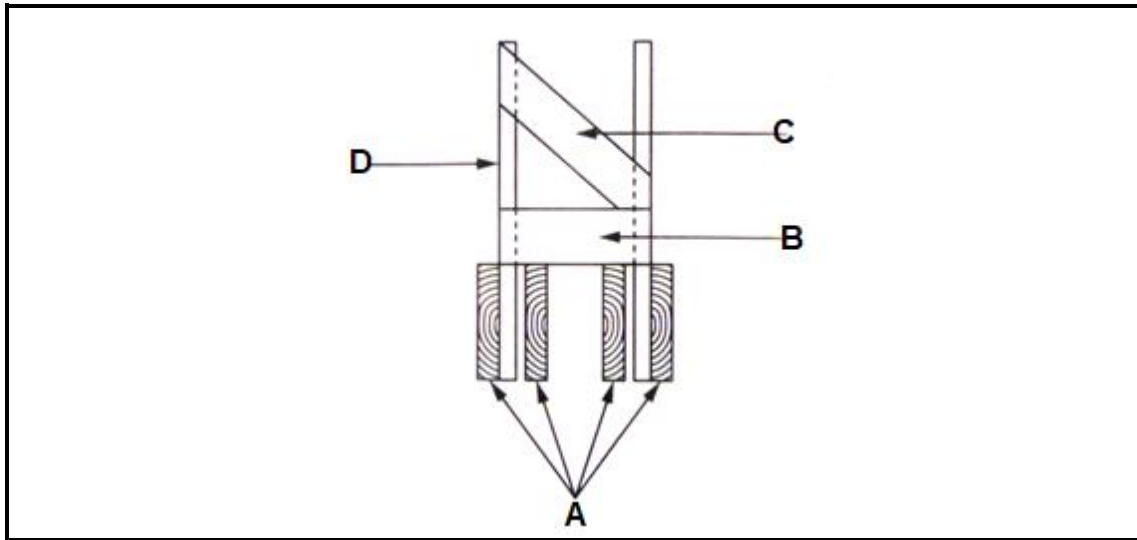


FIGURE 5.4

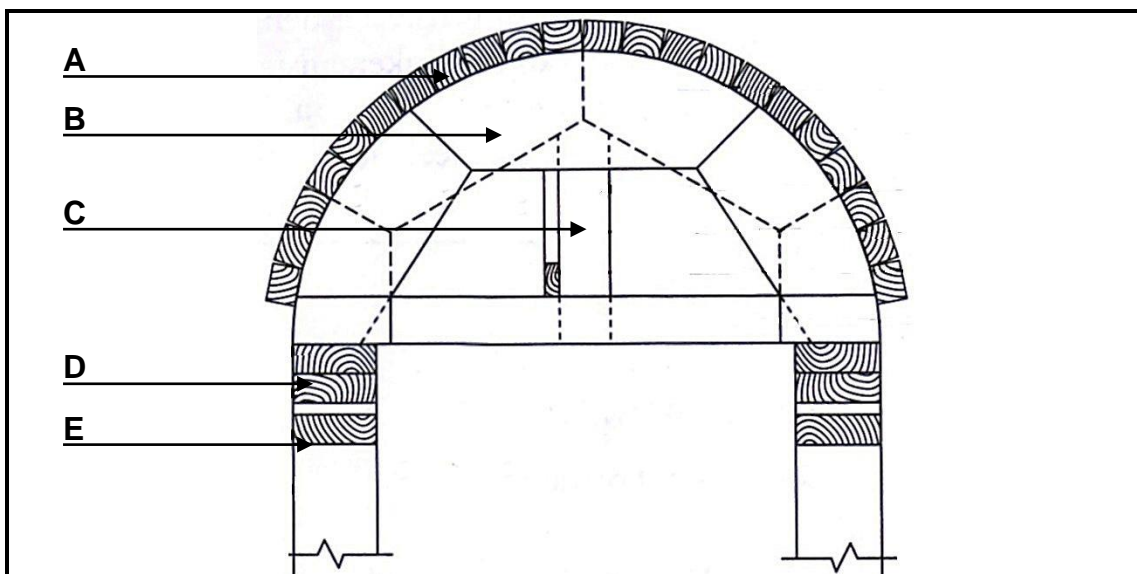
5.4.1 Identify parts **A** to **D**. (4)

5.4.2 Explain ONE use of **A** as shown in FIGURE 5.4. (1)

5.4.3 Explain TWO purposes of part **C**. (2)

5.5 Draw in your ANSWER BOOK, in good proportion, the front elevation to show the detail of the ties, braces and struts. Label any TWO parts on the drawing. (5)

5.6 Name the different parts **A** to **E** of the drawing below.



(5)
[30]

QUESTION 6: SHORING, JOINING, QUANTITIES, WALL PANELLING, CUPBOARDS AND IRONMONGERY (SPECIFIC)

6.1 Indicate if the following statements are TRUE or FALSE. Write only the word 'true' or 'false' next to the number in the ANSWER BOOK.

- 6.1.1 Shoring is a permanent construction that can be used to support a wall. (1)
- 6.1.2 Raking shores are used on top of the excavations of foundations to support it. (1)
- 6.1.3 Flying shores are used to provide support between two walls next to adjacent buildings. (1)
- 6.1.4 The wall plate provides a supporting surface for the shore and bracing and is fixed to the wall. (1)

6.2 Identify the different types of hinges in FIGURES 6.2.A to 6.2.C.

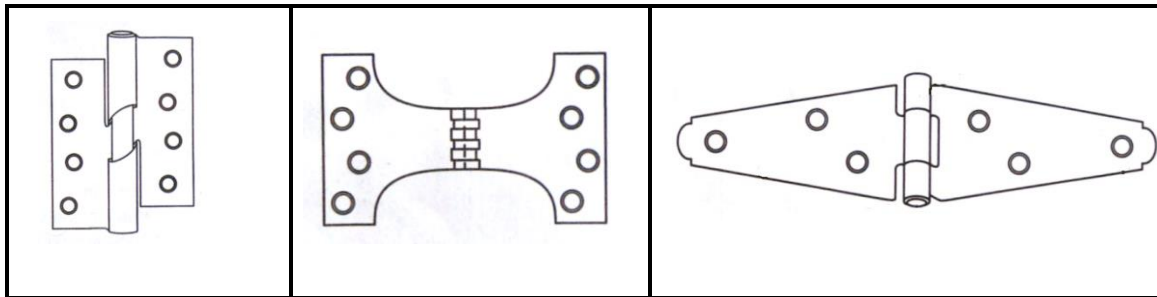


FIGURE 6.2. A

FIGURE 6.2. B

FIGURE 6.2. C

(3)

- 6.3 What is the purpose of cornices in houses? (1)
- 6.4 Calculate the total length of cornice required for a room that is 5 metres long and 3 metres wide on the inside. (4)
- 6.5 Recommend an ironmongery item that you will use for the following instances:
 - 6.5.1 An entrance door that must open 180° to its frame (1)
 - 6.5.2 Added security to doors besides a lock (1)
- 6.6 Use ANSWER SHEET 3 and draw, to scale 1 : 10, the front elevation of a one-panel door. The panels are placed in a 12 mm wide rebate and secured with a bead.

Use the following specifications:

- The door is 2 032 mm high and 813 mm wide
- The top rail and stiles are 114 mm x 44 mm
- The bottom rail is 220 mm x 44 mm
- 16 mm flat plywood panel

Print a title for the door. (6)

- 6.7 Use drawing instruments and draw in your ANSWER BOOK, in good proportion, a sketch of the horizontal section through a 50 mm x 40 mm ground and two 12 mm thick plywood panels to show how the joint is finished with a 12 mm thick cover strip, as used in wall panelling. (5)
- 6.8 List THREE board products that are suitable for wall panelling. (3)
- 6.9 A foundation with a length of 28 m, width of 450 mm and a thickness of 150 mm need to be cast with concrete. Calculate the volume of concrete required for the foundation in m³. (5)
- 6.10 A cabinet, 800 mm high, 1 000 mm wide and 500 mm deep, is to be fitted between two walls and under a counter.

Use ANSWER SHEET 4 and indicate the following labels on the drawing:

- Base
- Door frame
- Top
- Middle shelf
- Bottom shelf
- Plywood back

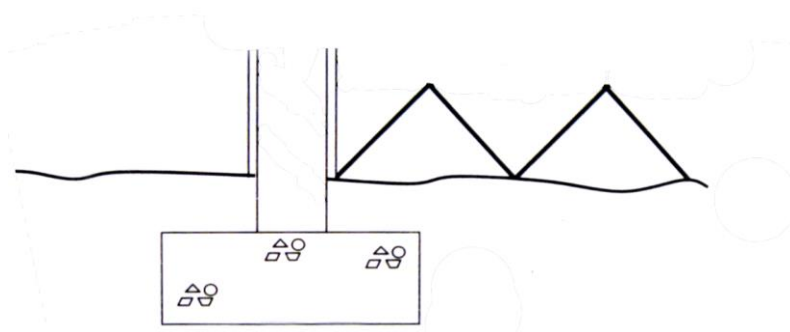
Recommend an alternate material for the back of the cabinet. (7)
[40]

TOTAL: 200

ANSWER SHEET 1	CIVIL TECHNOLOGY WOODWORKING	NAME: _____

4.1

	ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
4.1.1	Strip foundation	2	
4.1.2	Single brick wall	3	
4.1.3	Hardcore filling	1	
4.1.4	DPC	1	
4.1.5	Blinding layer	1	
4.1.6	Concrete floor	1	
4.1.7	Door opening	1	
4.1.8	Concrete lintel	1	
4.1.9	Wall plate	1	
4.1.10	Show labels	2	
	TOTAL:	14	



ANSWER SHEET 2	CIVIL TECHNOLOGY WOODWORKING	NAME: _____

4.3

ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Wall	1	
Capping	1	
Rough ground	1	
Tongue and groove board	1	
Correctness of drawing	1	
TOTAL:	5	

ANSWER SHEET 3	CIVIL TECHNOLOGY WOODWORKING	NAME: _____
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6.6 Front view one panel door

ANSWER SHEET 4	CIVIL TECHNOLOGY WOODWORKING	NAME: _____
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6.10 Cabinet

