



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2018

CIVIL TECHNOLOGY: WOODWORKING

MARKS: 200

TIME: 3 hours



This question paper consists of 19 pages, including 5 pages of 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: TWO questions are generic and FOUR 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 2.6, 3.1, 4.5, 5.4 and 6.6 on the attached ANSWER SHEETS using drawing instruments where necessary.
13. Write your NAME on every ANSWER SHEET and hand them in with your ANSWER BOOK, whether you have answered the question or not.
14. Due to electronic transfer, drawings in the question paper are NOT to scale.

QUESTION 1: SAFETY AND MATERIAL (GENERIC)

- 1.1 Answer the following questions with regard to the safety equipment in FIGURE 1.1.



FIGURE 1.1

- 1.1.1 What is the safety equipment in FIGURE 1.1 called? (1)
- 1.1.2 On which type of site is this type of safety equipment compulsory? (1)
- 1.2 Describe the safety measure which is applicable to each of the following factors:
- 1.2.1 Loose clothing (1)
- 1.2.2 Type of shoes in a workshop (1)
- 1.2.3 Carrying of sharp objects (1)
- 1.2.4 Dangerous moving parts of power tools (1)
- 1.2.5 Number of operators who operate a machine (1)
- 1.3 Who is responsible for the safety of visitors on a construction site? (1)
- 1.4 Name any FOUR safety measures which are applicable to the storage of flammable liquids. (4 x 1) (4)
- 1.5 Unreinforced concrete, reinforced concrete and precast concrete are used on construction sites.
Identify the type of concrete which will be used for the following work:
- 1.5.1 Suspended concrete floors (1)
- 1.5.2 Lintels above door openings (1)
- 1.5.3 Foundations for single-storey buildings (1)

- 1.6 Name ONE use of screed. (1)
- 1.7 Name TWO reasons why lime can be added to a mortar mix. (2 x 1) (2)
- 1.8 Briefly motivate why pine wood is used for carpentry work on a construction site. (2)
- 1.9 Indicate whether the following statements are TRUE or FALSE. Write only the word 'true' or 'false' next to the number in the ANSWER BOOK.
- 1.9.1 Board products are cheaper than solid wood products. (1)
- 1.9.2 Stock bricks are manufactured from cement. (1)
- 1.9.3 Face bricks must be plastered. (1)
- 1.9.4 Cement blocks are cast with hollow cores to make them lighter. (1)
- 1.10 Briefly motivate why sinks are manufactured from stainless steel. (2)
- 1.11 Briefly describe what an alloy is. (3)
- 1.12 Name ONE use of thermosetting plastic. (1 x 1) (1)
- [30]**

QUESTION 2: EQUIPMENT, TOOLS AND GRAPHICS (GENERIC)

2.1 Answer the following questions with regard to the hand tool in FIGURE 2.1.

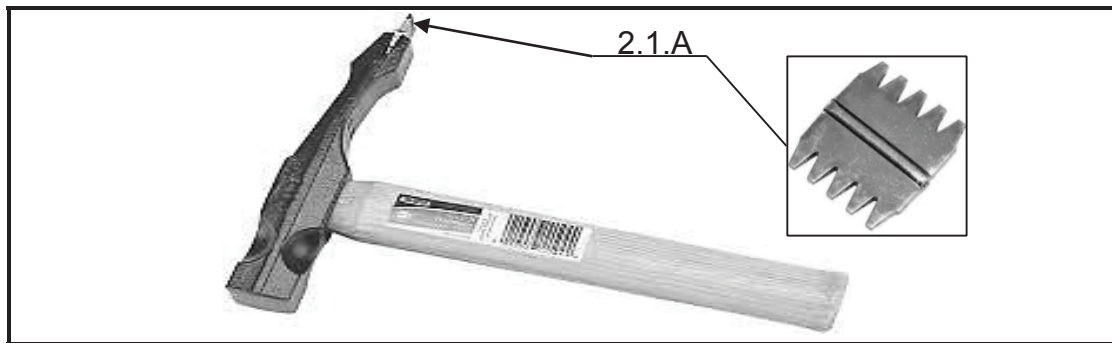


FIGURE 2.1

2.1.1 What is this tool called? (1)

2.1.2 Describe the purpose of part 2.1.A. (2)

2.1.3 Briefly motivate why part 2.1.A must be replaced regularly. (2)

2.2 Identify the tool in FIGURE 2.2 and name THREE measures that should be taken to care for it.



FIGURE 2.2

(4)

2.3 Identify the tool in FIGURE 2.3 and name THREE measures that should be taken to care for it.

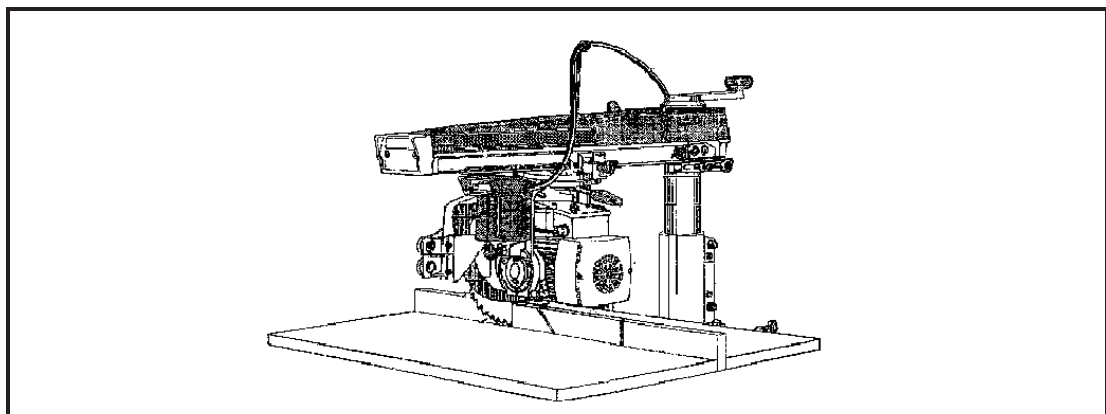


FIGURE 2.3

(4)

2.4 Name TWO measures for caring for a concrete mixer. (2 x 1) (2)

2.5 Answer the following questions with regard to the plan elevation in FIGURE 2.5.

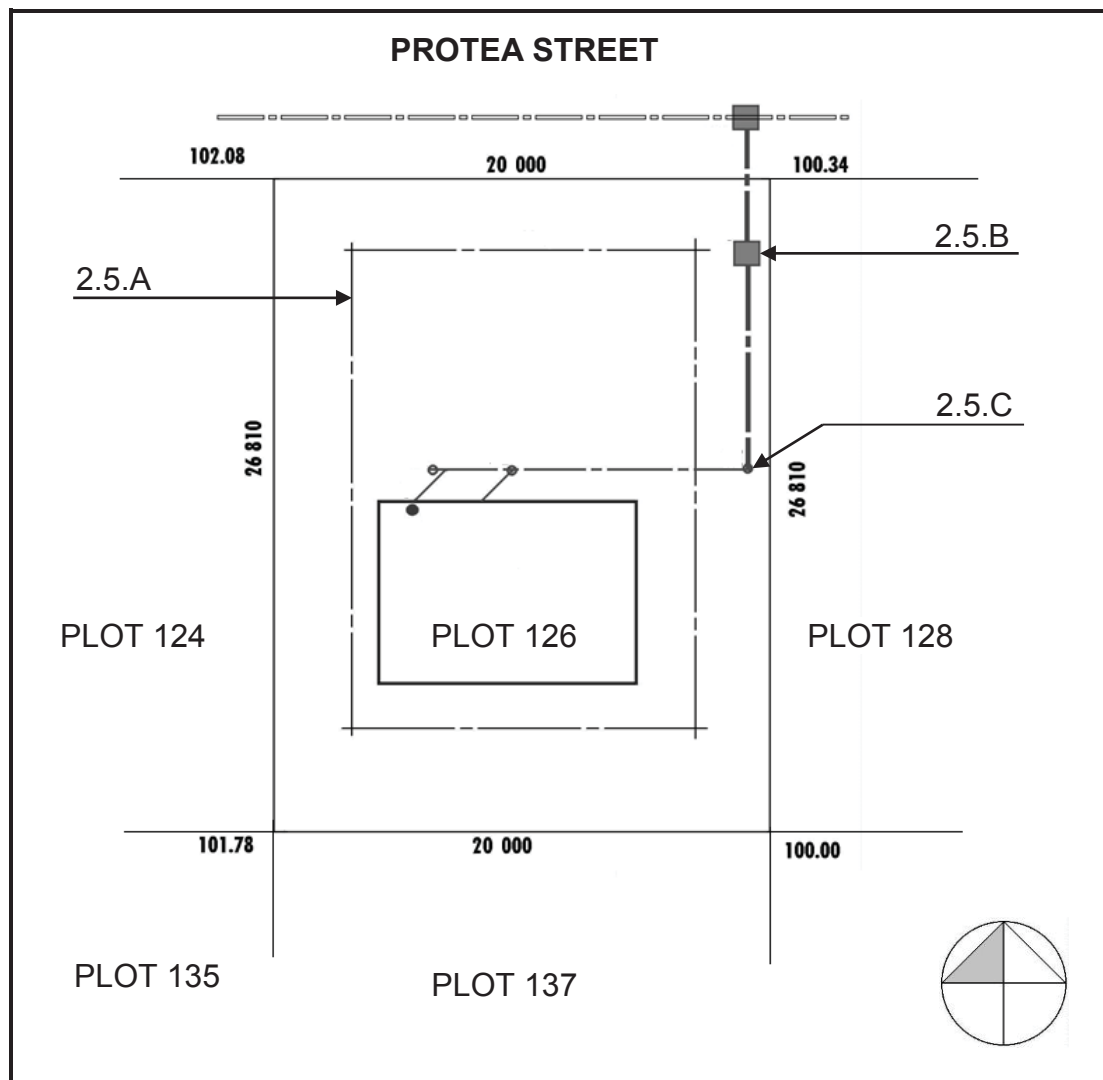


FIGURE 2.5

- 2.5.1 What is the plan elevation called? (1)
- 2.5.2 What is the plot number of the plot on the west side of plot 126? (1)
- 2.5.3 What are the lines at 2.5.A called? (1)
- 2.5.4 Identify the symbols at 2.5.B and 2.5.C. (2)

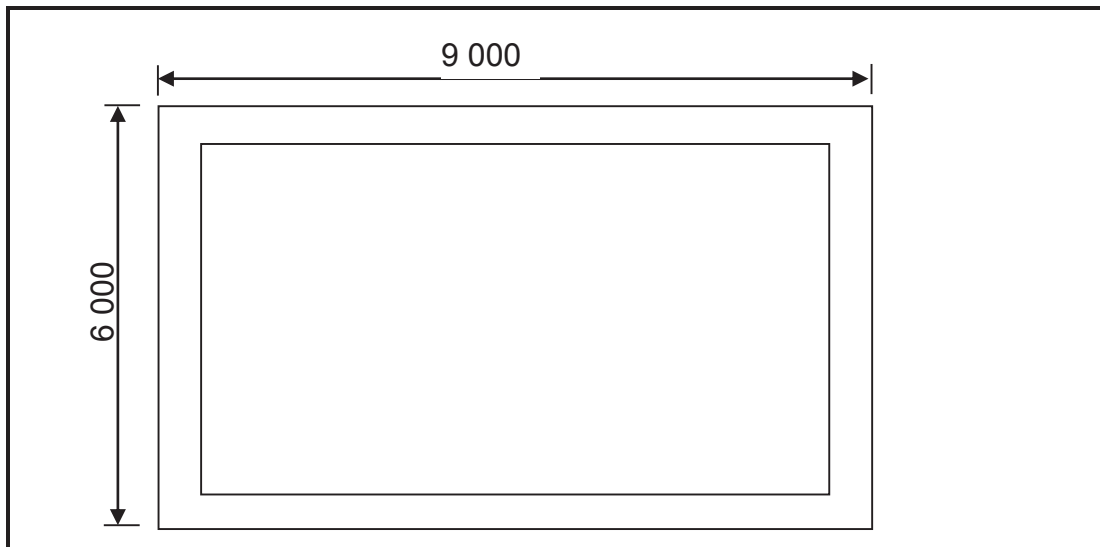
2.6 FIGURE 2.6, on ANSWER SHEET A, shows an incomplete section view of a single brick wall. Complete the section view to scale 1 : 20 and show the following parts with symbols and labels:

- 2.6.1 A strip foundation of 700 x 250 mm with the invert level of 400 mm (3)
- 2.6.2 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 (5)
- 2.6.3 The hardcore filling of 250 mm (1)
- 2.6.4 The dampproof course (2)
- 2.6.5 The blinding layer of 50 mm (1)
- 2.6.6 The concrete floor slab of 90 mm (1)
- 2.6.7 A door opening with a height of 2 100 mm (1)
- 2.6.8 A concrete lintel with a thickness of 70 mm above the door opening (2)
- 2.6.9 A wall plate of 114 x 38 mm (2)
- 2.6.10 Show any TWO labels. (2 x 1) (2)

[40]

QUESTION 3: QUANTITIES, JOINING AND GRAPHICS (GENERIC)

- 3.1 FIGURE 3.1 shows the foundation wall of a building. The width of the wall is 220 mm and the height 450 mm.

**FIGURE 3.1**

Use the quantity list on ANSWER SHEET B and calculate the following:

- 3.1.1 Determine the centre line of the foundation wall. (6)
- 3.1.2 Determine the quantity of bricks needed to build the foundation wall. Make provision for 5% brick breakages. (9)
- 3.2 Fully describe the purpose of the description column on the dimension paper for quantities. (3)
- 3.3 Describe, in point form, the application process of contact glue. (3)
- 3.4 Which joining glue/material consists of resin and a hardener? (1)
- 3.5 Name TWO properties of mastic sealant. (2 x 1) (2)
- 3.6 Make neat sketches to illustrate the following symbols on a floor plan:
- 3.6.1 Gully (2)
- 3.6.2 Check valve (2)
- 3.6.3 Dressed wood (2)

[30]

QUESTION 4: MATERIAL, TOOLS, GRAPHICS AND WINDOWS (SPECIFIC)

Start this question on a NEW page.

- 4.1 Name the two groups into which solid wood is divided. (2)
- 4.2 Choose the correct answer from those in brackets for the seasoning of timber and write only the question number with the correct answer in your ANSWER BOOK.
- 4.2.1 The compartment kiln method is (more expensive / cheaper) than natural seasoning. (1)
- 4.2.2 (Any type of wood / Only hardwood) can be dried artificially. (1)
- 4.2.3 A progressive kiln is only recommended for wood with a thickness of (150 mm / 50 mm). (1)
- 4.2.4 The moist content in wood can be reduced by up to (25% / 15%). (1)
- 4.3 Answer the questions on the following machine in FIGURE 4.3.

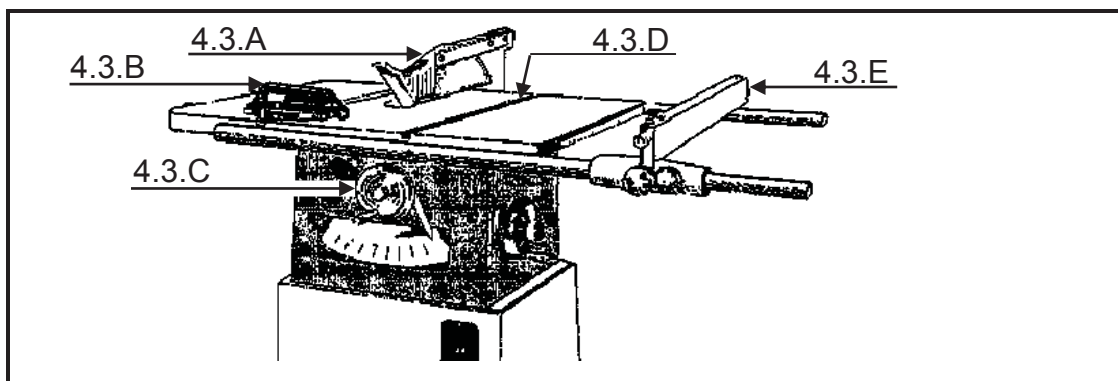


FIGURE 4.3

- 4.3.1 What is the name of the machine? (1)
- 4.3.2 Identify the parts 4.3.A to 4.3.E. (5)
- 4.4 List ONE use of each of the following portable woodworking machines:
- 4.4.1 Jig saw (1)
- 4.4.2 Orbital sander (1)
- 4.4.3 Router (1)

- 4.5 FIGURE 4.5 on ANSWER SHEET C shows the incomplete view of a building. Complete on a scale of 1:50, the SA-type roof truss with roof construction supported on the outside walls. The roof pitch is at 30° and overhang is 300 mm. (12)
- 4.6 Identify the following mouldings: (3)

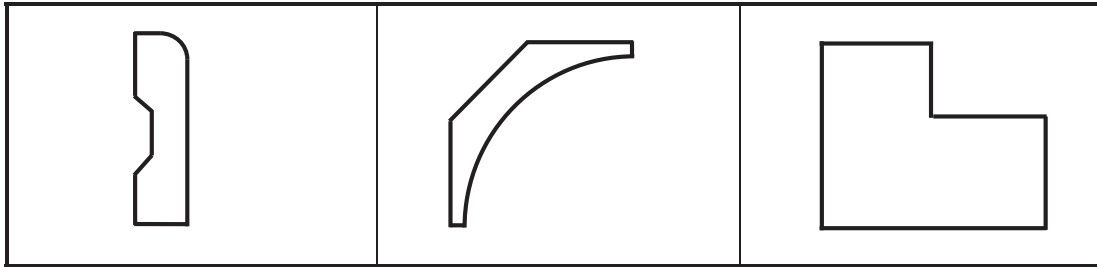


FIGURE 4.6.1

FIGURE 4.6.2

FIGURE 4.6.3

[30]

QUESTION 5: JOINING, WINDOWS, DOORS AND WALL PANELLING (SPECIFIC)

- 5.1 What is the function of a fixing lug on a metal doorframe? (1)
- 5.2 Name THREE methods to fix a shelf to a wall. (3 x 1) (3)
- 5.3 Answer the following questions on the joint construction in FIGURE 5.3.

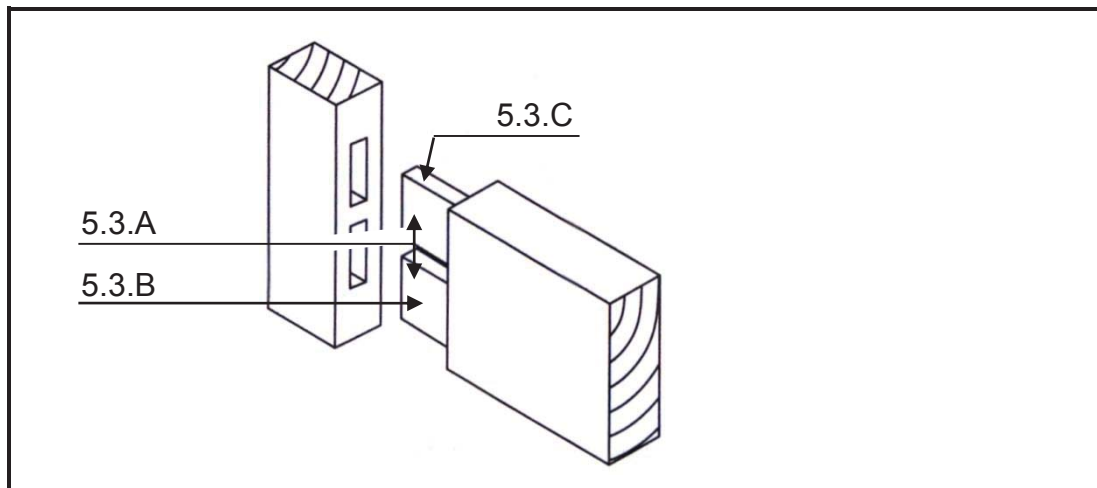


FIGURE 5.3

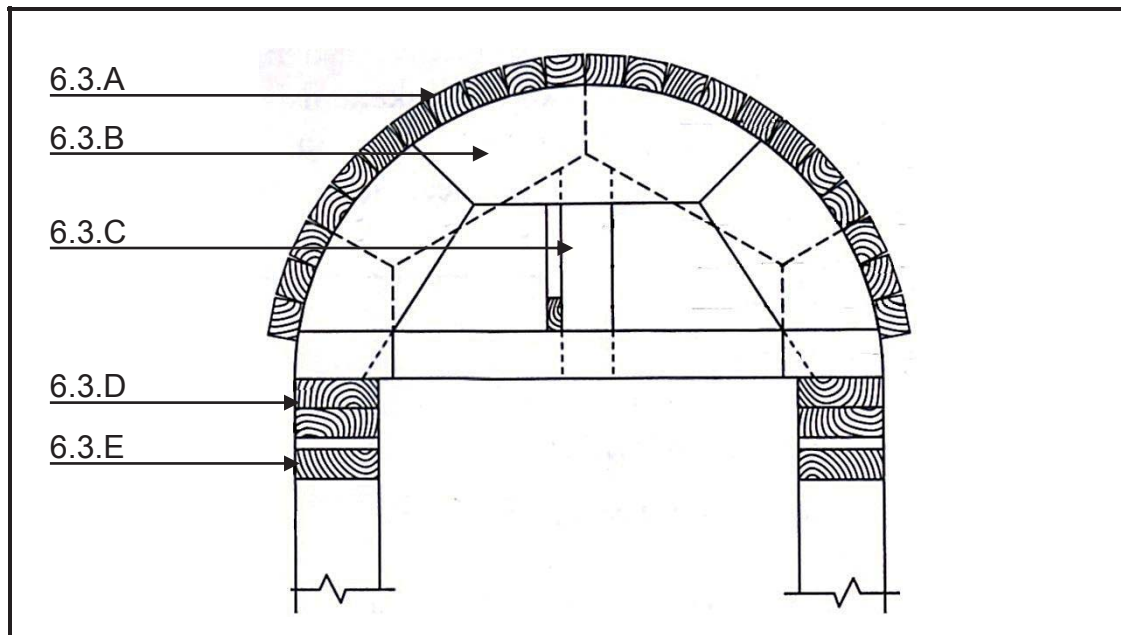
- 5.3.1 What is the name of the joint? (1)
- 5.3.2 In what type of construction will you use this joint? (1)
- 5.3.3 What part is 5.3.A? (2)
- 5.3.4 What type of cheek is 5.3.B and 5.3.C? (2)
- 5.3.5 If hand tools are used to make this joint, what type of chisel will be used to chisel the hole? (1)
- 5.4 FIGURE 5.4 on ANSWER SHEET D shows the incomplete horizontal view of a stile lipped and partially rebated into the mullion of a casement with glass. Complete in good proportion the different parts of the stile of the adjacent left view:
- 5.4.1 Ovolo moulding (2)
- 5.4.2 Putty for the glass (1)
- 5.4.3 Complete the lip of the stile (2)
- 5.4.4 Drip groove (2)

- 5.5 Motivate why a minimum space of 2 mm is allowed between the edge of the panel door and the edge of the groove. (2)
- 5.6 Make a neat drawing in good proportion of the back view of the framed, ledged and braced batten door. (6)
- 5.7 Name FOUR advantages of plywood for wall panelling. (4)

[30]

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

- 6.1 Discuss FOUR requirements for the construction of centring. (4 x 1) (4)
- 6.2 What type of centring will you use for the construction of a flat arch? (1)
- 6.3 Name the different parts 6.3.A to 6.3.E of the centre in FIGURE 6.3. (5)

**FIGURE 6.3**

- 6.4 Name TWO advantages of board products that you can use for the sides of formwork. (2 x 1) (2)
- 6.5 Describe the purpose of the following requirements for the parts of formwork:
- 6.5.1 The inside faces of timber should be treated with mould oil. (2)
- 6.5.2 The thickness of matching members of the formwork should be uniform. (2)
- 6.5.3 Bolts should be greased. (2)

- 6.6 FIGURE 6.6 on ANSWER SHEET E 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 Indicate whether the following statements are TRUE or FALSE. Write only the word 'true' or 'false' next to the number 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 foundation excavations to support them. (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 different types of hinges in FIGURES 6.10.A to 6.10.C. (3)

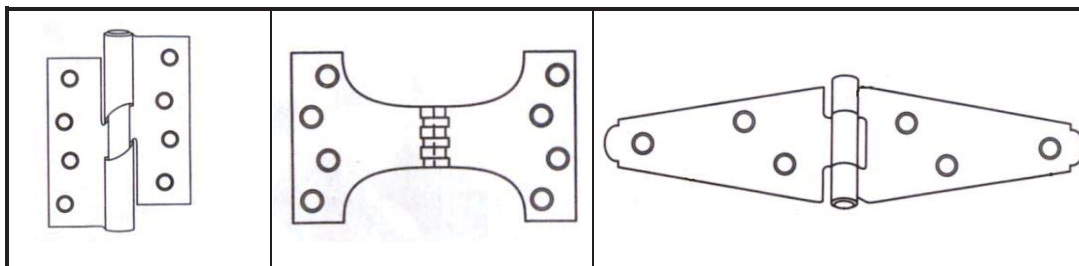


FIGURE 6.10.A

FIGURE 6.10.B

FIGURE 6.10.C

- 6.11 What is the purpose of the open space underneath the suspended timber floor? (1)
- [40]

TOTAL: 200

ANSWER SHEET A	CIVIL TECHNOLOGY GENERIC	NAME: _____

2.6 FIGURE 2.6 on ANSWER SHEET A shows an incomplete section view of a single brick wall. Complete the section view to scale 1 : 20.

2.6.1	Strip foundation	(3)	
2.6.2	Single brick wall	(5)	
2.6.3	Hard core filling	(1)	
2.6.4	Damp proof course	(2)	
2.6.5	Blinding layer	(1)	
2.6.6	Concrete floor slab	(1)	
2.6.7	Door opening	(1)	
2.6.8	Concrete lintel	(2)	
2.6.9	Wall plate	(2)	
2.6.10	2 Labels	(2)	
	TOTAL	/20	

NGL



ANSWER SHEET B	CIVIL TECHNOLOGY GENERIC	NAME: _____
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QUESTION 3.1

A	B	C	D
			3.1.1 CENTRE LINE: (6)
		 x m = m
		 x m = m
			= m
			Minus: x m = m
			TOTAL CENTRE LINE = m
			3.1.2 QUANTITY OF BRICKS: (9)
			<u>AREA:</u>
			<u>Total wall area</u>
.....		
	<u>.....</u>	<u>.....</u>	Thus: Total wall area =
			<u>TOTAL BRICKS</u>
		100 bricks/ m ² for single brick wall
	<u>.....</u>	<u>.....</u>	Thus: bricks for total wall
			<u>5% BREAKAGE</u>
			TOTAL BRICKS:
		 + = total quantity bricks

ANSWER SHEET C	CIVIL TECHNOLOGY WOODWORKING	NAME: _____

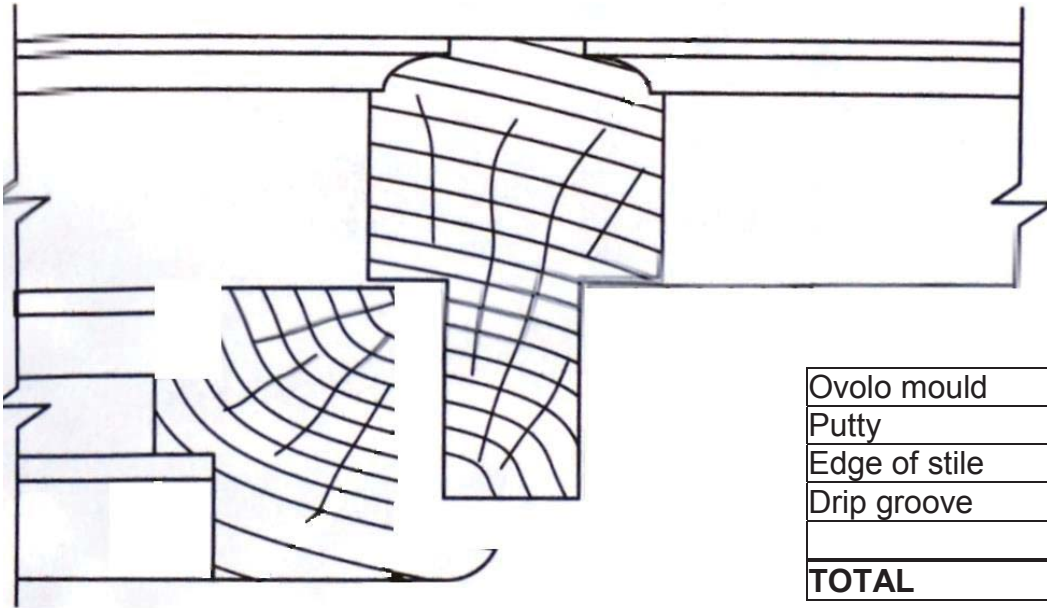
- 4.5 FIGURE 4.5 on ANSWER SHEET C shows the incomplete view of the outside walls and one inner wall of a building. Complete by using scale 1:50, the SA-type roof truss with a roof construction supported on the outside walls. The roof pitch is 30° and overhang is 300 mm.



SA-type truss	1	
Tie beam	1	
Principal rafters	2	
King post	1	
Strut	2	
Position of support	1	
30° Pitch	1	
300 mm Overhang	1	
Scale	2	
TOTAL	12	

ANSWER SHEET D	CIVIL TECHNOLOGY WOODWORKING	NAME: _____

- 5.4 FIGURE 5.4 on ANSWER SHEET D shows the incomplete section through the mullion and adjacent stile of a casement with glass. The stiles are lipped and partially rebated into the mullion. Complete in good proportion the section view by completing the parts of the left hand stile:

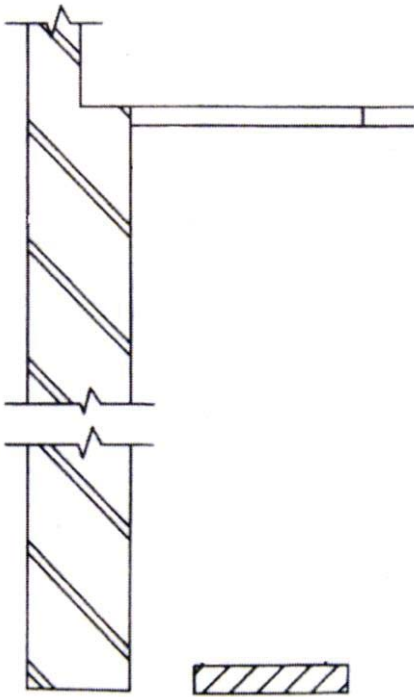


Ovolo mould	2	
Putty	1	
Edge of stile	2	
Drip groove	2	
TOTAL	7	

ANSWER SHEET E	CIVIL TECHNOLOGY WOODWORKING	NAME: _____

- 6.6 FIGURE 6.6 on ANSWER SHEET E shows the vertical view of a wall, sole plate and soffit shutter board for a floor slab.
Complete the drawing by drawing all the parts for formwork supports on a scale of 1:20.

(10)



Wedges	2	
Props	2	
Cross-bearers	2	
Bearer	2	
Scale	2	
TOTAL	10	

