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NAME:	
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SCHOOL:	
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SUBJECT:	CIVIL TECHNOLOGY: WOODWORKING
----------	--------------------------------------

ANSWER ALL THE QUESTIONS IN THE QUESTION PAPER.

MARKER					INT. MODERATOR				DIST. MODERATOR				PROV. MODERATOR			
Question	Marks			Marker's code & initials	Marks			IM's code & initials	Marks			DM's code & initials	Marks			PM's code & initials
1																
2																
3																
4																
5																
6																
TOTAL																

TIME: 3 hours

MARKS: 200

34 pages



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**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of SIX questions. Answer ALL the questions in the spaces provided.
2. You may use sketches to illustrate your answers.
3. Use the mark allocation as a guide to the length of your answers.
4. 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*.
5. For the purpose of this question paper, the size of a brick should be taken as 220 mm x 110 mm x 75 mm.
6. Use your own discretion where dimensions and/or details have been omitted.
7. Answer QUESTIONS 2; 4.5; 5.6 and 6 on the templates provided, using drawing instruments where necessary.
8. Drawings in the question paper are NOT to scale due to electronic transfer.
9. No pages may be torn from this question paper.
10. Candidates may not retain a question paper or remove it from the examination room. Question papers must be returned to the invigilator at the end of the examination session.
11. Answers must be written in black/blue ink as distinctly as possible. Do NOT write in the margins.
12. Indicate the questions you have answered by drawing a circle around the relevant numbers on the front cover of the question paper where marks are to be recorded.
13. Draw a neat line through any work/rough work that must NOT be marked.
14. In the event that you use the additional space provided:
 - 14.1 Write down the number of the question.
 - 14.2 Leave a line open and rule off after your answer.
15. Write neatly and legibly.

REQUIREMENTS:

1. Drawing instruments
2. A non-programmable calculator

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QUESTION 1: OHSA, MATERIALS, TOOLS, EQUIPMENT AND JOINING (GENERIC)

1.1	Choose the correct word/phrase from those given in brackets. Write only the word/phrase below the questions (1.1.1 to 1.1.5) in the spaces provided.	
1.1.1	(Oil or water-based paint/Silicone/Acid) is used to protect metal against corrosion.	
		(1)
1.1.2	Curing (increases the strength of concrete/increases the density of concrete/allows concrete to set faster).	
		(1)
1.1.3	Electroplating can be applied using (electrodes/electro jacks/ electrolysis).	
		(1)
1.1.4	Powder coating is the process of applying a layer of (plastic/paint/zinc) to metal.	
		(1)
1.1.5	Galvanising is the process of applying a (zinc/copper/tin) coating to the base of metals.	
		(1)



1.2 Answer the following questions regarding the scaffolding in FIGURE 1.2 below.

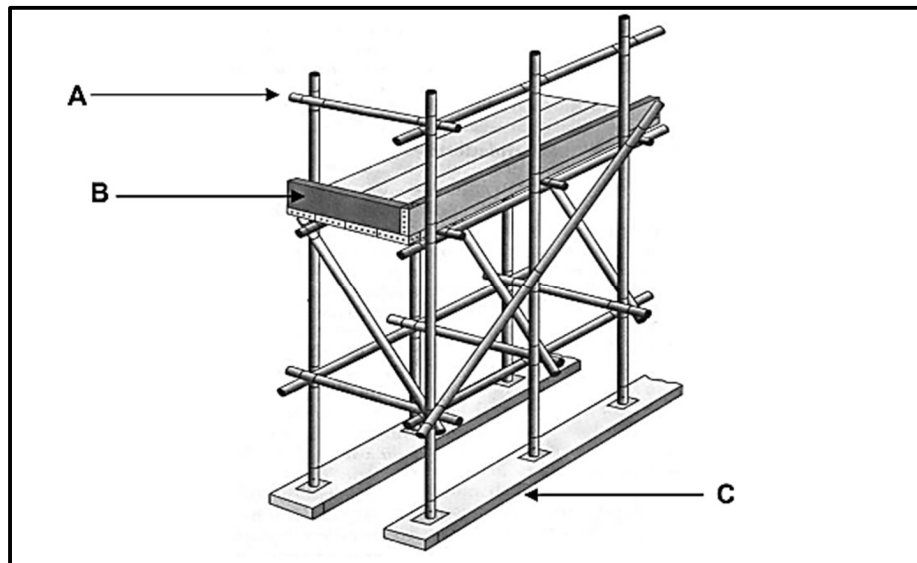


FIGURE 1.2

1.2.1	Name parts A to C .	
		(3)
1.2.2	Is this a dependent or an independent scaffolding?	
		(1)
1.2.3	What is the maximum height that part A must be from the platform?	
		(1)



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1.3	You have been tasked by a contractor to install a 20 kg gate to the pier of a boundary wall.	
1.3.1	Name the joining fixture that you will use to secure the gate to the pier.	(1)
1.3.2	Motivate why you will use this joining fixture.	
		(2)
1.3.3	Explain how you will install the gate by using the joining fixture mentioned in QUESTION 1.3.1, if the positions of the holes have already been marked on the pier.	
		(3)
1.4	You were tasked to locate steel bars and copper pipes placed in a wall.	
1.4.1	Name the tool you would use to detect these materials.	(1)
1.4.2	Describe how you will take care of this tool after using it.	
		(1)





1.5	Name TWO methods that can be used to move building material around a site.	
		(2)

[20]**QUESTION 2: GRAPHICS AS MEANS OF COMMUNICATION (GENERIC)**

FIGURE **A** and FIGURE **B** on the next page shows drawings that appear on a building plan.

Analyse the drawings and complete the table that follows.

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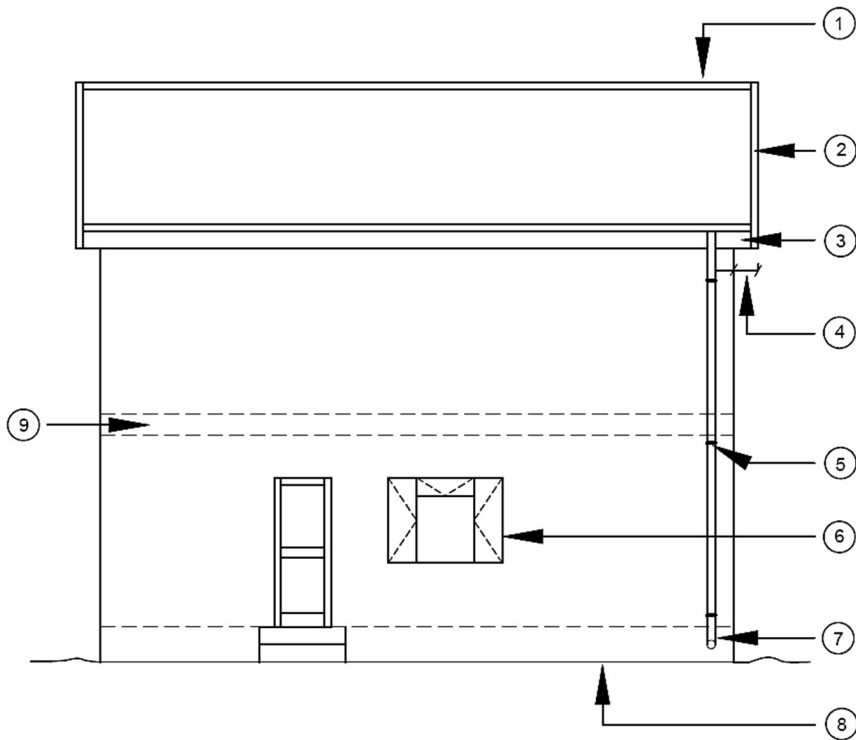


FIGURE A
SCALE 1 : 100

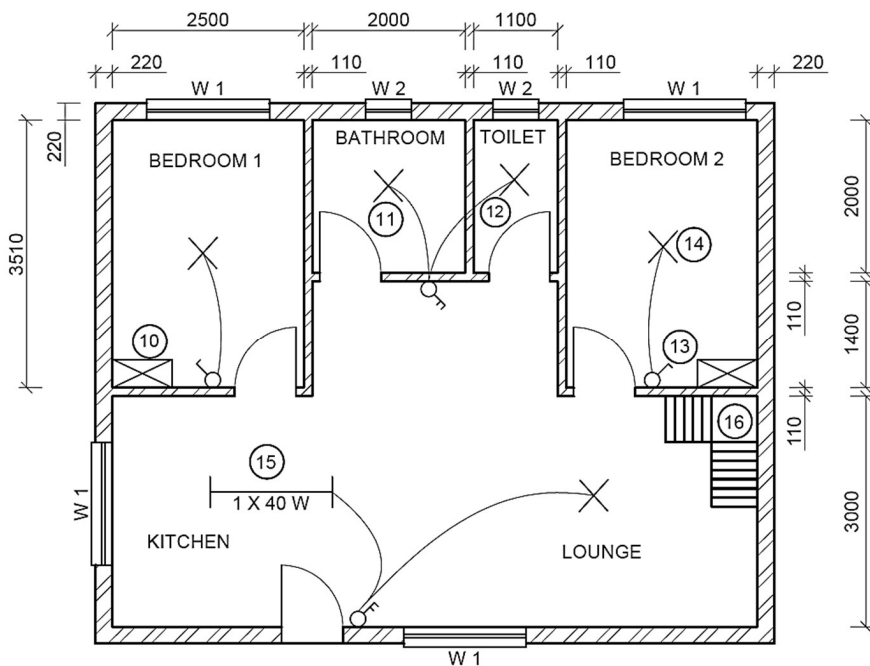


FIGURE B
SCALE 1 : 100

NOTES:

Contractors must verify all dimensions and levels on site before commencing work. Architects must be notified of any discrepancies immediately.

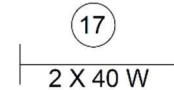
ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

Brick force must be installed at every third course up to window height. From the top of the window, brick force must be installed between every course up to wall plate height.

DPM must be fitted under the floor slab to prevent water from the substructure.

The following electrical fittings must be installed in the kitchen:



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DRAWING TITLE:
SITE PLAN STAND 101

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PROPOSED DWELLING ON STAND 101,
JABULANI STREET, CRADOCK

PROJECT NO.
GR 448-210

DRAWING NO.
559P7

DATE:
27/03/2020

DRAWN:
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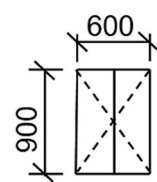
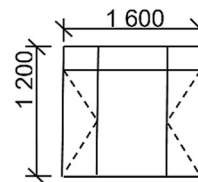
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SCALE:
1 : 100

WINDOW 1

WINDOW 2



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NO.	QUESTIONS	ANSWERS	MARKS
1.	Identify the elevation in FIGURE A.		1
2.	Describe the type of house that is indicated in FIGURE A.		1
3.	Identify number 1.		1
4.	Identify number 3.		1
5.	Identify number 4.		1
6.	Identify the fastener indicated by number 5.		1
7.	Identify number 6.		1
8.	Identify number 7.		1
9.	Identify number 8.		1
10.	What does <i>DPM</i> stand for, as indicated in the notes?		1
11.	Identify number 10.		1
12.	Recommend a suitable material that can be used for the manufacturing of number 2 in FIGURE A.		1
13.	Name the TWO elevations on which number 2 is installed.		2
14.	Describe the purpose of number 3.		1
15.	Deduce ONE feature that has been omitted from the elevation in FIGURE A.		1
16.	Recommend any TWO sanitary fitments carrying wastewater, other than a bath, that can be installed in the room indicated by number 11.		2





NO.	QUESTIONS	ANSWERS	MARKS
17.	What sanitary fixture carrying soil water can be installed in the room indicated by number 12 ?		1
18.	Describe the error that appears at number 6 in the elevation in FIGURE A .		1
19.	State the reference code for this plan.		1
20.	Which room will number 13 serve?		1
21.	What does the line between numbers 13 and 14 represent?		1
22.	Differentiate between number 15 in FIGURE B and number 17 in the notes.		2
23.	Explain the installation of brick force from the top of the window to the wall plate, as indicated by the architect.		1
24.	Recommend a possible finish for the outside walls of the house.		1
25.	Deduce from FIGURE A which elevation does not have windows.		1
26.	Deduce the thickness of the external wall in FIGURE B .		1
27.	Name the material that can be used to close the open sides of number 16 .		1
28.	Name the town in which the proposed dwelling will be built.		1





NO.	QUESTIONS	ANSWERS	MARKS
29.	Calculate the area of the bathroom. Show ALL calculations. Give your answer in m ² .		3
30.	Calculate the total length of the wall on the EASTERN side of the building. Show ALL calculations. The length must be indicated in metres.		6

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QUESTION 3: QUANTITIES AND JOINING (SPECIFIC)

3.1 FIGURE 3.1 below shows a joining fixture that is used on building sites and in workshops.

**FIGURE 3.1**

3.1.1	Identify the joining fixture.	
		(1)
3.1.2	Name the fixing agent that should be used with this joining fixture.	
		(1)
3.1.3	Explain ONE use of this joining fixture.	
		(1)
3.1.4	What colour is used for fixing heavier items?	
		(1)

3.2 FIGURE 3.2 below is an illustration depicting a ceiling construction.

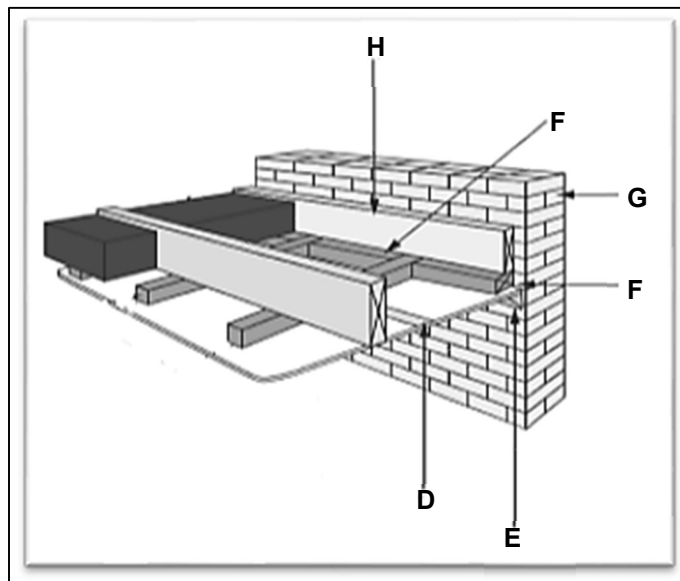


FIGURE 3.2

Identify the members labelled **E**, **F** and **G**.

	(3)

3.3 FIGURE 3.3 below shows a woodworking joint.

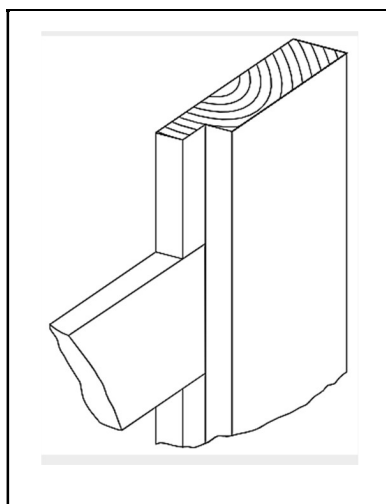


FIGURE 3.3

3.3.1 Identify the woodworking joint illustrated above.

		(1)



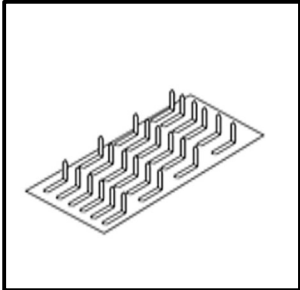
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3.3.2	Where can this type of joint be used?	
		(1)
3.4	Explain, by means of a two-dimensional freehand sketch, how you would fix the floor joists for an upper-level suspended timber floor, if the joists cannot be built into the wall.	
		(3)
3.5	The specification for a Rawl bolt is R-RBL-M08/25. What does <i>M08</i> represent?	
		(1)



3.6	Below are pictures of fasteners that are used on building sites and in workshops. Write down the name of EACH fastener next to the question numbers (3.6.1 to 3.6.3) in the spaces provided.	
	 3.6.1  3.6.2  3.6.3	
3.6.1		
		(1)
3.6.2		
		(1)
3.6.3		
		(1)



- 3.7 FIGURE 3.7 below shows the floor plan of a building with a gable roof. Study the figure and answer the questions that follow. Show ALL calculations.

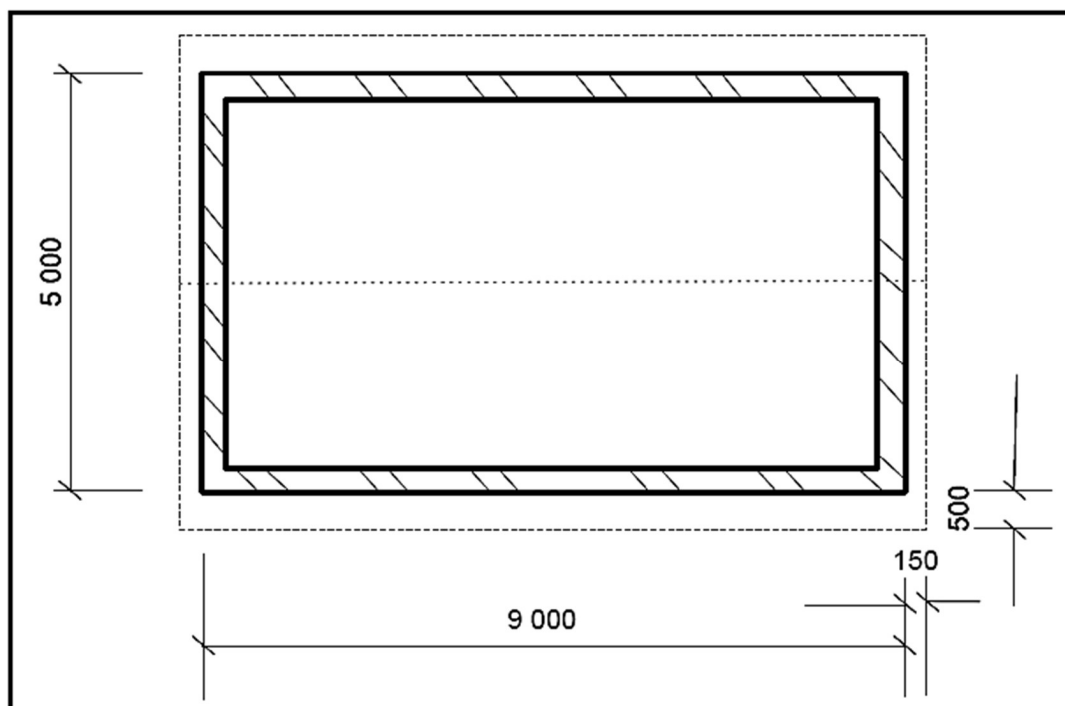


FIGURE 3.7

Use the following specifications:

- Walls are 220 mm thick
- Length of rafter 3 600 mm
- Centre-to-centre spacing between purlins 900 mm
- Measurement between centres if roof trusses are 1 400 mm



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Calculate the following:

- 3.7.1 The number of purlins needed
 3.7.2 The length of purlins needed
 3.7.3 The number of roof trusses needed

A	B	C	D	
3.7.1			Number of purlins needed:	(3)
			=	
			=	
3.7.2			Length of purlins needed:	(4)
			=	
			=	
			=	
3.7.3			Number of roof trusses needed:	(7)
			Internal measurement =	
			=	
			=	
			=	
			=	

[30]



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QUESTION 4: CASEMENTS, DOORS AND WALL PANELLING

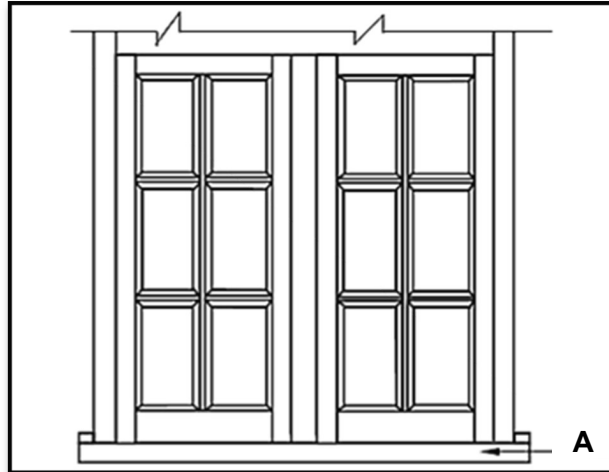
- 4.1 Give ONE word/term for each of the following descriptions by choosing a word/term from the list below. Write only the word/term below the descriptions (4.1.1 to 4.1.5) in the spaces provided.

cornice; quadrant; windowsill; mullion; glazing bar; front rail;
mortice and tenon; tongue and groove; putty; skirting; glue;
PVC; capping; paint; top rail; varnish

4.1.1	The moulding between the wall and the floor	
		(1)
4.1.2	The member that vertically separates the main parts of a double casement	
		(1)
4.1.3	Used to keep the windowpane in place	
		(1)
4.1.4	The joint used to join the strip boards used in walls panels	
		(1)
4.1.5	The horizontal member of the casement that is found directly below the transom	
		(1)



- 4.2 FIGURE 4.2 below shows an external elevation of an incomplete casement. The casement can be extended by placing a new part on top of the existing casement. Study the picture and answer the questions that follow.

**FIGURE 4.2**

4.2.1	Name the omitted part that can be placed on top of the casement to make it a complete casement.	
		(1)
4.2.2	Name ONE purpose of the part that can be placed on top of the casement.	
		(1)
4.2.3	Identify member A .	
		(1)

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4.2.4	Draw a neat, freehand sketch of the sectional view of the profile of part A in the space provided.																
	<table border="1"> <thead> <tr> <th>ASSESSMENT CRITERIA</th><th>MARK</th><th>CANDIDATE'S MARK</th></tr> </thead> <tbody> <tr> <td>Correctness of shape</td><td>1</td><td></td></tr> <tr> <td>Throat/drip groove</td><td>1</td><td></td></tr> <tr> <td>Hatching</td><td>1</td><td></td></tr> <tr> <td>TOTAL:</td><td>3</td><td></td></tr> </tbody> </table>	ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK	Correctness of shape	1		Throat/drip groove	1		Hatching	1		TOTAL:	3		(3)
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK															
Correctness of shape	1																
Throat/drip groove	1																
Hatching	1																
TOTAL:	3																





4.3	Describe TWO disadvantages of EACH of the following roof coverings:	
4.3.1	Concrete roof tiles	(2)
4.3.2	Thatch roof	(2)
4.3.3	IBR roof sheeting	(2)
4.4	Explain why you would rather use mechanically graded timber than visually graded timber for roof construction.	(2)





4.5 Draw to scale 1 : 50 a king post roof truss. Start the drawing on the lines as indicated below.



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	12	

(12)

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4.6 FIGURE 4.6 below shows a vertical sectional view through the top of a wall panel.

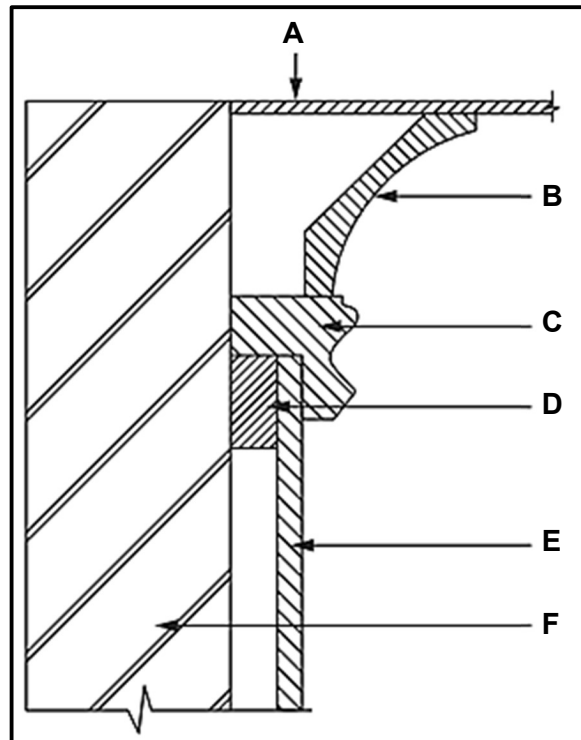


FIGURE 4.6

4.6.1	Identify the members labelled A to D .	(4)
4.6.2	Describe the purpose of member D .	(2)



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4.7 FIGURE 4.7 below shows a joint used in a three-panel door.

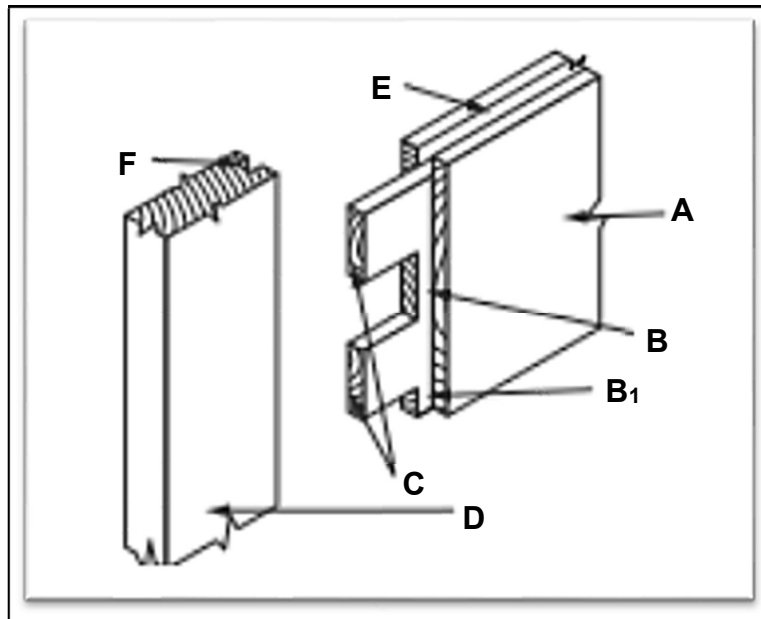


FIGURE 4.7

State the ratio for the thickness of **C**.

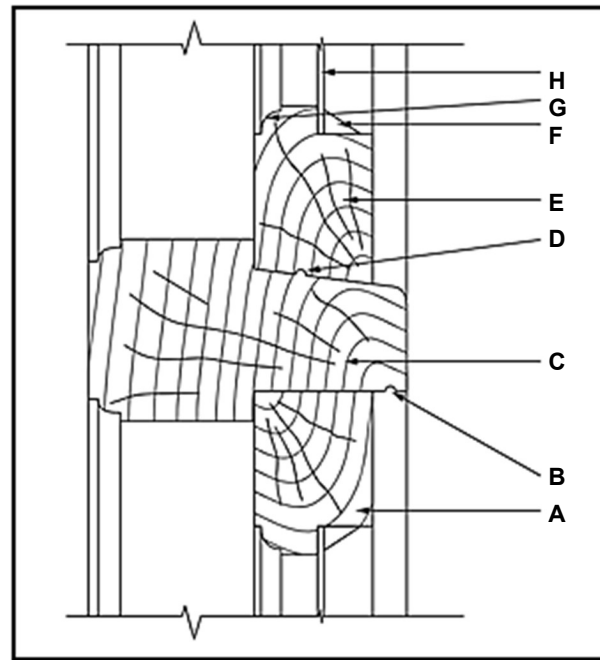
(1)



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- 4.8 FIGURE 4.8 below depicts a vertical section through the transom, bottom rail of a fanlight and top rail of a casement.

**FIGURE 4.8**

Identify the members labelled **B** and **E**.

(2)**[40]****SA EXAM PAPERS**

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**QUESTION 5: ROOFS, CEILINGS, TOOLS, EQUIPMENT AND MATERIALS
(SPECIFIC)**

5.1 FIGURE 5.1 below shows an electrical hand tool. Study the picture and answer the questions that follow.

**FIGURE 5.1**

5.1.1	Identify the tool shown above.	
		(1)
5.1.2	Describe what could happen if no personal safety equipment is worn when using the equipment mentioned in QUESTION 5.1.1.	
		(1)
5.1.3	Why should this hand tool be stored in a safe, dry place?	
		(1)
5.2	Name TWO different types of trap doors that can be fitted to a ceiling.	
		(2)

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5.3	Differentiate between <i>purlins</i> and <i>battens</i> in terms of their uses.	
		(2)
5.4	Name the different types of roof underlays for EACH of the following roofs:	
5.4.1	Tiled roof	
		(1)
5.4.2	Thatch roof	
		(1)
5.4.3	IBR roof sheeting	
		(1)



- 5.5 FIGURE 5.5 below shows a woodworking machine. Study the picture below and answer the questions that follow.

**FIGURE 5.5**

5.5.1	Identify the woodworking machine.	
		(1)
5.5.2	Give TWO reasons why you should not adjust the height of the saw while the machine is operating.	
		(2)
5.5.3	Explain TWO methods that can be used to protect the blade of the machine.	
		(2)
5.5.4	Give TWO reasons why it is necessary to check the timber for loose knots and nails before using the machine.	
		(2)

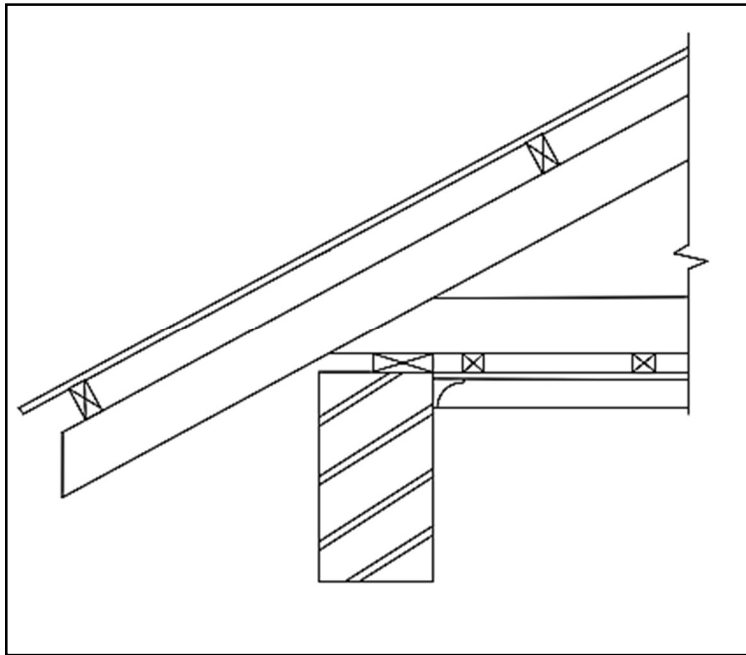


5.6

Complete the vertical section through the foot of a roof truss by drawing the closed eaves to scale 1:10.

Show the following in your drawing:

- Fascia board: 230 mm x 38 mm
- Hanger: 38 mm x 38 mm
- Bearer: 38 mm x 38 mm
- 6 mm fibre cement board
- Two quarter round mouldings below the fibre cement board



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	6	

(6)**5.7**

Draw freehand, a top view of a roof to show the valley between the two inclined roofs in the space provided.

ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	3	

(3)



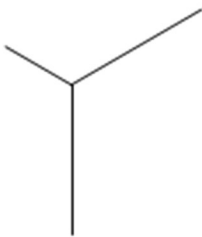
5.8	Give ONE reason why you would close an open eave.	
		(1)
5.9	Explain why fibre-cement boards are preferred over gypsum ceiling boards for a closed eave.	
		(1)
5.10	Name TWO parts of the roof construction to which the framework of a trapdoor is secured.	
		(2)

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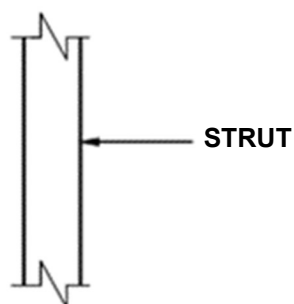
**QUESTION 6: GRAPHICS AS MEANS OF COMMUNICATION (SPECIFIC)**

6.1	Differentiate, by means of two-line diagrams, between a king post roof truss and a SA (Howe) roof truss. Draw ONLY the trusses with overhangs in the space provided.	(12)						
<table border="1"> <thead> <tr> <th>ASSESSMENT CRITERIA</th><th>MARK</th><th>CANDIDATE'S MARK</th></tr> </thead> <tbody> <tr> <td>Correctness of drawing</td><td>12</td><td></td></tr> </tbody> </table>			ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK	Correctness of drawing	12	
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK						
Correctness of drawing	12							

6.2	Draw to scale 1 : 1 the top rail and stile of an assembled ISOMETRIC view of a long and short shoulder tenon and mortise joint. The timber used for the joint is 60 mm x 21 mm. Do NOT show hidden details. Start the drawing from the given point.							
 <table border="1"> <thead> <tr> <th>ASSESSMENT CRITERIA</th><th>MARK</th><th>CANDIDATE'S MARK</th></tr> </thead> <tbody> <tr> <td>Correctness of drawing</td><td>10</td><td></td></tr> </tbody> </table>			ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK	Correctness of drawing	10	
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK						
Correctness of drawing	10							



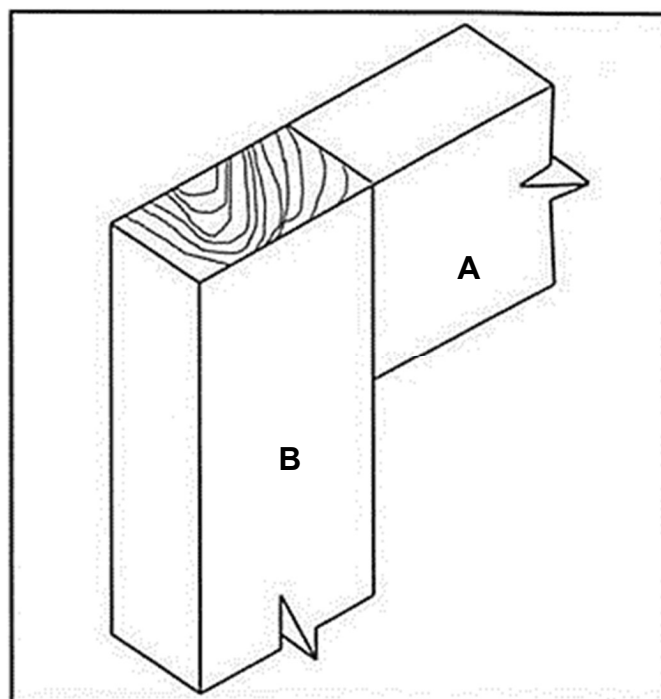
- 6.3 The drawing below shows a part of a timber prop for the formwork of a floor slab. Draw in good proportion a vertical section through the top part of the formwork for a floor slab. The end grain of the soffit board must be shown. Shows any THREE labels.



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	7	
Any THREE labels	3	
TOTAL:	10	



- 6.4 FIGURE 6.4 below shows the incomplete assembled view of an open haunched mortice and tenon joint. Study the picture below and answer the question that follows.

**FIGURE 6.4**

Draw, in good proportion, an ISOMETRIC view of the joint on part **A** shown in the FIGURE 6.4.

ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	8	

(8)
[40]

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CIVIL TECHNOLOGY: WOODWORKING**GR12 0626****33****ADDITIONAL SPACE****SA EXAM PAPERS**

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