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Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

CIVIL TECHNOLOGY: WOODWORKING

NOVEMBER 2024

MARKS: 200

TIME: 3 hours

This question paper consists of 17 pages and 6 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.
2. Answer ALL the questions.
3. Read ALL the questions carefully.
4. Answer each question as a whole. Do NOT separate subsections of questions.
5. Number the answers correctly according to the numbering system used in this question paper.
6. Start the answer to EACH question on a NEW page.
7. Do NOT write in the margins of the ANSWER BOOK.
8. You may use sketches to illustrate your answers.
9. Write ALL calculations and answers in the ANSWER BOOK or on the attached ANSWER SHEETS.
10. Use the mark allocation as a guide to the length of your answers.
11. 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*.
12. For the purpose of this question paper, the size of a brick should be taken as 220 mm x 110 mm x 75 mm.
13. Use your own discretion where dimensions and/or details have been omitted.
14. Answer QUESTIONS 2, 3.2, 3.5, 5.2, 5.3 and 5.4 on the attached ANSWER SHEETS using drawing instruments, where necessary.
15. Write your CENTRE NUMBER and EXAMINATION NUMBER on every ANSWER SHEET and hand them in with your ANSWER BOOK, whether you have used them or not.
16. Drawings in the question paper are NOT to scale due to electronic transfer.
17. Google Images was used as the source of all photographs and pictures.
18. Write neatly and legibly.

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

Start this question on a NEW page.

1.1 Choose the correct word(s) from those given in brackets. Write only the word(s) next to the question numbers. (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 Concrete. .

1.1.1 Wooden scaffold standards should not be placed more than (4 m/3 m/6 m) apart. (1)

1.1.2 Trestle scaffolds must have a maximum height of (3 m/4 m/6 m). (1)

1.1.3 The material safety data sheet that accompanies hazardous chemical substances must contain (fire-fighting measures/ flame ratio/combustion rate). (1)

1.1.4 When transporting long ladders with a vehicle, (ensure that the ladder does not protrude excessively/mark the end of the ladder with a green flag/place ladder in an upright position). (1)

1.1.5 (Galvanising/Powder coating/Electrolysis) is the process of applying a plastic coating to a metal. (1)

1.1.6 Electroplating is the process in which (the thickness of undersized parts can be increased/metal becomes extremely hot/metals are coated with paint). (1)

1.1.7 The (thread and shank/head and pin/runout and shank) do not form part of the length of a bolt. (1)

1.1.8 The purpose of the nylon insert on a hexagonal nut is for (decorative purposes/easy removal from a bolt/preventing backing off). (1)

1.1.9 Wooden ladders may be treated with (oil-based paint/ wood preservatives/water-based paint) according to the Occupational Health and Safety Act (OHSA). (1)

1.1.10 Workers carrying large equipment may not use (spiral/suspended/ fire escape) stairways that are a temporary part of a structure. (1)

1.2 Which pictorial view below represents a nut with a built-in washer?



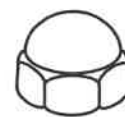
A



B



C



D

(1)

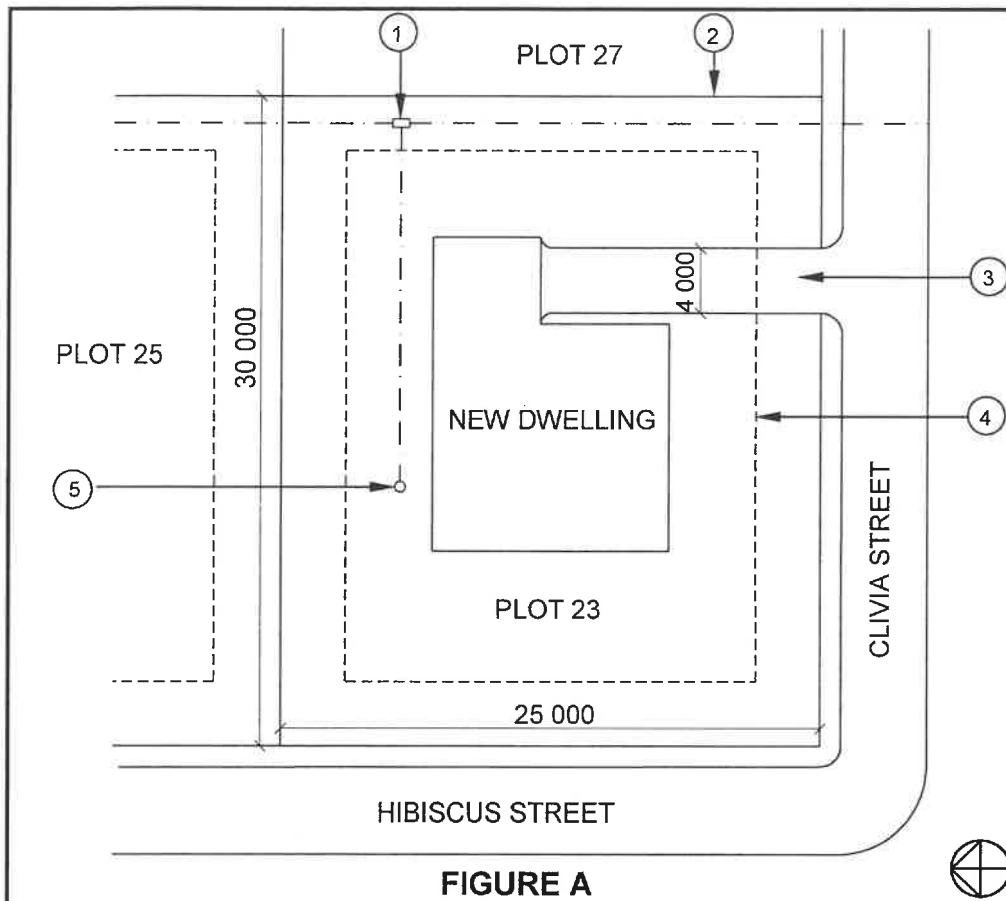
1.3 The specifications for a Rawl bolt are R-RBL-M08/25. What does the M08 represent? (1)

- 1.4 Cured concrete is exposed to elements.
- 1.4.1 Explain the effect of cured concrete on steel reinforcement. (1)
- 1.4.2 Explain the advantages of cured concrete in terms of the weight it can carry. (1)
- 1.5 Differentiate between the *multi-detector* and the *laser level* in terms of the use thereof. (2)
- 1.6 Describe TWO uses of the dumpy level. (2)
- 1.7 Describe how you will take care of a telescopic staff. (2)
- [20]**

QUESTION 2: GRAPHICS AS MEANS OF COMMUNICATION (GENERIC)

Start this question on a NEW page.

FIGURE A and FIGURE B on the next page show drawings that appear on a building plan. Analyse the drawings and complete the table on ANSWER SHEET 2.

**NOTES:**

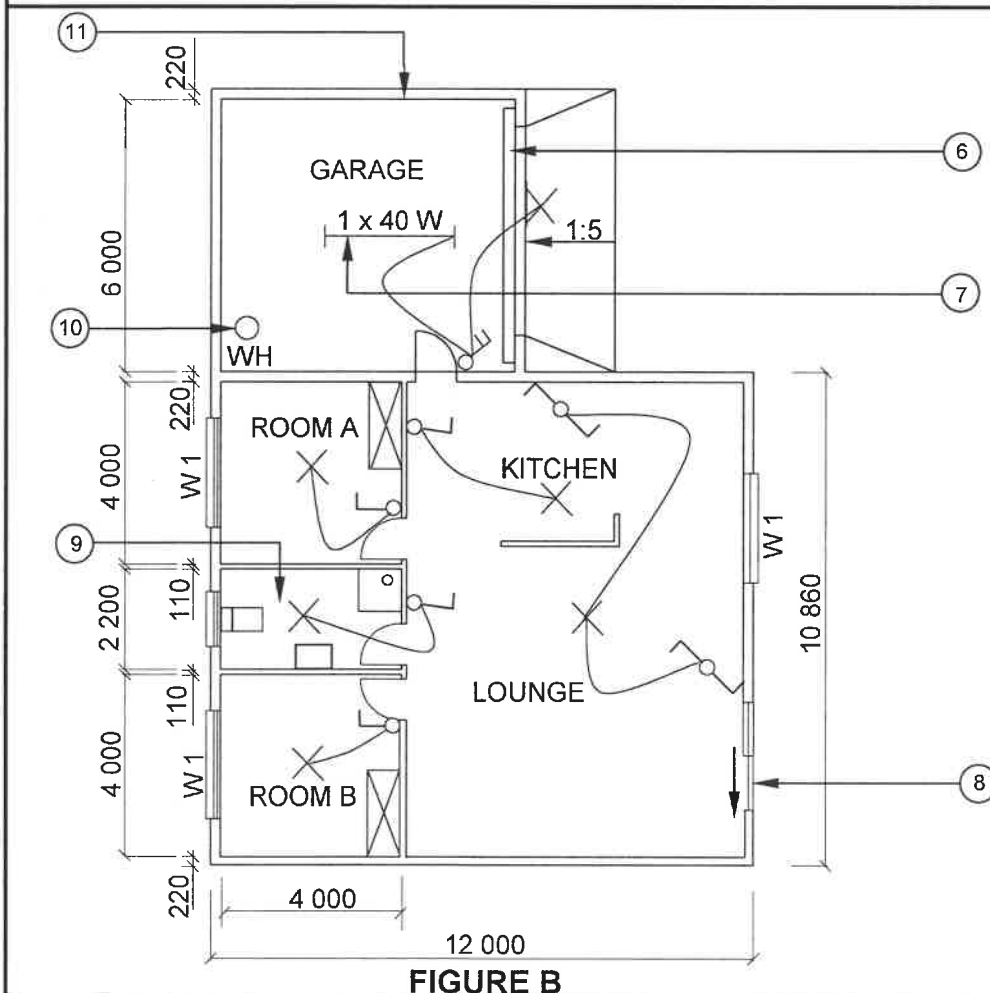
Contractors must verify all dimensions and levels on site before commencing work.

Architects to be notified of any discrepancies immediately.

Fencing: Clear-view fencing to be used on the boundary

Architect's signature

Client's signature



REVISION
1

DATE:
14/04/2024

DRAWING OF
ELECTRICAL
FITTINGS

PRINTED BY:
FROG PRINTERS

DATE OF PRINT:
16/04/2024

DRAWING TITLE:
SITE PLAN AND FLOOR PLAN

PROJECT:
PROPOSED DWELLING OF MS KOCK
ON PLOT 23, CLIVIA STREET, MALUBU

PROJECT NO.:
GR 688-646

DRAWING NO.:
446P2

DATE:
07/04/2024

DRAWN:
SP JOB

CHECKED:
P BOT

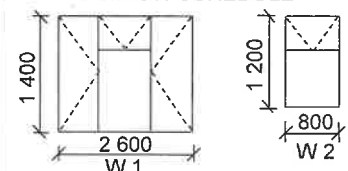
SITE PLAN

SCALE 1 : 500

FLOOR PLAN

SCALE 1 : 100

REFERENCE CODE
QP 4 – 2024

WINDOW SCHEDULE**[40]**

QUESTION 3: CUPBOARDS, CASEMENTS, WALL-PANELLING AND QUANTITIES (SPECIFIC)

Start this question on a NEW page.

- 3.1 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 (3.1.1 to 3.1.5) in the ANSWER BOOK, e.g. 3.1.6 oil.

hatch; kick plate; front rail; soft board; hinges; quadrant;
handle; screws; hardboard; glue; Rawl bolts; rail

- | | | |
|-------|--|-----|
| 3.1.1 | The item used to finish off a freestanding cupboard at the bottom | (1) |
| 3.1.2 | A material used for the bottom of a drawer | (1) |
| 3.1.3 | An item that is used to attach the doors to a cupboard | (1) |
| 3.1.4 | This item is used to join the members of a cupboard | (1) |
| 3.1.5 | The member at the top of the cupboard to which the cornice is attached | (1) |

3.2 FIGURE 3.2 below shows the front view of a freestanding cupboard with a side table without doors.

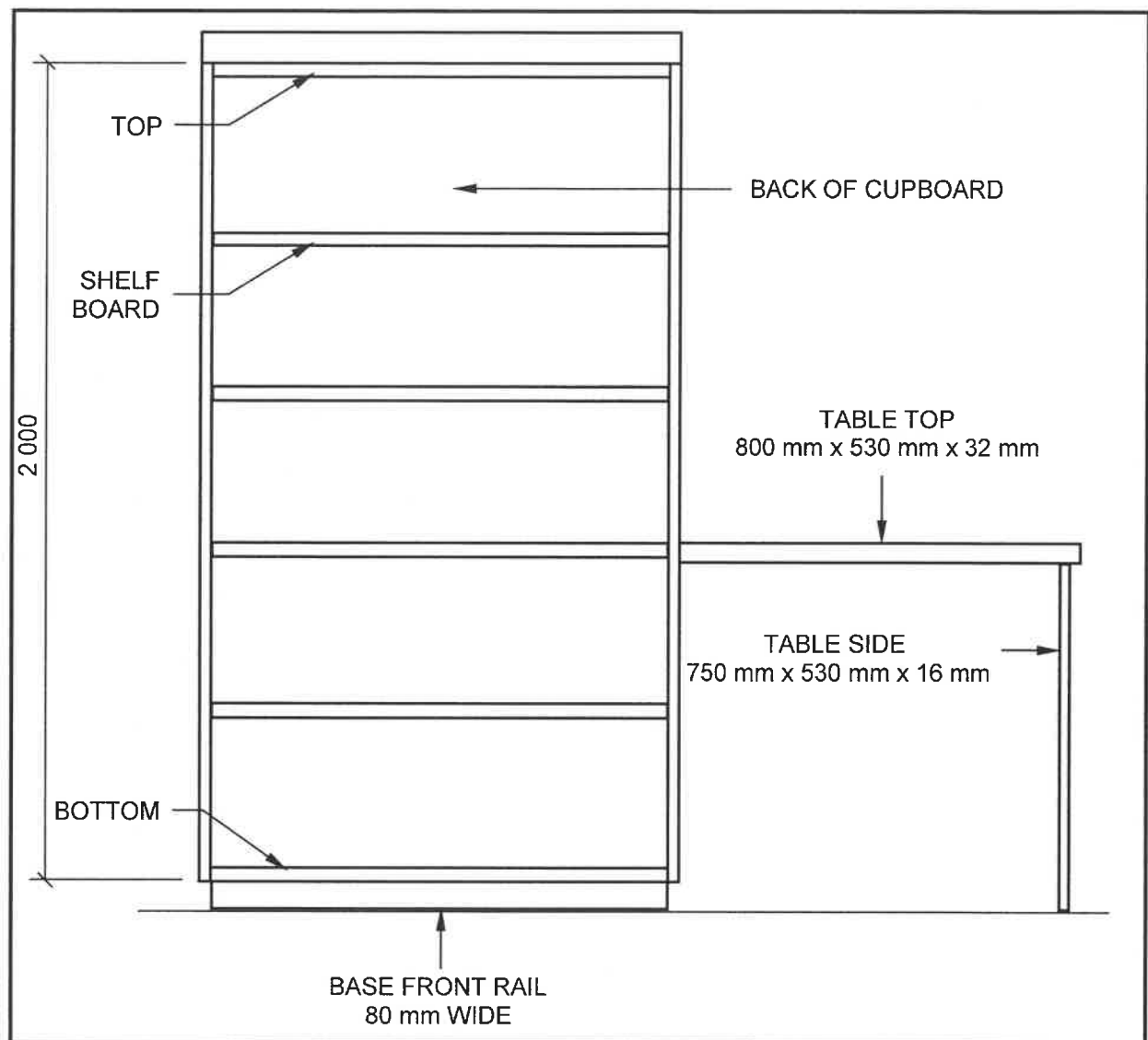


FIGURE 3.2

Use ANSWER SHEET 3.2 and complete the cutting list for the material needed for the cupboard and side table.

Use the following specifications:

- 16 mm melamine board is used for the construction of the cupboard with the side table.
- The back of the cupboard fits inside the frame and is made of 16 mm melamine board.
- The width of the cupboard is 900 mm and the width of the table is 530 mm.

(8)

- 3.3 FIGURE 3.3 below shows an INCORRECT vertical sectional view through a part of a casement with a fanlight.

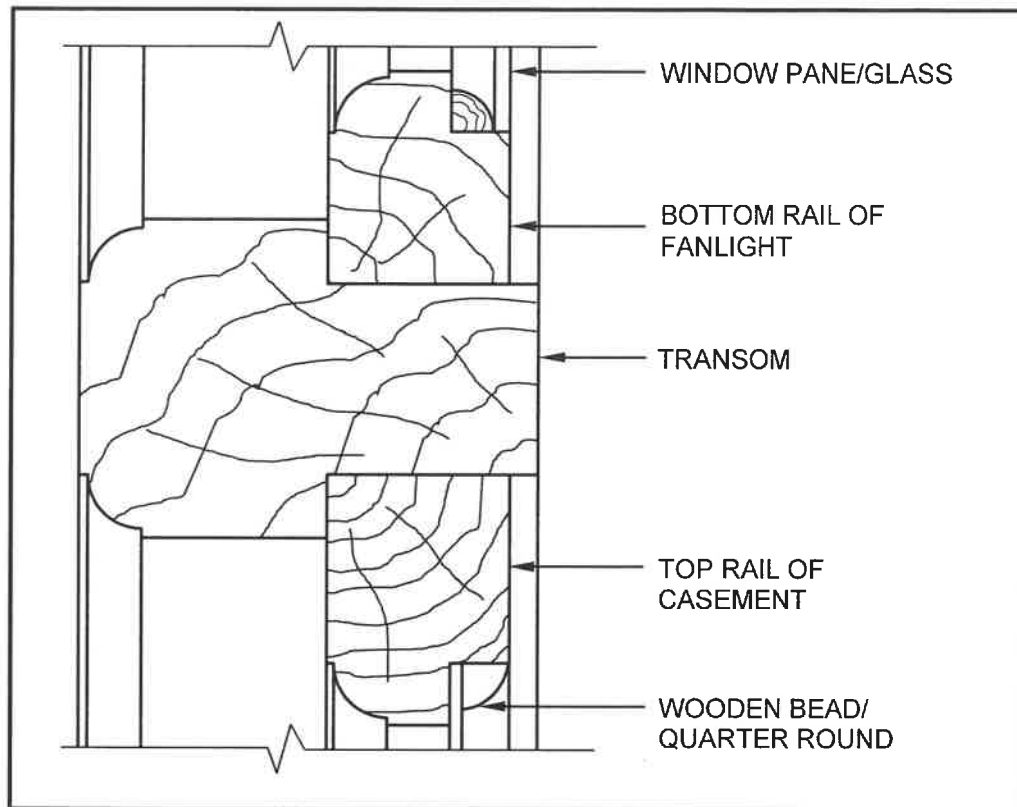


FIGURE 3.3

- 3.3.1 Make a neat freehand sketch of the CORRECT sectional view of the transom in your ANSWER BOOK. Draw only the part of the transom that is INCORRECT. (4)
- 3.3.2 Determine ONE mistake, other than on the transom, in this casement with a fanlight. (1)
- 3.4 Wall panelling must be installed against an existing wall. Use the list below and rearrange **A** to **D** in the CORRECT order/sequence to install the wall panelling to the wall. (4)
- A** Quadrant mould
 - B** Rough grounds
 - C** Skirting
 - D** Tongue and groove boards

- 3.5 ANSWER SHEET 3.5 shows the front view of a freestanding TV cupboard, with shelves and without a door.

Project the detail of the freestanding cupboard and complete a sectional view on cutting plane **A-A**. The depth of the freestanding cupboard is indicated.

Use the following specifications:

- 16 mm melamine board is used for the construction of the cupboard.
- The back of the cupboard fits inside the frame and is made of 16 mm melamine board.
- The top front rail and the base front rail are flush with the front of the cupboard.

(8)
[30]

QUESTION 4: ROOFS, CEILINGS, TOOLS, EQUIPMENT AND MATERIALS (SPECIFIC)

Start this question on a NEW page.

- 4.1 Choose a description from COLUMN B that matches the item in COLUMN A. Write only the letter (A–J) next to the question numbers (4.1.1 to 4.1.6) in the ANSWER BOOK, e.g. 4.1.7 K.

COLUMN A		COLUMN B	
4.1.1	Table saw	A	always check the tension of the blade before the machine is switched on
4.1.2	Spindle moulder	B	position the work piece so that the machine blade does not come into contact with anything underneath it
4.1.3	Drill press	C	do not apply pressure, the weight of the machine is enough
4.1.4	Belt sander	D	always ensure that the chuck key stays in the chuck
4.1.5	Jig saw	E	ensure that the cutters are turning freely before the machine is switched on
4.1.6	Router	F	use a mitre gauge at all times when doing crosscutting
		G	always check that the tension of the blade is correct
		H	ensure that the cutting tools rest on the tool rest
		I	apply soap or wax to allow the sole to glide easily across the work piece
		J	lock the table height according to the specific type of work

(6 x 1) (6)

- 4.2 Selecting and preserving material for woodworking is essential to ensure high quality work.
- 4.2.1 Describe the type of finish that lacquer provides to woodworking projects. (2)
- 4.2.2 What does the letter next to the SABS symbol on the head of the timber indicate for commercial use? (1)
- 4.2.3 When applying sanding sealer, how much drying time must be allowed between consecutive coats? (1)
- 4.2.4 Name TWO different thicknesses of timber when selecting wood for roof trusses. (2)
- 4.3 FIGURE 4.3 below shows the INCORRECT constructional detail of a part of a conventional trap door construction.

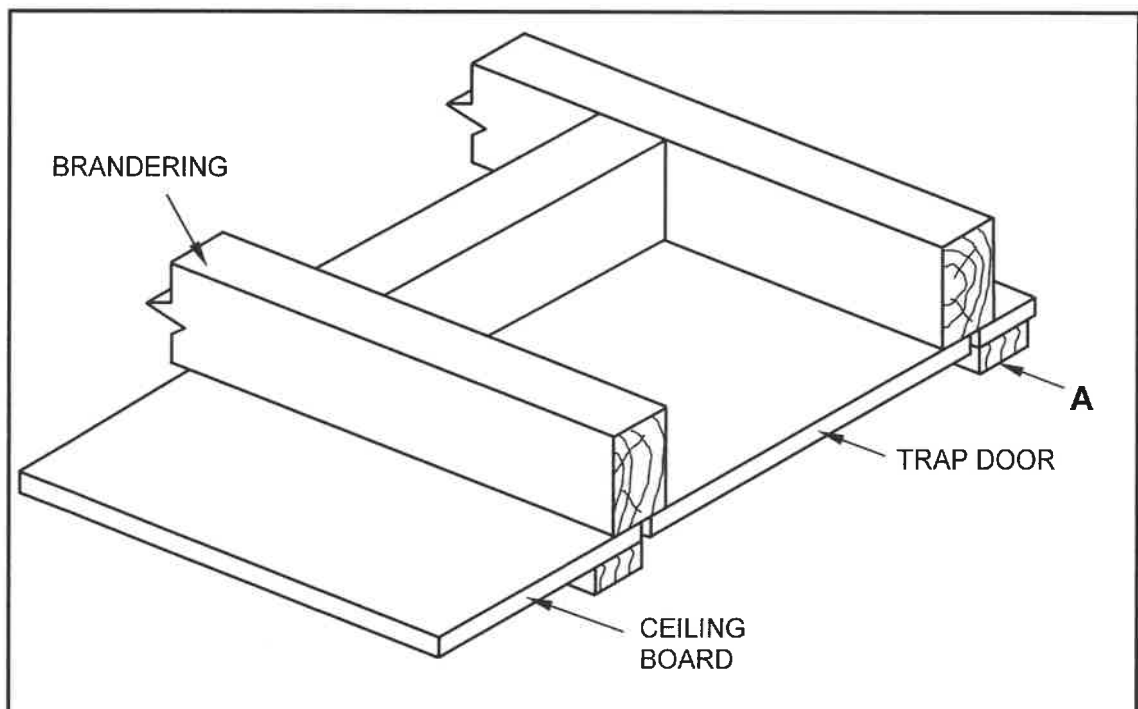


FIGURE 4.3

- 4.3.1 Identify A. (1)
- 4.3.2 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)

- 4.4 Identify, in EACH drawing in FIGURE 4.4 below, the joining fixtures that were used to join the members.

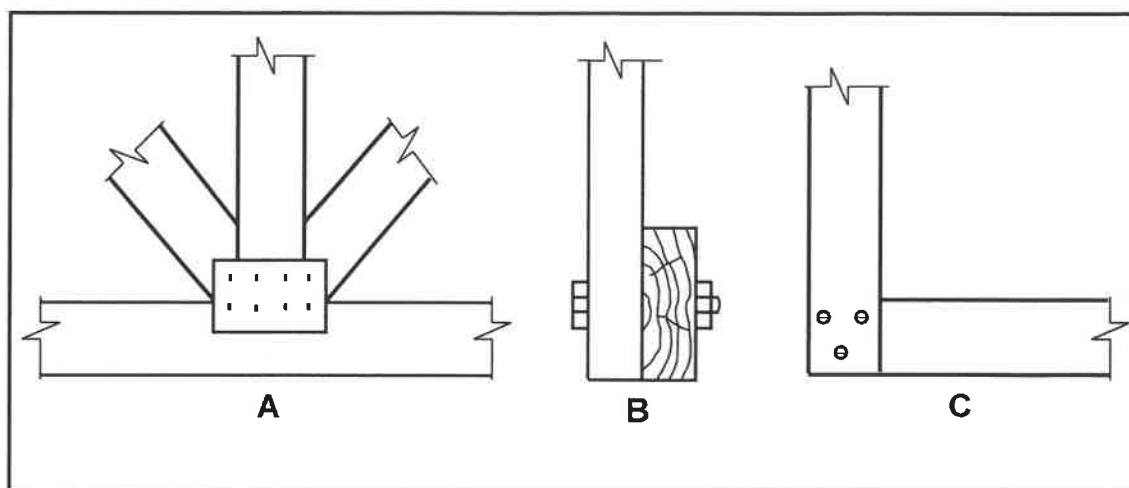
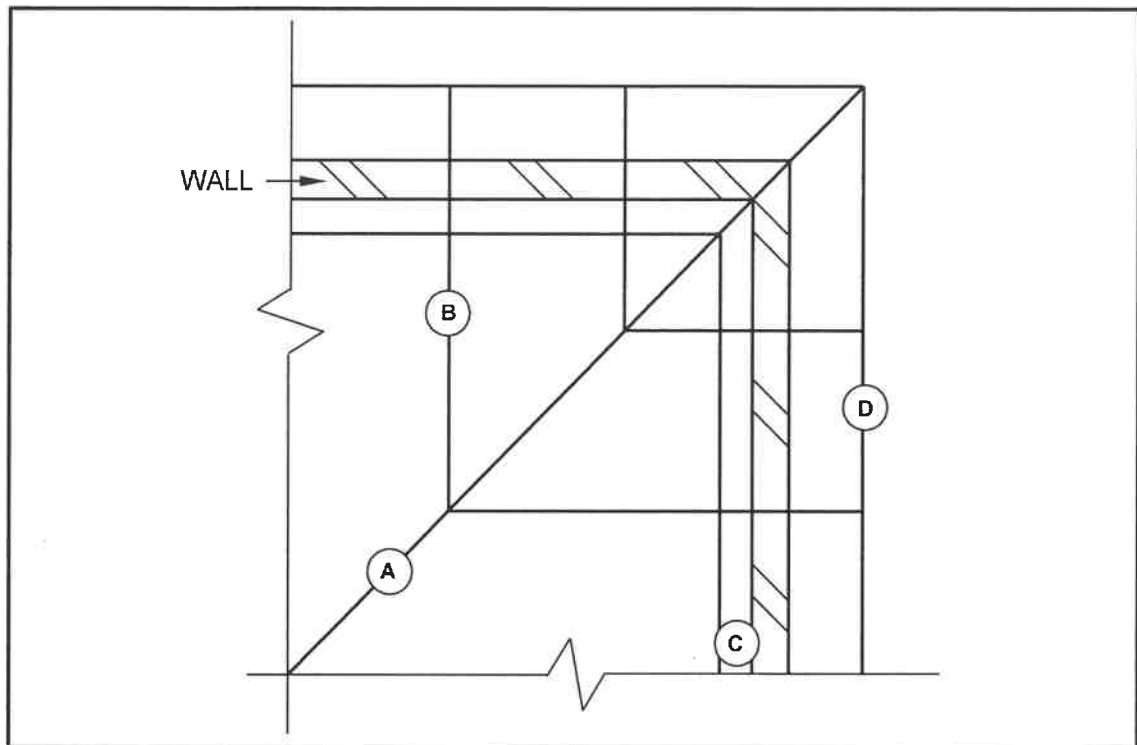


FIGURE 4.4

- (3)
- 4.5 Except for a SA Howe truss, name THREE other types of roof trusses that are commonly used. (3)
- 4.6 State the maximum spacing between purlins/battens for the following roof coverings:
- 4.6.1 Corrugated iron sheeting (1)
- 4.6.2 Fibre-cement tiles (1)
- 4.6.3 Metal roof tiles (1)
- 4.7 Give THREE reasons why you would rather use a *closed eave* than an *open eave*. (3)

- 4.8 The sketch in FIGURE 4.8 below shows a line diagram of the layout of the roof members of a hipped roof on the corner of a building. Identify parts **A** to **D**.

**FIGURE 4.8**

(4)

- 4.9 Name ALL the timber parts that are used in the construction of a collar-tie roof truss.

(3)
[40]

QUESTION 5: CENTERING, FORMWORK, SHORING AND GRAPHICS AS MEANS OF COMMUNICATION (SPECIFIC)

Start this question on a NEW page.

- 5.1 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 your ANSWER BOOK. (12)

- 5.2 ANSWER SHEET 5.2 shows the side view of one pair of ribs with ties on both sides of the ribs for a segmental arch.

Complete the drawing to show the constructional detail of the supporting members below the ribs and ties of the centre as seen from the side.

Print any ONE label. (6)

- 5.3 ANSWER SHEET 5.3 shows a sectional view of part of a multistorey building where a new opening was cut into an existing wall.

Complete the drawing by using a line diagram to draw the following members to support the wall:

- Dead shores
- Needle
- Braces

(5)

- 5.4 ANSWER SHEET 5.4 shows the incomplete view of the formwork for a landing.

Complete the drawing by adding the omitted members of the formwork for the landing.

Print any ONE label NOT given.

(7)
[30]

QUESTION 6: SUSPENDED FLOORS, STAIRCASES, IRONMONGERY, DOORS AND JOINING (SPECIFIC)

Start this question on a NEW page.

6.1 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 (6.1.1 to 6.1.5) in the ANSWER BOOK, e.g. 6.1.6 D.

- 6.1.1 Locks and latches are generally used to lock ...
A doors.
B cupboards.
C drawers.
D All the above-mentioned (1)
- 6.1.2 Mortise locks are mortised into the ... of a door.
A stile
B rail
C panel
D None of the above-mentioned (1)
- 6.1.3 Rim locks are not very secure and are therefore used as ... locks.
A permanent
B stable
C temporary
D rebated (1)
- 6.1.4 The ... keeps a mortise lock locked.
A latch
B bolt
C spindle hole
D face plate (1)
- 6.1.5 Straight cupboard locks are available for ... doors.
A only left-handed
B only right-handed
C left- and right-handed
D None of the above-mentioned (1)
- 6.2 Describe the methods to join the following components:
- 6.2.1 Door to a frame (2)
- 6.2.2 Roof trusses to a wall plate (2)

- 6.3 In your ANSWER BOOK, use line diagrams to differentiate between the top views of *staggered struts* and *in-line struts* used for suspended timber floors. (6)
- 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)
- DO NOT show hidden detail.
- 6.5 FIGURE 6.5 shows the front view of a four-panel door with a low lock rail, diminishing stiles and raised panels. Section line A–A is also indicated on the drawing.

Sketch in your ANSWER BOOK, in good proportion, the horizontal sectional view as seen from A–A.

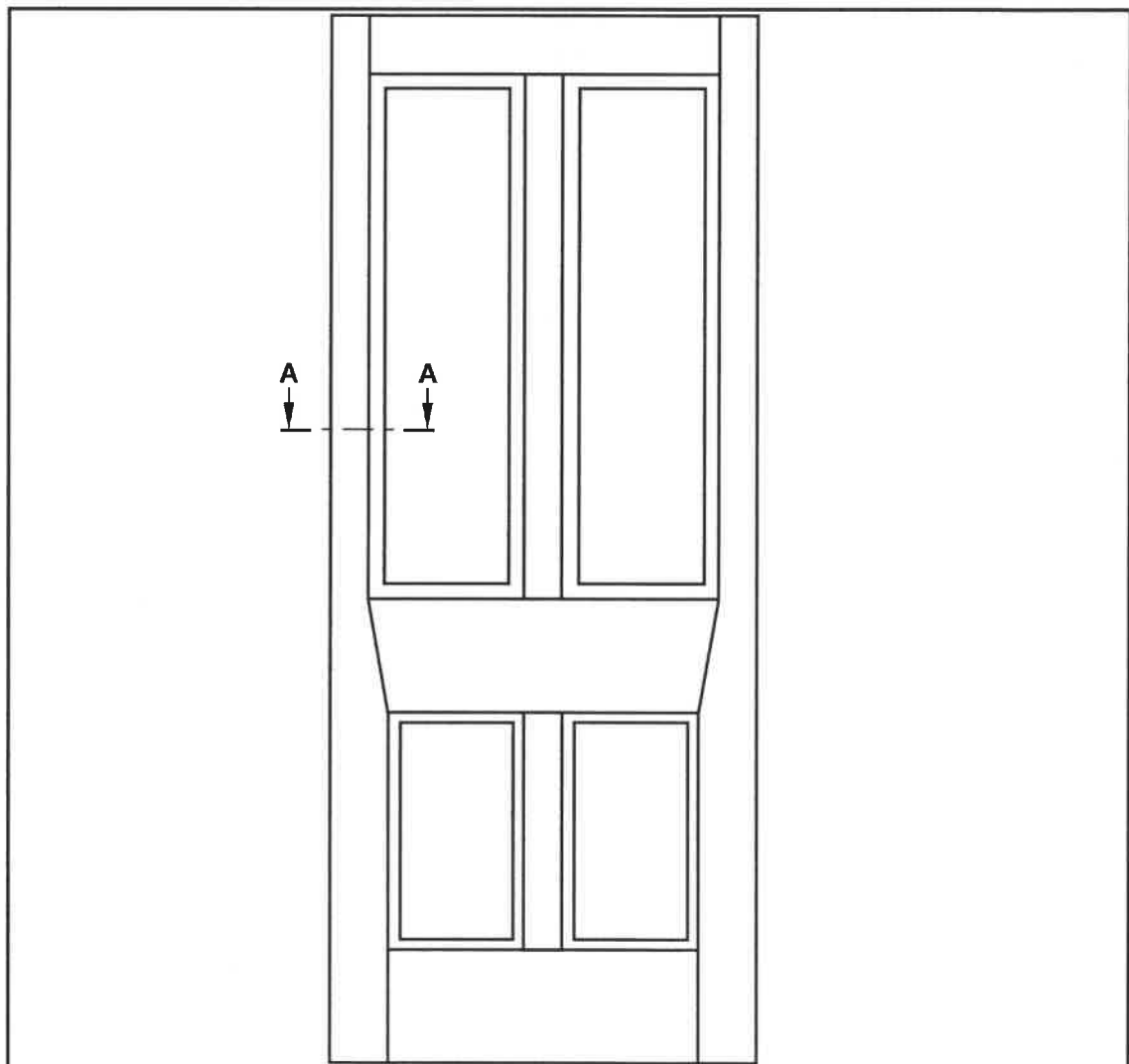


FIGURE 6.5

(8)

- 6.6 Study FIGURE 6.6 below. Match the word(s) in the list below with the labels in FIGURE 6.6. Write only the correct word(s) next to the label (A–I) in the ANSWER BOOK.

riser; bearer; outer stringer; cleat; half-landing; tread;
shutter board; handrail; nosing of tread; cross bearer;
baluster; newel post; horizontal brace; wall stringer; step

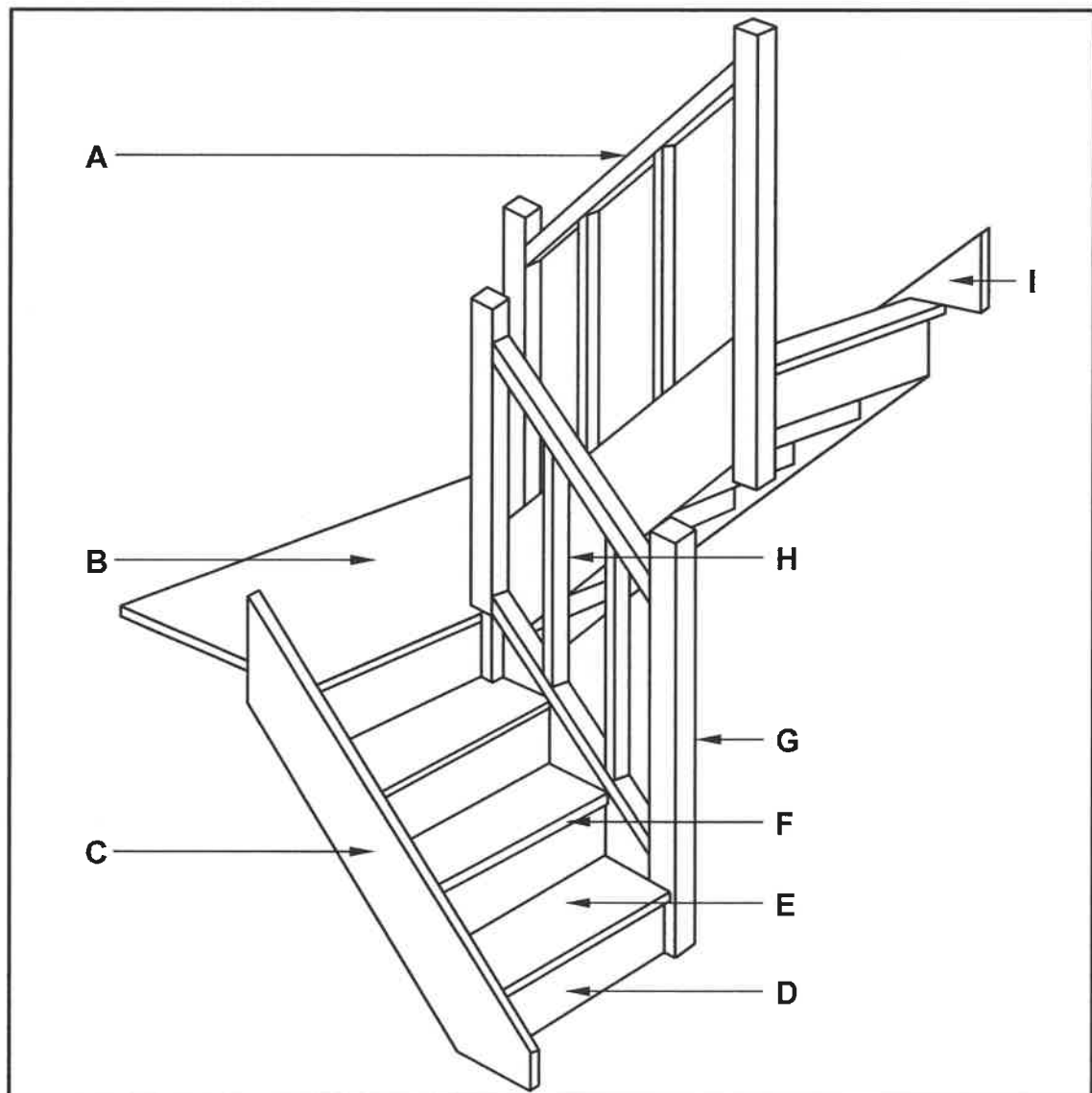


FIGURE 6.6

(9)
[40]

TOTAL: 200

CENTRE NUMBER:

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EXAMINATION NUMBER:

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ANSWER SHEET 2

NO.	QUESTIONS	ANSWERS	MARKS
1.	What is the measurement of the dwelling facing Hibiscus Street?		1
2.	Identify number 1.		1
3.	Identify the number indicating the building line.		1
4.	Identify number 2.		1
5.	Identify number 3.		1
6.	Write down the abbreviation for number 5.		1
7.	Explain the purpose of number 6.		1
8.	How many fluorescent tubes are used in number 7?		1
9.	How many one-way switch single-pole switches are in the dwelling?		1
10.	How many built-in cupboards are in the dwelling?		1
11.	What is omitted in terms of electrical installation in the bedrooms?		1
12.	Name TWO access points into the dwelling.		2
13.	How do you know in which direction the door at number 8 will open?		1
14.	Name ONE other fixture that can be installed in the bathroom indicated by number 9.		1
15.	Identify number 10.		1

CENTRE NUMBER:

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EXAMINATION NUMBER:

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16.	Which plot is on the eastern side of plot number 23?		1
17.	How many inside doors are in the building?		1
18.	How many 2 600 mm x 1 400 mm windows are in the building?		1
19.	Who checked the drawing of the new dwelling?		1
20.	Why will it be difficult to enter the dwelling at number 8 if the NGL is 300 mm lower than the FFL?		1
21.	Who was responsible for the printing of the building plan?		1
22.	Deduce from the notes column the date that revision 1 took place.		1
23.	In which town will the new dwelling be erected?		1
24.	Draw the symbol for a sink unit – double.		5
25.	Draw the symbol for hardcore filling.		2
26.	Calculate the metres of clear-view fencing that would be needed to fence plot number 23, excluding the driveway. Give your answer in metres and show ALL calculations.		6
27.	The internal area of the garage is 39,6 m ² . Calculate the internal length of number 11. Give your answer in mm and show ALL calculations.		3
		TOTAL:	40

CENTRE NUMBER:

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EXAMINATION NUMBER:

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ANSWER SHEET 3.2

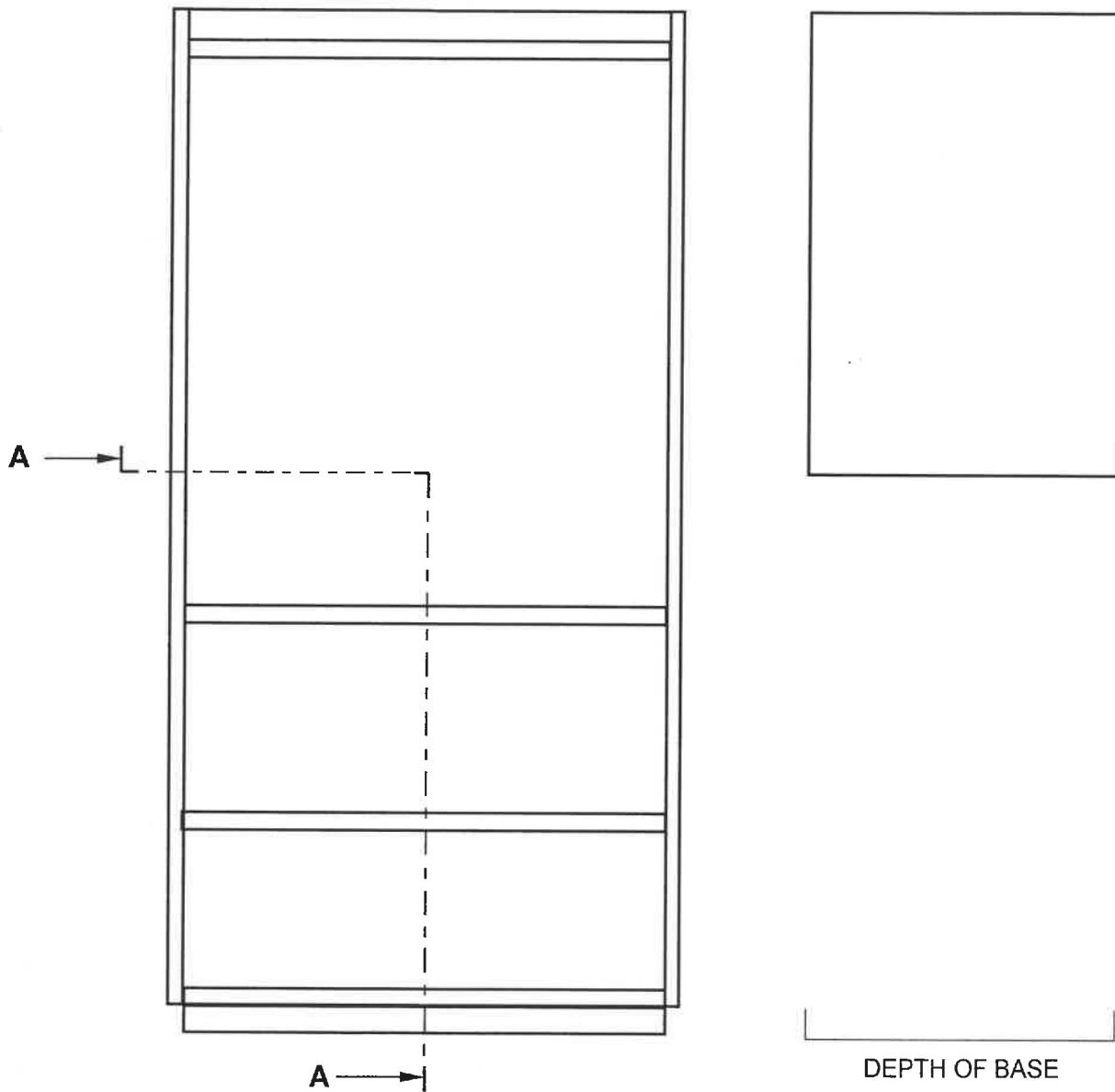
MEMBER	QUANTITY	UNIT	LENGTH	WIDTH	THICKNESS
Top	1	mm	...	530	16
Front rail of base	1	mm	868	...	16
Shelf board	...	mm	868	514	16
Table top	1	mm	...	530	...
Side of table	1	mm	...	530	16
Back of cupboard	1	mm	16

(8 x 1)

CENTRE NUMBER:

EXAMINATION NUMBER:

ANSWER SHEET 3.5



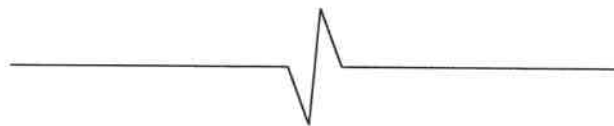
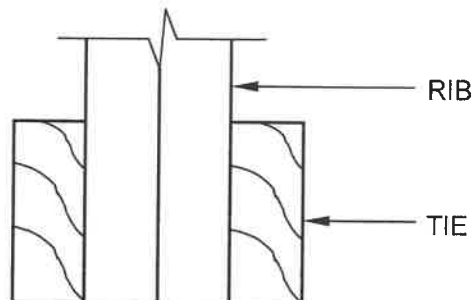
ASSESSMENT CRITERIA		
NO.	MARK	CANDIDATE'S MARK
1	2	
2	1	
3	1	
4	1	
5	1	
6	2	
TOTAL:	8	

CENTRE NUMBER:

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EXAMINATION NUMBER:

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ANSWER SHEET 5.2

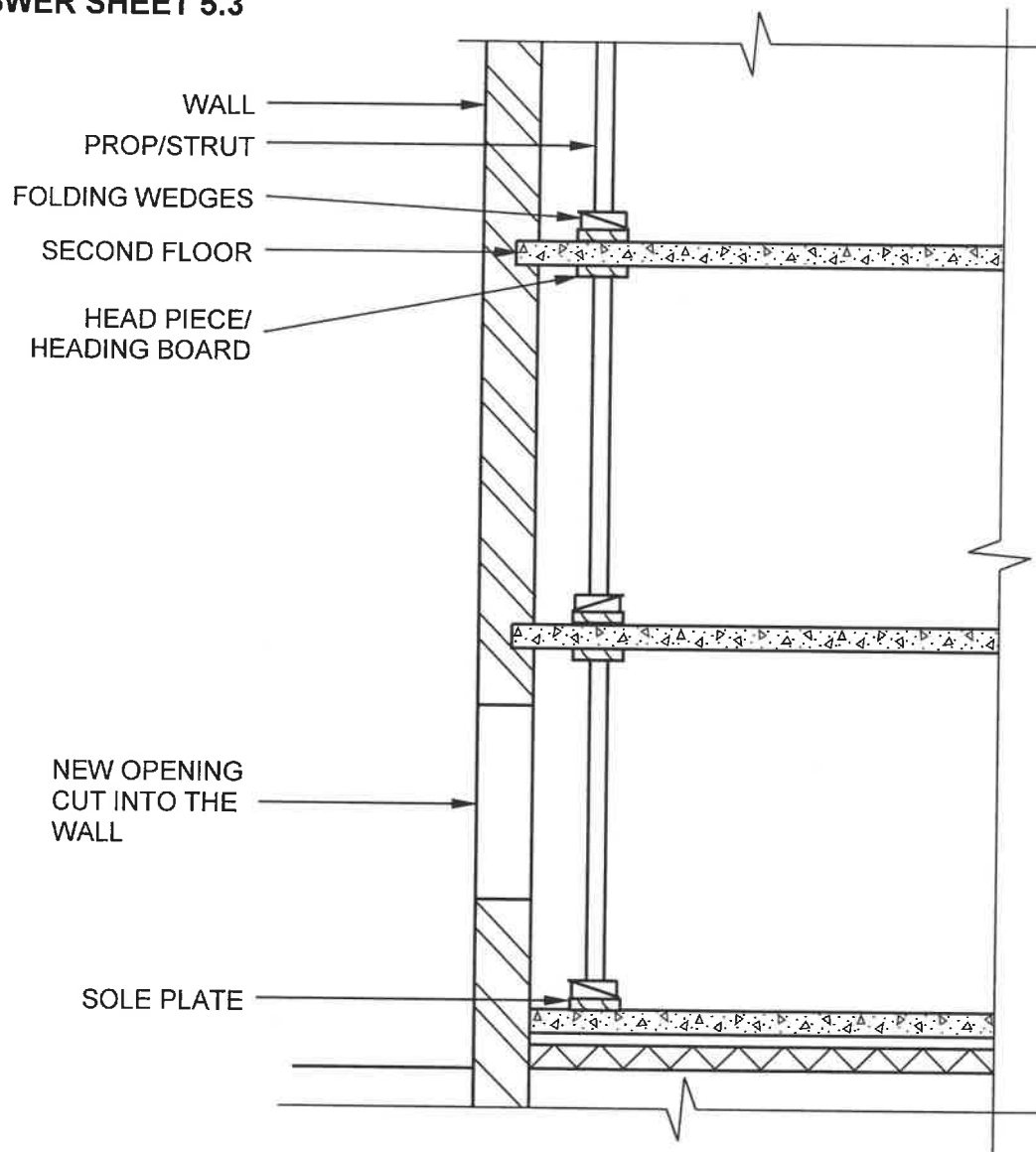
ASSESSMENT CRITERIA		
NO.	MARK	CANDIDATE'S MARK
1	2	
2	2	
3	1	
4	1	
TOTAL:	6	

CENTRE NUMBER:

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EXAMINATION NUMBER:

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ANSWER SHEET 5.3

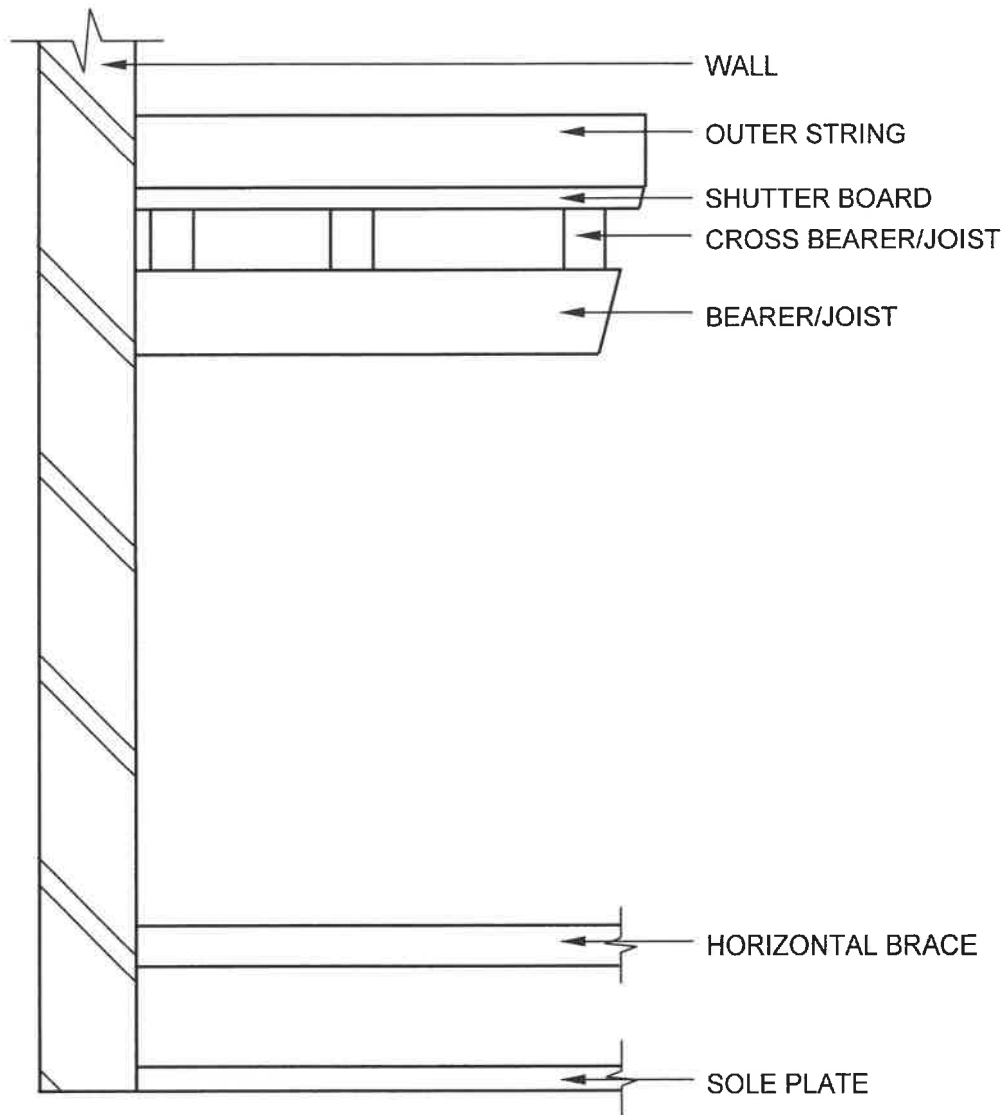
ASSESSMENT CRITERIA		
NO.	MARK	CANDIDATE'S MARK
1	1	
2	2	
3	2	
TOTAL:	5	

CENTRE NUMBER:

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EXAMINATION NUMBER:

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ANSWER SHEET 5.4

ASSESSMENT CRITERIA		
NO.	MARK	CANDIDATE'S MARK
1	2	
2	2	
3	1	
4	2	
TOTAL:	7	