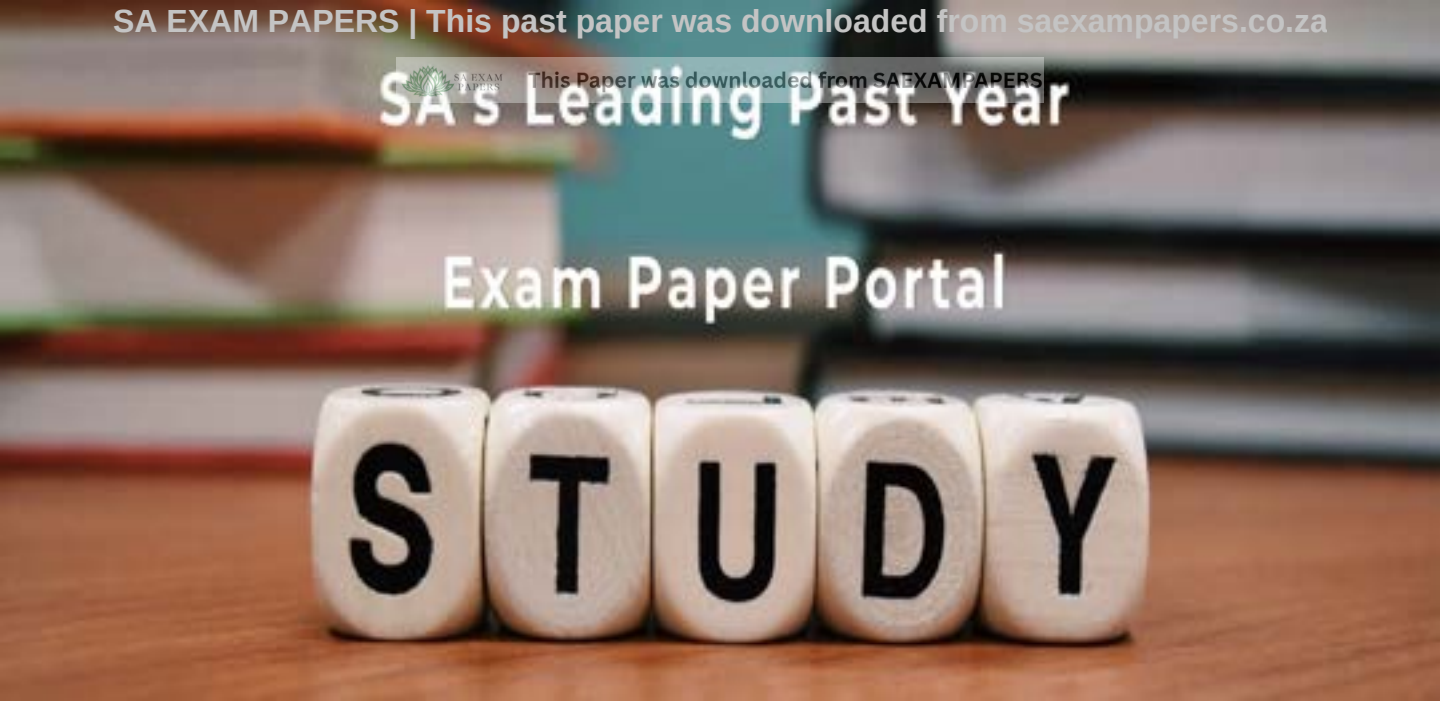


GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JUNE EXAMINATION
JUNIE EKSAMEN
GRADE / *GRAAD* 12
2025

CIVIL TECHNOLOGY:
SIVIELE TEGNOLOGIE:
WOODWORKING
HOUTBEWERKING

CIVIL TECHNOLOGY Woodworking

C2120E

TIME/*TYD*: 3 hours/*uur*
MARKS/*PUNTE*: 200
18 pages + 4 answer sheets
18 bladsye + 4 antwoordblaaie

X05

REQUIREMENTS:

1. Drawing instruments
2. A non-programmable calculator

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX questions.
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Start the answer to EACH question on a NEW page.
5. Do NOT write in the margin 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; 3.5; 5.6 and 6.1 on the attached ANSWER SHEETS as prescribed in each question.
13. Drawings in the question paper are NOT according to scale due to electronic transfer.
14. Write neatly and legibly.

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

Start this question on a NEW page.

1.1 Choose a description from COLUMN B that matches an item in COLUMN A. Write only the letter (A – N) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 O.

COLUMN A	COLUMN B
1.1.1 Conveyor belt	A Process takes 38 days
1.1.2 Builder's hoist	B Has rungs
1.1.3 Ladder	C Based on visual inspections and visible features
1.1.4 Curing	D Expensive
1.1.5 Powder coating	E Strength usually refers to bending strength
1.1.6 Painting	F Gates must be shut when in use
1.1.7 Galvanising	G Loose material must never be dropped from elevated areas
1.1.8 Mechanically graded timber	H Improves the durability of concrete by reducing cracks
1.1.9 Visually graded timber	I Changes the surface properties of a metal
1.1.10 Linseed oil	J Suitable for hardwood furniture
	K Apply using a compressor and a spray gun
	L To be used by 2 or more people
	M To cover iron/steel with a layer of zinc to prevent it from rusting
	N Enhances the appearance of surfaces

(10 x 1) (10)

1.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A – D) next to the question numbers (1.2.1 to 1.2.5) in the ANSWER BOOK, e.g. 1.2.6 E.

1.2.1 Electroplating is the process of …

A applying a plastic coating on metal using electrolysis.
B coating metal with another metal using electrolysis.
C applying paint to a metal by means of magnetism.
D applying liquid zinc to a metal using pressure. (1)

1.2.2 Why would you coat a metal with a layer of paint?

A To resist extreme temperatures
B To prevent corrosion
C To prevent warping
D Only A and B (1)

1.2.3 When using a scaffold, it must be inspected to ensure that …

A the scaffold is not attached to the building.
B the scaffold platform is supported every 4 metres.
C the scaffold is free from any defects.
D All the above-mentioned. (1)

1.2.4 … of scaffolds should be secured vertically.

A Transoms
B Diagonal braces
C Standards
D Base plates (1)

1.2.5 The employer must ensure that the rungs of wooden ladders are …

A not painted.
B free from grease.
C not cracked.
D All of the above-mentioned. (1)

1.3 FIGURE 1.3 below shows a tool that is used in the building industry.

FIGURE 1.3

1.3.1 Identify the tool shown above. (1)

1.3.2 Explain the use of the tool in FIGURE 1.3. (1)

1.4 Explain what could happen if the ends of scaffold planks exceed 230 mm beyond the last support. (1)

1.5 Explain the safety purpose of the following members of a scaffold:

1.5.1 Guardrail (1)

1.5.2 Toe-board/Kickboard (1)

[20]

QUESTION 2: GRAPHICS AS MEANS OF COMMUNICATION (GENERIC)

Start this question on a NEW page.

FIGURE 2 below shows drawings that appear on a building plan. Analyse the drawings and complete the table on ANSWER SHEET 2.

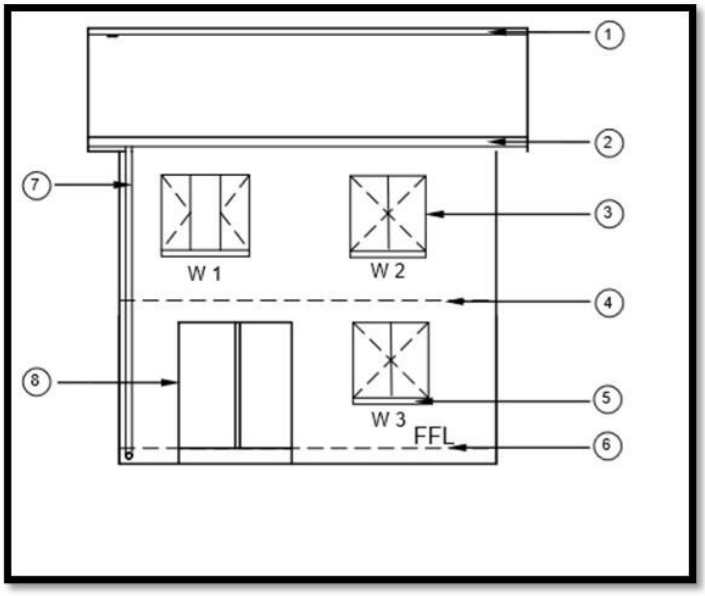


FIGURE A

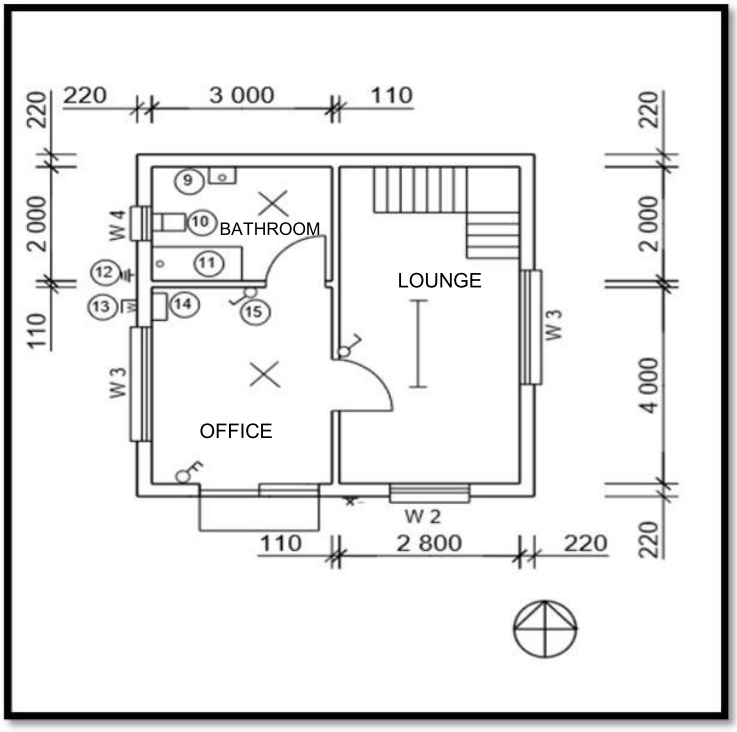


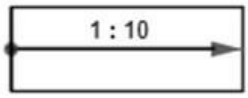
FIGURE B

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

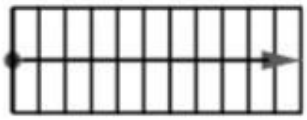
ARCHITECT'S SIGNATURE .....

CLIENT'S SIGNATURE .....

The following must be placed in the front of the sliding door:



Access to the first floor must be by means of a:



REVISION	DATE	DESCRIPTION

PRINTED BY: NKOSI PRINTERS	DATE OF PRINT: 2018/10/02
DRAWING TITLE: SITE PLAN STAND: 1843	
PROJECT: PROPOSED DWELLING ON STAND 1843, DIEPRIVIER	
PROJECT NO. GR 557-102	DRAWING NO. 5597P9

DATE:	DRAWN:	CHECKED:
25/04/2018	JP MALOI	P. BRITZ

REFERENCE CODE: QP 1- 2018	SCALE: 1: 100

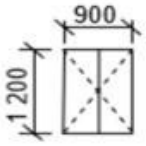
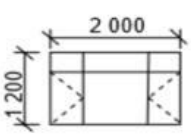
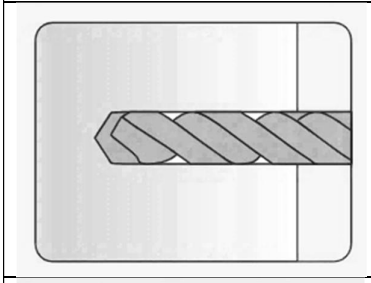
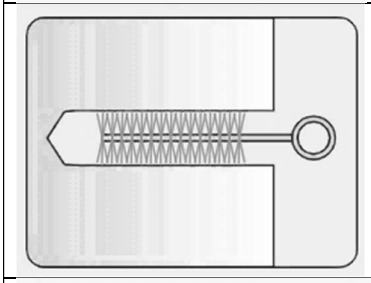
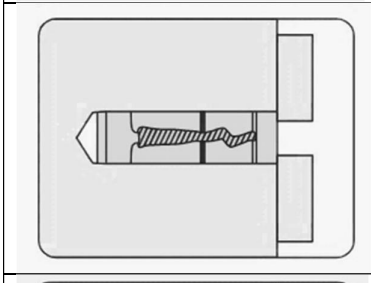
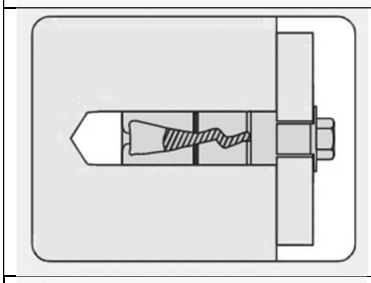
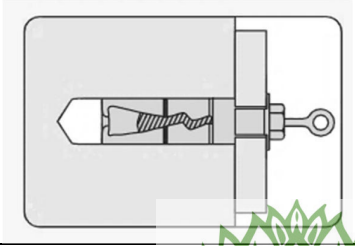
WINDOW 2	WINDOW 3
	

FIGURE 2 **[40]**

QUESTION 3: QUANTITIES AND JOINING

Start this question on a NEW page.

3.1 Write a description that illustrates the method of fastening a Rawl bolt into a brick wall for each of the illustrations shown in COLUMN A. Write only the question numbers (3.1.1 to 3.1.5) as indicated in COLUMN B in your ANSWER BOOK, followed by the explanation, e.g. 3.1.6 Mark the hole for the Rawl bolt.

COLUMN A	COLUMN B
	3.1.1
	3.1.2
	3.1.3
	3.1.4
	3.1.5

(5)

3.2 FIGURE 3.2 below shows fasteners.

FIGURE 3.2

3.2.1 Identify the fasteners shown above. (1)

3.2.2 Explain the THREE steps you would follow to attach a feature utilising the above fastener to a brick wall, if the hole has been marked. (3)

3.3 FIGURES **A** and **B** below show woodworking joints.

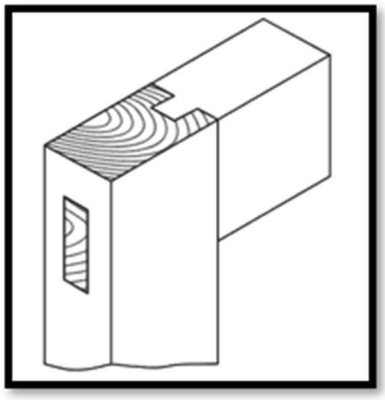


FIGURE A

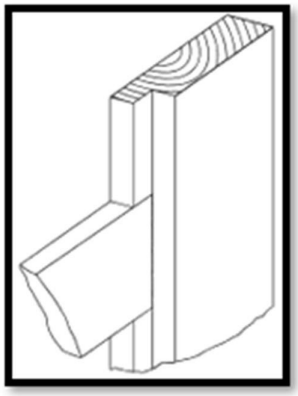


FIGURE B

3.3.1 Identify the woodworking joints illustrated above. (2)

3.3.2 State where each type of joint can be used. (2)

3.4 FIGURE 3.4 shows the attachment of a ceiling boqard to battens.

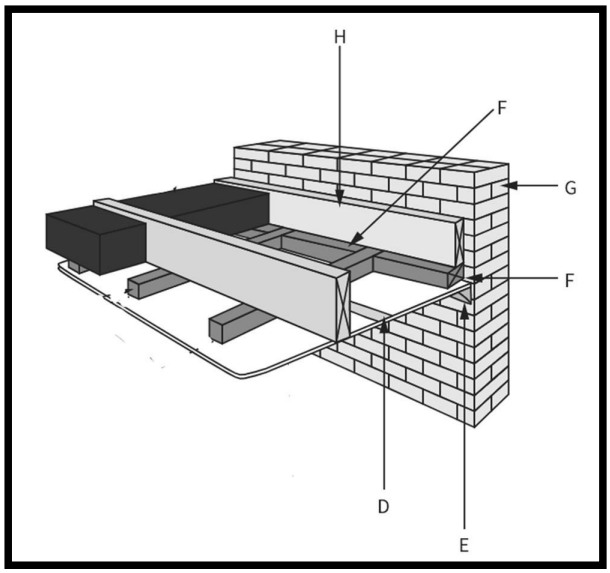


FIGURE 3.4

3.4.1 Identify **E**, **G** and **H**. (3)

3.4.2 Explain the purpose of **D** and **F**. (2)

3.5 FIGURE 3.5 below shows the floor plan of a building with a gable roof. Study the figure and answer the questions that follow. Show ALL calculations.

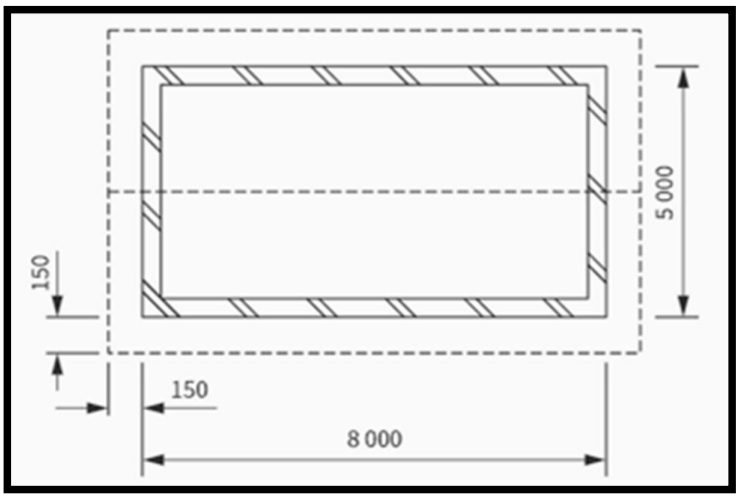


FIGURE 3.5

Use the following specifications:

- The walls are 220 mm thick.
- The length of the rafter is 3 600 mm.
- The centre-to-centre spacing between purlins is 900 mm.
- The overhang of the roof at the fascia board ends is 150 mm.

Use ANSWER SHEET 3.5 and calculate the following:

3.5.1 The internal measurements (2)

3.5.2 The length of the wall plates (3)

3.5.3 The number of purlins needed (3)

3.5.4 The area of roof underlay needed (4)

[30]

QUESTION 4: CASEMENTS, DOORS AND WALL-PANELLING

Start this question on a NEW page.

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 next to the question numbers (4.1.1 to 4.1.5) in the ANSWER BOOK, e.g. 4.1.6 paint.

cornice; quadrant; window sill; mullion; glazing bar; front rail; mortice and tenon; tongue and groove boards; 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 separates the main parts of a double casement vertically (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 wall panels (1)

4.1.5 The horizontal member of the casement locatred directly below the transom (1)

4.2 Name the THREE main parts of a double casement with fanlights. (3)

4.3 FIGURE 4.3 below shows an external elevation of an incomplete casement. The casement can be extended by placing a new part on top of the existing one. Study the figure and answer the questions that follow.

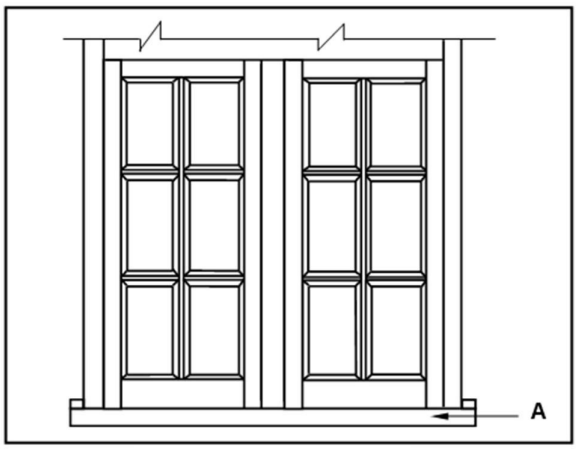


FIGURE 4.3

4.3.1 Name the missing part that can be placed on top of the casement to complete it. (1)

4.3.2 Explain ONE advantage of the part that can be placed on top of the casement. (1)

4.3.3 Describe the purpose of a transom in a casement. (1)

4.3.4 Name TWO parts of a swing frame that keeps the glass in place. (2)

4.4 FIGURE 4.4 below depicts a vertical section through the transom, bottom rail of a fanlight and top rail of a casement.

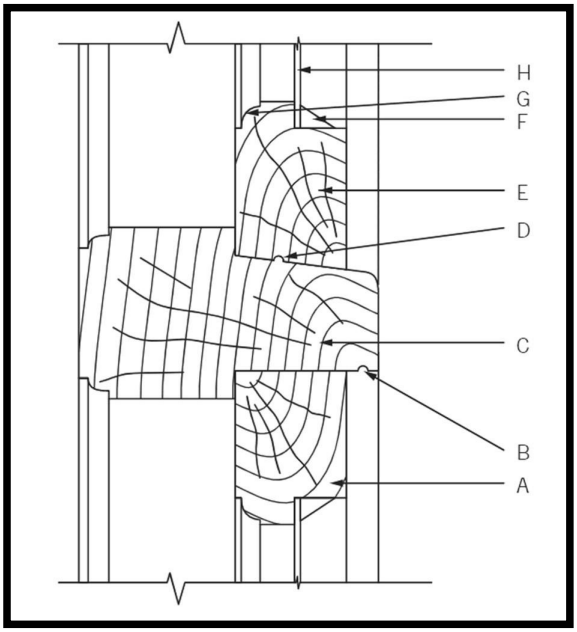


FIGURE 4.4

4.4.1 Identify the members **A** – **E**. (5)

4.4.2 Describe the purpose of part **B**. (1)

4.5 FIGURE 4.5 below shows a vertical section through the bottom of a panelled door. Study the drawing and answer the questions that follow.

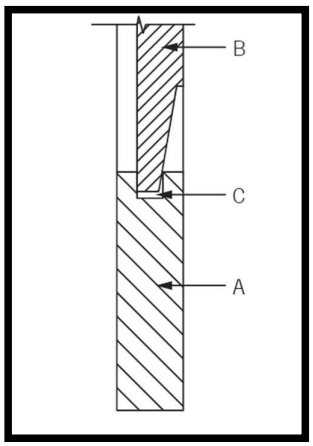


FIGURE 4.5

4.5.1 Label parts **A** – **C.** (3)

4.5.2 Explain ONE purpose of part **C**. (1)

4.5.3 State the thickness of part **A**. (1)

4.5.4 Identify the joint used to join part **A** to the stile of a door. (2)

4.5.5 Make a neat, freehand sketch of the front and top view of a raised panel. (3)

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

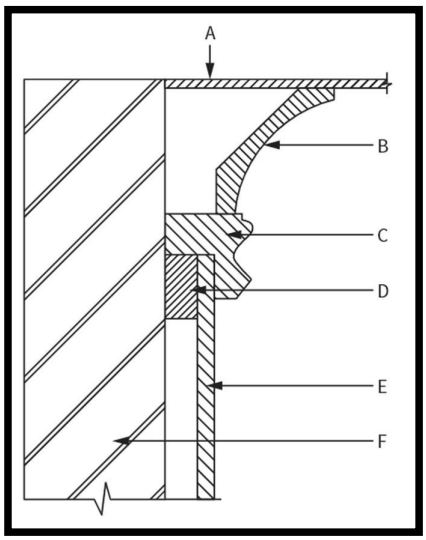


FIGURE 4.6

4.6.1 Identify the members labelled **A – D.** (4)

4.6.2 Describe the purposes of members **C** and **D**, respectively. (2)

4.6.3 Explain why the length of the tongue is shorter than the depth of the groove. (2)

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

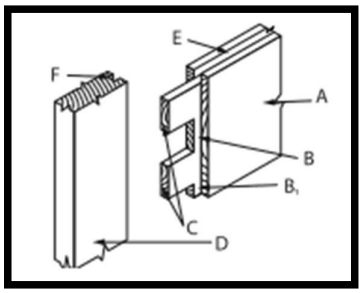


FIGURE 4.7

Predict the ratio of the thickness of part **C**. (1)

4.8 Describe what you understand by the term *muntin* in a door. (2)

[40]

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

Start this question on a NEW page.

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

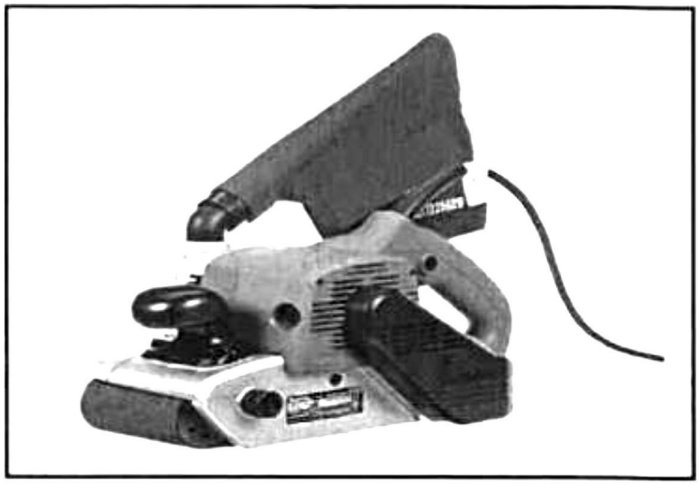


FIGURE 5.1

5.1.1 Identify the tool. (1)

5.1.2 Predict what could happen if no personal safety equipment is worn while using this tool. (2)

5.1.3 Briefly explain why this hand tool should be stored in a safe, dry place. (1)

,

5.2 FIGURE 5.2 below shows a woodworking machine. Study the picture and answer the questions that follow.

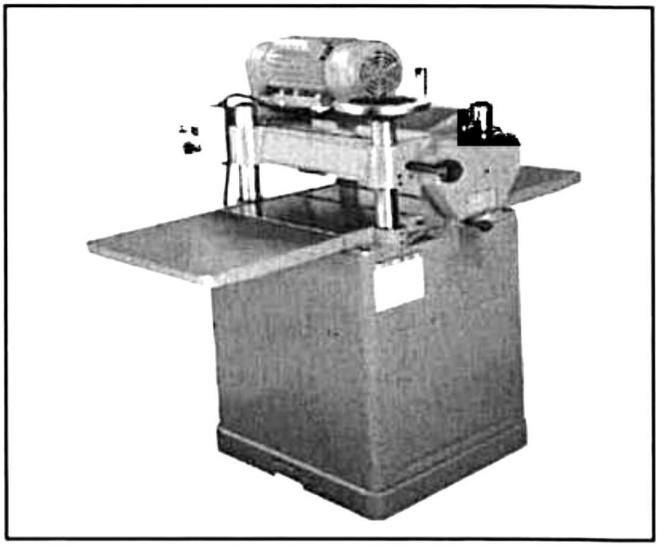


FIGURE 5.2

5.2.1 Identify the woodworking machine. (1)

5.2.2 Give TWO reasons why you should not adjust the height of the machine while it is operating. (2)

5.2.3 Explain TWO precautionary methods that can be taken to protect the blade of the machine. (2)

5.2.4 Explain TWO reasons why it is necessary to check the timber for loose knots and nails before using this machine. (2)

5.3 Name TWO different types of trapdoors that can be fitted to a ceiling. (2)

5.4 Differentiate between the uses of a *purlin* and a *batten*. (2)

5.5 Name the appropriate roof underlays for EACH of the following roofs:

5.5.1 Tiled roof (1)

5.5.2 Thatch roof (1)

5.5.3 IBR roof sheeting (1)

5.6 Use ANSWERSHEET 5.6 and complete the vertical section through the foot of a roof truss by drawing the closed eave to scale 1 : 10.

Show the following on your drawing:

- Facia 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 (7)

5.7 Explain the term *eaves of a roof*. (1)

5.8 List TWO different roof trusses used to build a roof. (2)

5.9 Differentiate between *open* and *closed* eaves (2)
[30]

QUESTION 6: GRAPHICS AS MEANS OF COMMUNICATION (SPECIFIC)

Start this question on a NEW page.

6.1 ANSWER SHEET 6.1 shows the front view of a freestanding cupboard, with an oval hanging rail and a drawer, without a door.

Project the detail of the freestanding cupboard and draw a sectional left view on cutting plane **A-A**.

Use the following specifications:

- The cupboard is made of 16 mm melamine.
- The drawer bottom is made of 3 mm hardboard.
- The cupboard back is made of 3 mm hardboard. (12)

6.2 Draw, in your ANSWER BOOK, a neat two-dimensional sketch of the vertical sectional view of ONE half of the CORRECT constructional detail of the conventional trap door. Label any TWO parts. (8)

6.3 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 your ANSWER BOOK. (12)

6.4 Sketch in your ANSWER BOOK, in good proportion, the isometric view of ONLY the top rail with the tenon for a haunched mortice-and-tenon joint. (8)
[40]

TOTAL: 200

END

NAME AND SURNAME: _____

ANSWWER SHEET 2

NO.	QUESTION	ANSWER	MARKS
2.1	Name the drawing depicted in FIGURE **B.**		1
2.2	Deduce the scale of the drawing.		1
2.3	Identify number **4**.		1
2.4	Identify number **12**.		1
2.5	Identify number **11**.		1
2.6	Identify number **8**.		1
2.7	Identify number **7**.		1
2.8	Identify number **14**.		1
2.9	Identify number **5**.		1
2.10	Identify the number that indicates the ELECTRICITY METER in FIGURE **B**.		1
2.11	Recommend TWO suitable scales for floor plans other than the one listed in the notes.		2
2.12	Give the abbreviations for the following: 2.12.1 Water closet 2.12.2 Bath	2.12.1 2.12.2	2
2.13	Name the feature that must be placed in front of the sliding door as specified in the notes.		1
2.14	Who checked the drawing?		1

NAME AND SURNAME: _____

2.15	Describe what is indicated by number **3.**		1
2.16	Differentiate between the light installed in the lounge and that in the office.		2
2.17	Provide the drawing number from the building plan.		1
2.18	Who must be notified when a contractor sets out levels on a site and there are variances?		1
2.19	Identify ONE important feature that is omitted from the plan.		1
2.20	What should be installed for balancing and support as you go up the staircase?		1
2.21	Deduce the height of window 2 from the window schedule.		1
2.22	Draw the symbol for a shower.		1
2.23	Draw the electrical symbol for a wall mounted light.		2
2.24	Deduce the width of window **3** from the window schedule.		1

NAME AND SURNAME: _____

2.25	Recommend a suitable floor covering for the bathroom.		1
2.26	Explain what is meant by 1:10, as indicated on the symbol in the notes.		1
2.27	Identify the type of roof that is used for the building in FIGURE **A**.		1
2.28	Prove, by means of a control test, that the total vertical dimensions on the left and right of the plan in FIGURE **B** are equal.		6
2.29	Calculate the area of the bathroom. Show ALL calculations. Give your answer in m². Round-off your answer to TWO decimal places.		3
		TOTAL:	**40**

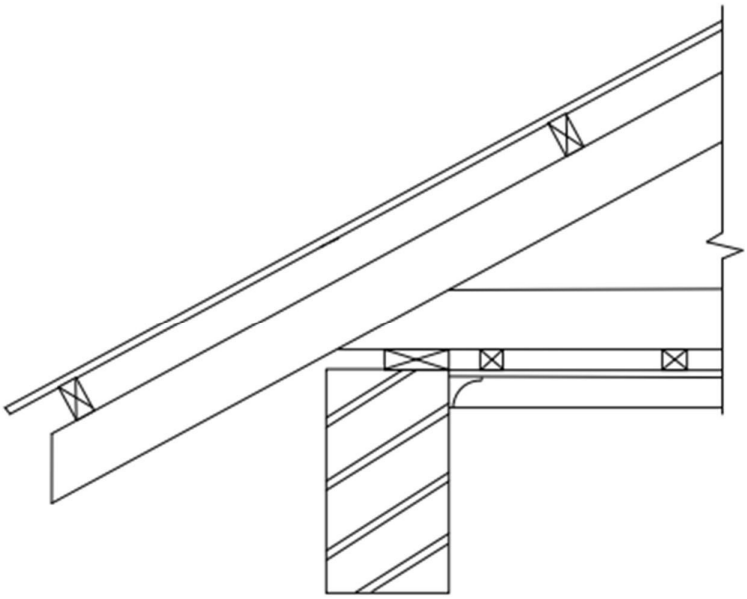
NAME AND SURNAME: _____

ANSWER SHEET 3.5

A	B	C	D	
3.5.1			Internal measurements:	
			= _____	
			= _____	
				(2)
3.5.2			Length of wall plates needed:	
_____	_____	_____		
				(3)
3.5.3			Number of purlins needed:	
			= _____	
			= _____	
			= _____	
				(3)
3.5.4			Area of roof underlay needed:	
	_____	_____		
				(4)

NAME AND SURNAME: _____

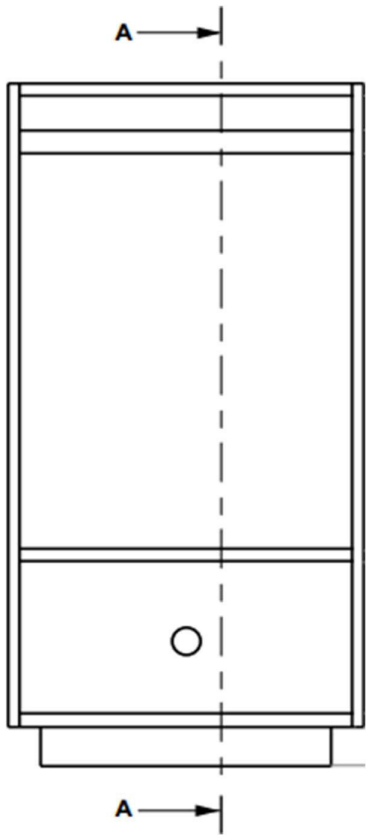
ANSWER SHEET 5.6



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
TOTAL:	7	

NAME AND SURNAME: _____

ANSWER SHEET 6.1



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
1	1	
2	1	
3	1	
4	1	
5	1	
6	1	
7	1	
8	1	
9	1	
10	1	
11	1	
12	1	
TOTAL:	**12**	