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# **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2022**

## **CIVIL TECHNOLOGY: WOODWORKING MARKING GUIDELINE**

**MARK: 200**

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This marking guideline consists of 17 pages, including 9 answer sheets.

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## INSTRUCTIONS FOR THE MARKERS

### 1. Markers should:

- Familiarise themselves with the question and answer before evaluating the responses of candidates.
- Always interpret the responses of the candidates within the context of the question.
- Consider any relevant and acceptable answer during pre-marking but should strictly adhere to the answers after finalisation of the marking guideline.
- There are two approaches to answering questions, these are (1) to describe and (2) to explain.
- If a candidate is required to explain e.g., a process in 4 steps, only the first 4 responses should be considered.
- If, however a candidate is required to e.g., explain or describe how to transfer heights from one point to another using a transparent pipe level we need to consider that candidates may write a long description not necessarily well organised as an intellectual response may do. In this case the marker needs to evaluate the complete statement to judge if the candidate explained the required outcome satisfactorily and allocate marks on merit. The marker should apply his/her professional judgement with these types of questions.
- Mark what the candidate wrote and do not award marks for answers that the marker thinks the candidate meant with what was written.
- Indicate the tick or cross right at the position where the mark needs to be awarded or where the candidate made the error.
- Accept the letter corresponding with the correct answer as well as the answer written in full in multiple-choice questions.
- Accept incorrect spelling in one-word answers unless the spelling changes the meaning of the answer.

### 2. For calculations:

- A mark is only awarded if the correct unit is written next to the answer.
- If TWO marks are awarded ONE mark is awarded for the answer and ONE mark for the correct unit.
- Where the candidate made a principle error e.g. added instead of multiplying, no marks will be awarded for the steps. If the answer is correct according to what the candidate did, the mark for the answer can be awarded for the application of skills.
- Where an incorrect answer could be carried over to the next step, the first answer will be deemed incorrect. However, should the incorrect answer be carried over correctly, the marker has to recalculate the values, using the incorrect answer from the first calculation. If correctly used, the candidate should receive the full marks for subsequent calculations.
- Markers should consider when and where a candidate has rounded off in a calculation, as well as the subsequent effect it has on the final answer obtained. The calculation should therefore be awarded marks on merit.
- Alternative methods of calculations must be considered, provided that the correct answer is obtained.

**3. When marking drawings:**

- The member for which the mark should be awarded should be drawn correctly in the correct position to receive a mark.
- A member incorrectly drawn but wrongfully repeated in another position will be awarded the mark for the repeated incorrect member provided that the marking guideline provide for TWO or more marks for that member (positive marking).
- Marks can only be awarded for a label if the label is correctly indicating the correct member.
- Scale drawings should always be marked using an appropriate mask.

**When a candidate drew the wrong drawing e.g.:**

- A horizontal section instead of a vertical section, no marks will be allocated to the drawing as the candidate did not respond to the expected outcome.
- An orthographic view instead of sectional view, no marks will be allocated to the drawing as the candidate did not respond to the expected outcome.
- An orthographic view instead of an isometric view, no marks will be allocated to the drawing as the candidate did not respond to the expected outcome.
- If the incorrect drawing was drawn, the candidate can be awarded for only what was asked but mark/s for the correctness of the drawing will not be awarded e.g., if a King Post roof truss was asked in the question, and candidate drew SA-Howe Truss.

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

- 1.1 It is an unplanned/uncontrolled (1) event that occurs because of an unsafe act/unsafe conditions. (1) (2)
- 1.2 Steel alloy pipe (1)
- 1.3 1.3.1 Two (1)
- 1.3.2 38 mm (1)
- 1.3.3 900 mm (1)
- 1.4 Any TWO:
- To ensure that the scaffolding is stable in all directions
  - Must be able to carry the mass of the load
  - Free of any defects
  - Similar answer (Any 2 x 1) (2)
- 1.5 1,8 meters (1)
- 1.6 3 meters (1)
- 1.7 1.7.1 Any ONE:
- Higher person can slip and fall on the lower person
  - Can damage the ladder
  - Makes it more unstable
  - Similar answer (Any 1 x 1) (1)
- 1.7.2 Red or orange flag (1)
- 1.7.3 Any ONE:
- Aluminium
  - Wood
  - Metal
  - Similar answer (Any 1 x 1) (1)
- 1.7.4 Any ONE:
- Defects must be visible (clean)
  - Will prevent slipping accidents (oil / grease)
  - Similar answer (Any 1 x 1) (1)
- 1.8 Any TWO:
- Can be applied with a brush, roller or spray-gun
  - Enhances appearance of surfaces
  - Easy to apply
  - Makes cleaning and maintenance easier
  - Dry quickly
  - Marks/smudges are easily cleaned with water
  - Gives elastic/flexible finish resistant to cracking (Any 2 x 1) (2)



- 1.9 Any TWO:
- Increases the strength of concrete
  - Decreases the permeability of concrete
  - Improves the durability of concrete
  - Reduces cracks
  - Makes concrete more watertight
  - Reduce crimping cracks in the concrete
  - Provides volume stability
  - Concrete can carry more weight without being damaged (Any 2 x 1) (2)
- 1.10 Any TWO:
- Painting
  - Electroplating
  - Powder coating
  - Galvanising (Any 2 x 1) (2)

**[20]****QUESTION 2: GRAPHICS, JOINING AND EQUIPMENT (GENERIC)**

- 2.1 FIGURE 2.1 on ANSWER SHEET A shows the outer lines of a structure that must be built on a site. Draw the site plan on scale 1 : 200 on ANSWER SHEET A so that the structure is in the middle of the site.

The site plan must comply with the following requirements:

- 2.1.1 Plot size is 30 m wide from east to west and 40 m long from south to north (2)
- 2.1.2 Pavement of 2 m and the street of 6 m on the south side (3)
- 2.1.3 Building boundaries are 2 m on the east, north and west sides and 4 m on the south side (4)
- 2.1.4 3 m wide entrance to the site (2)
- 2.1.5 Datum level in the north-west corner of the site (2)

Also draw in the sewer lay-out on the structure and show the following:

- 2.1.6 Water closet and symbol at the abbreviation (1)
- 2.1.7 Sewer pipes (2)
- 2.1.8 Rodding eye with the abbreviation (2)
- 2.1.9 Inspection eye with the abbreviation (2)
- 2.1.10 Manhole with the abbreviation (2)

Indicate the following measurements:

- 2.1.11 Length and width of the site (4)
- 2.1.12 South and west building boundaries (2)

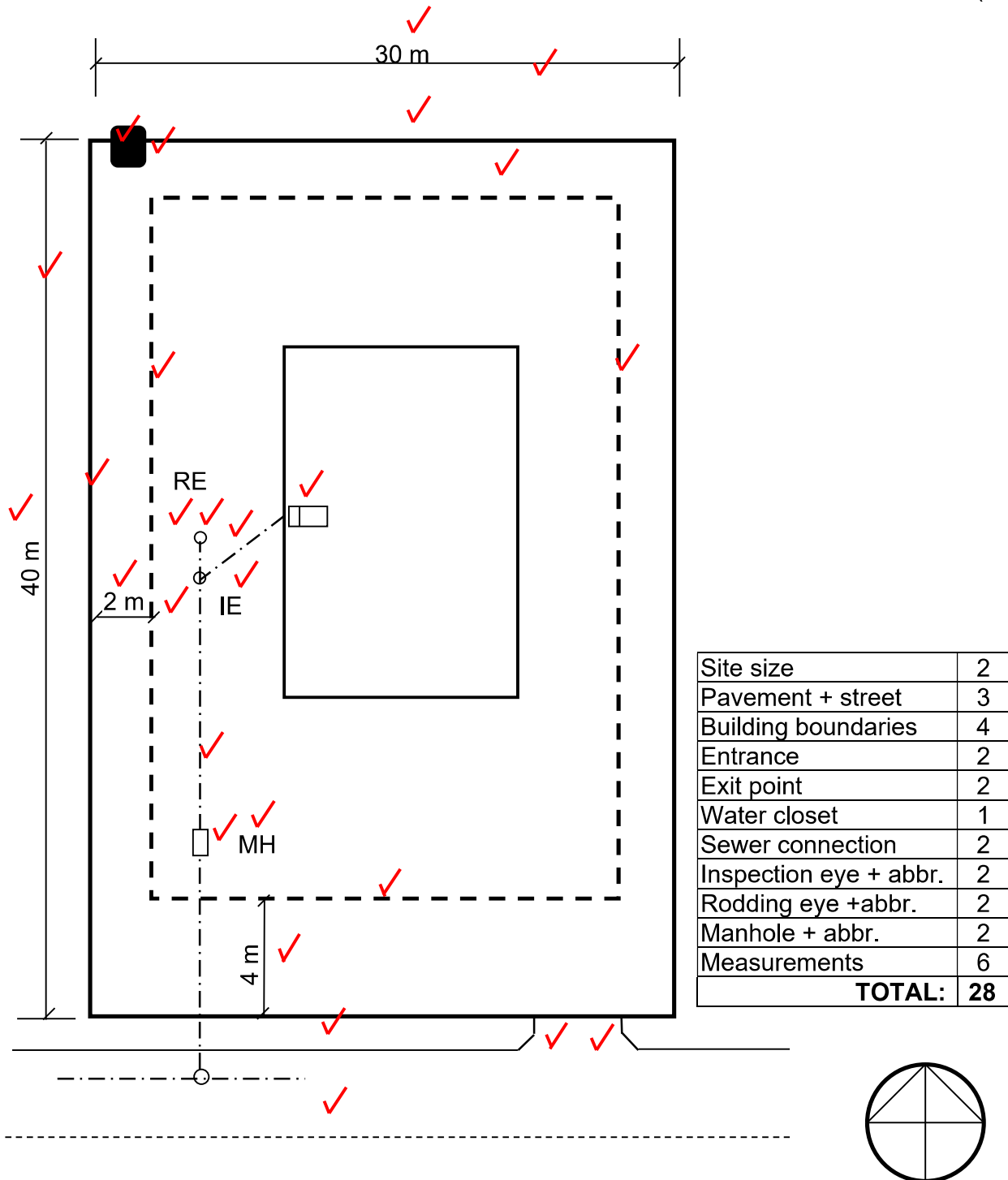
Use the points table on ANSWER SHEET A as reference.

- 2.2 When square shoulder is driven in it resists rotation. (1)
- 2.3 A – Nut (1)  
B – Thread (1)  
C – Run-out (1)  
D – Shank (1) (4 x 1) (4)
- 2.4 Prevents backing off. (1)
- 2.5 Can be tightened with fingers. (1)
- 2.6 2.6.1 1,61 m (1)
- 2.6.2 1,64 – 1,584 x 100 = 5,6 m (4)
- [40]**

**TOTAL SECTION A: 60**

<b>ANSWER SHEET A</b>	<b>CIVILCTECHNOLOGY GENERIC</b>	NAME: _____

2.1 FIGURE 2.1 on ANSWER SHEET A shows the outer lines of a structure that must be built on a site. Draw the site plan on scale 1 : 200 on ANSWER SHEET A so that the structure is in the middle of the site. (28)



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

3.1 3.1.1 16 mm ✓ (1)

3.1.2 Skirting ✓ (1)

3.1.3 7,5 m<sup>2</sup> ✓ (1)

3.1.4 Mullion ✓ (1)

3.2 3.2.1

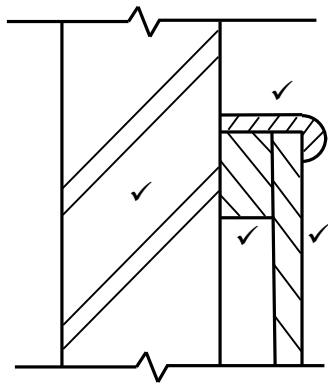
- Transom ✓
- Bottom rail of fanlight ✓
- Top rail of casement ✓

(3)

3.2.2 Drip groove/Throat ✓ (1)

3.3	3.3.1	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	
					<b>Area of roof sheeting needed:</b>	
					Width of the roof = 150 mm + 8 000 mm + 150 mm	
					= 8 300 mm ✓	
		✓			Length of sheet = x Length of rafter + overhang of roof sheeting	
		2/	8,3 ✓		= 2 900 mm + 50 mm = 2 950 mm ✓	
			2,95 ✓	48,97 m <sup>2</sup> ✓		(6)
	3.3.2				<b>Number of ridge plates needed:</b>	
					Length of one ridge capping = 1 800 mm	
					Width of roof covering = 8 300 mm	
					Number of ridge plates = $\frac{\text{Width of roof covering}}{\text{Length of one ridge plate}}$	
					= $\frac{8,3}{1,8}$ ✓	
					= 4,61	
					= 5 ✓ ridge plates of 1,8 m long are needed	(3)

3.4

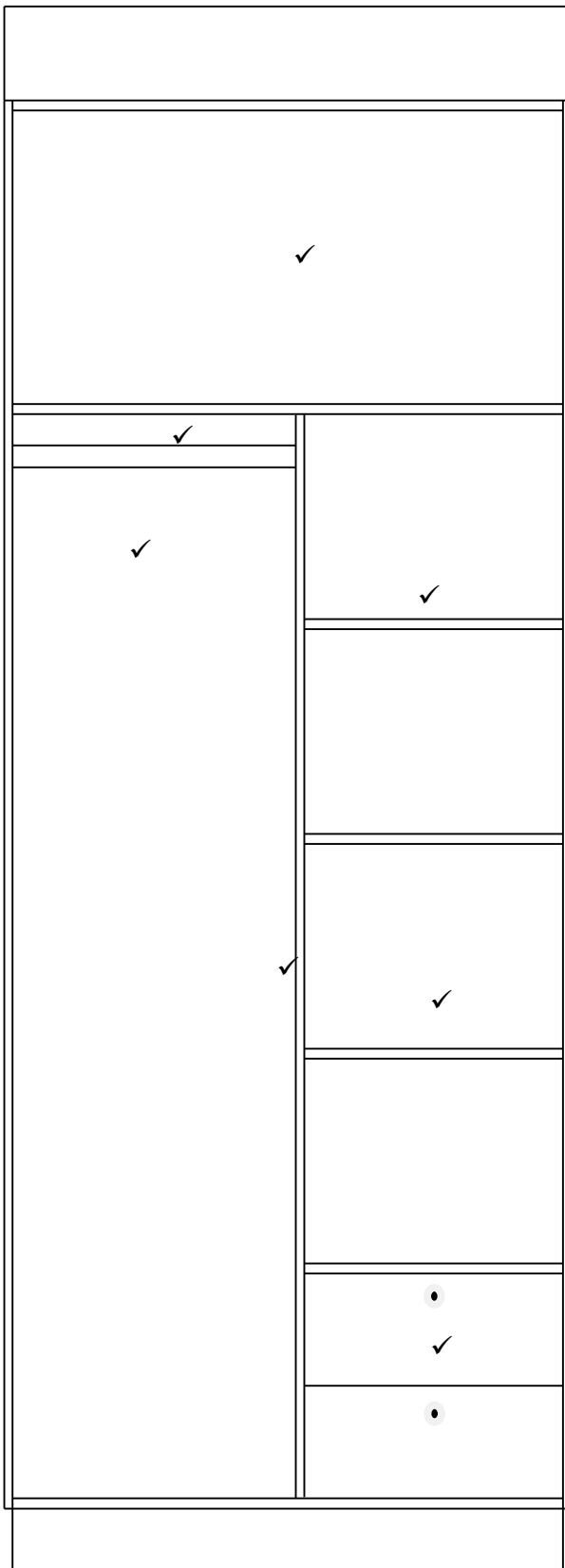


Correctness ✓

ASSESSMENT CRITERIA	MARK
Wall	1
Capping	1
Rough ground	1
Tongue and groove board	1
Correctness of drawing	1
<b>TOTAL:</b>	<b>5</b>

(5)

3.5



ASSESSMENT CRITERIA	MARK
Top shelf (full width)	1
Intermediate side in middle	1
Hanging space on left side	1
Oval hanging rail	1
FOUR shelves	2
TWO drawer units below shelving	1
Correctness of drawing	1
<b>TOTAL:</b>	<b>8</b>

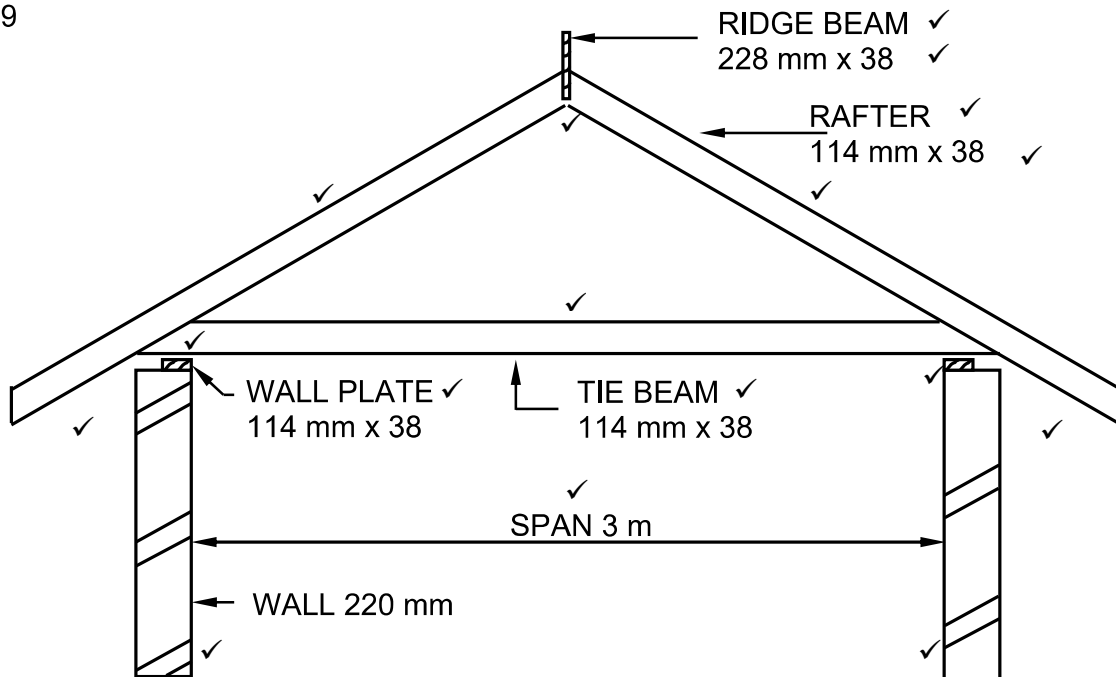
Correctness ✓

(8)  
[30]

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

- 4.1 4.1.1 A – Jigsaw ✓  
B – Lathe ✓ (2)
- 4.1.2
- Clean the jigsaw blade after use and store in a safe place. ✓
  - Use the correct blade only for the intended purposes. ✓
  - Do not force the jigsaw blade to cut through material.
  - Avoid the use of blunt saw blades.
  - Keep the power cord away from the blade.
  - Always plan your cuts carefully – make pre-cuts if necessary to prevent blade from breaking.
  - Use the correct blade for the specific work.
- ANY TWO OF THE ABOVE** (2)
- 4.1.3
- Always ensure that the work piece/stock is fastened tightly. ✓
  - Ensure that the work piece/stock moves freely. ✓
  - Ensure that the tool rest is locked as close as possible to the work-piece/stock.
- ANY TWO OF THE ABOVE** (2)
- 4.2
- Store the belt sander in a place where it cannot be damaged by dirt or dust. ✓
  - Store in a wooden box away from moisture.
- ANY ONE OF THE ABOVE** (1)
- 4.3
- Strength ✓
  - Density ✓
- (2)
- 4.4
- Sand the wood surface with different grades of sandpaper ✓
  - Sand until the surface is smooth and free from scratches. ✓
  - Remove all dust. ✓
- (3)
- 4.5
- A conventional trapdoor consists of a panel that can be pushed up ✓
  - Hinged trapdoor open upwards/downwards by pivoting around the hinges. ✓
- (2)
- 4.6 Timber framework ✓  
Panel ✓  
Cover strip
- ANY TWO OF THE ABOVE** (2)
- 4.7 King post: 114 mm x 38 mm ✓  
Branding: 38 mm x 38 mm/38 mm x 50 mm ✓ (2)
- 4.8 Hurricane clips:
- Securing purlins to rafter (roof truss)
  - Securing trusses to wall plates
  - Ideally used at eaves overhangs
  - Where truss cross each other or where truss members cross each other or meet at 90°
  - To fix opposite faces of roof members. ✓
- Storm clips: Securing roof tiles to the battens. ✓ (2)

4.9



ASSESSMENT CRITERIA	MARK
Walls drawn correctly	2
Wall plates drawn correctly	2
Tie beam drawn correctly	2
Rafters drawn correctly	2
Ridge beam drawn correctly	2
Overhang drawn correctly	2
Labels (any TWO)	2
Span	1
Dimensions of members (any TWO)	2
Application of scale: ONE or TWO incorrect = 3 THREE or FOUR incorrect = 2 More than FIVE incorrect = 1 NO measurement correct = 0	3
<b>TOTAL:</b>	<b>20</b>

Scale ✓✓✓

**DRAWING NOT TO SCALE**  
**A MASK MUST BE USED TO MARK THIS QUESTION**

(20)

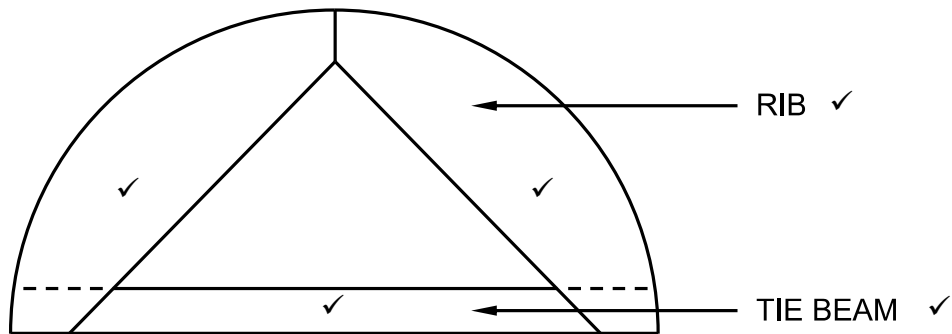
**TOTAL: 40**

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

5.1 5.1.1 Open laggings ✓ (1)

5.1.2 Closed laggings ✓ (1)

5.2



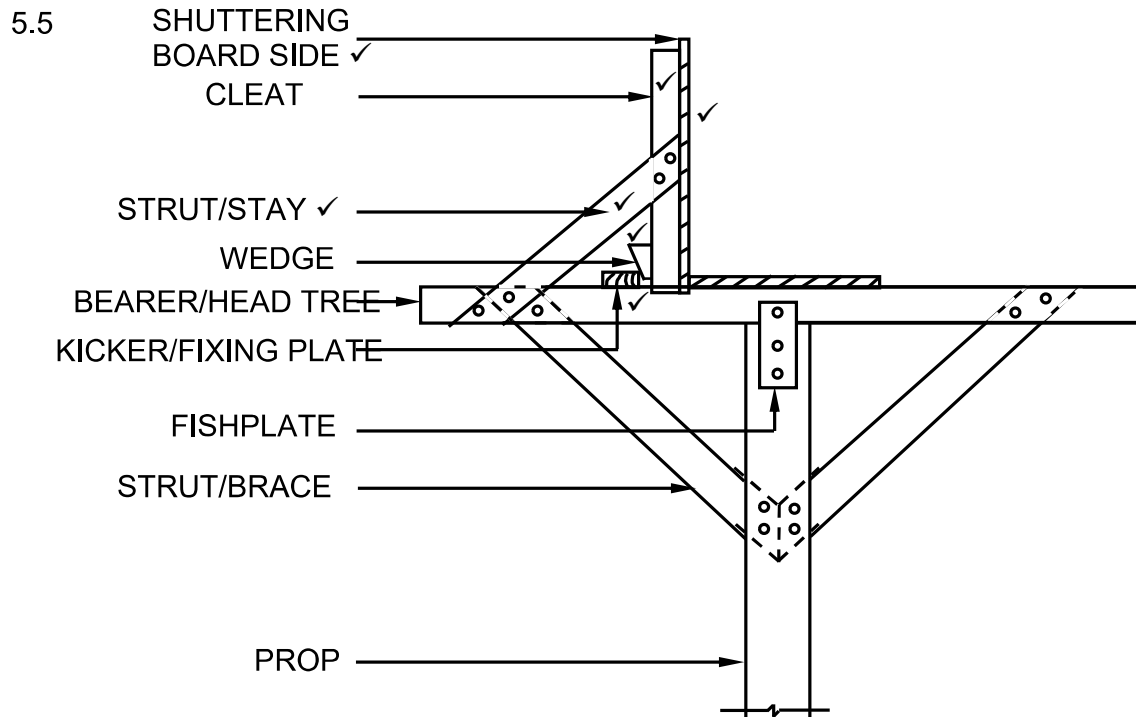
ASSESSMENT CRITERIA	MARK
Tie beam	1
Ribs	2
Two labels	2
Correctness of drawing	1
<b>TOTAL:</b>	<b>6</b>

Correctness ✓

(6)

5.3 Steel ✓ (1)

5.4 Releasing oil ✓ (1)



Correctness ✓

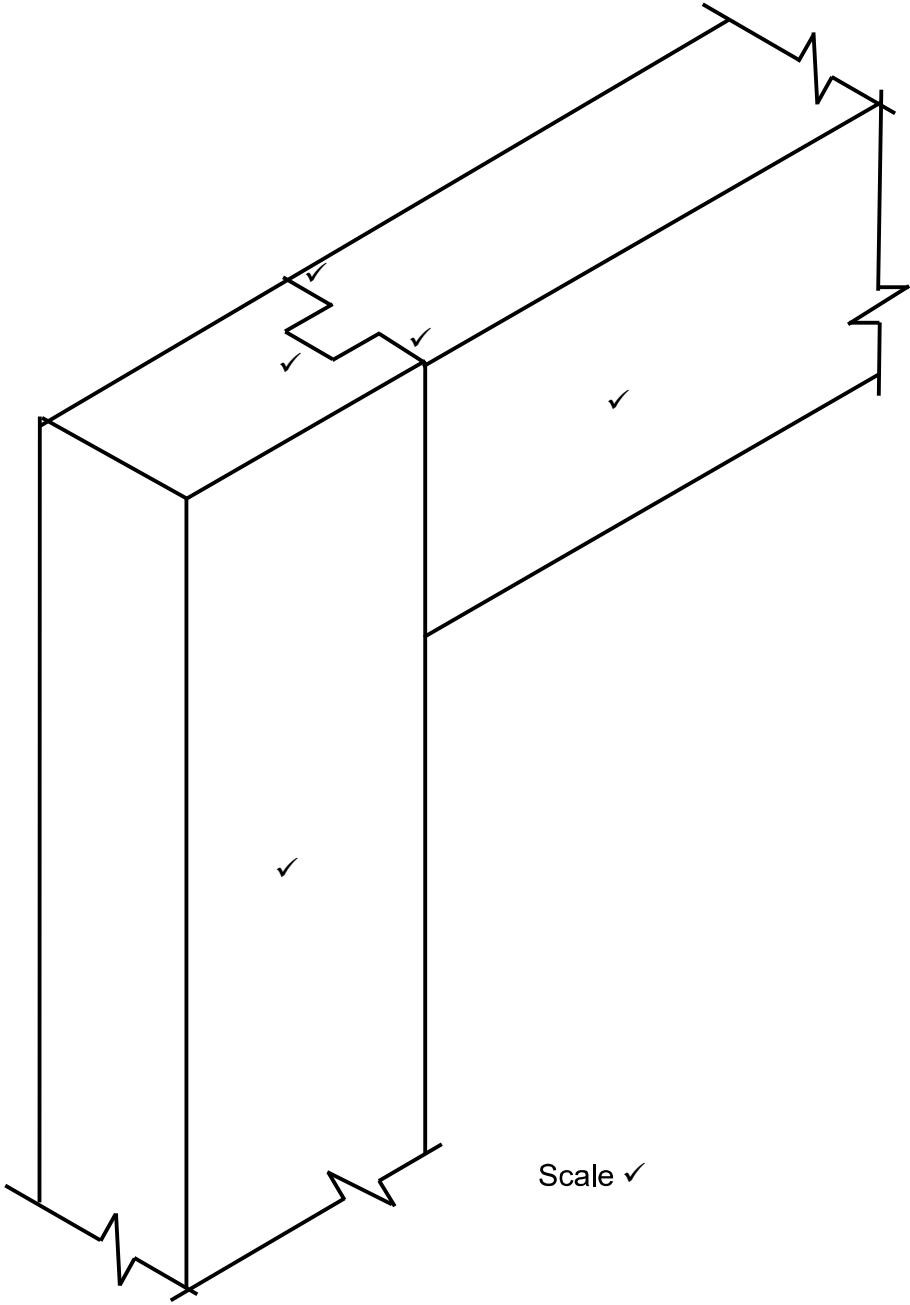
ASSESSMENT CRITERIA	MARK
Shuttering board side	1
Cleat	1
Kicker/Fixing plate	1
Wedge	1
Stay/Strut	1
Any TWO labels	2
Correctness of drawing	1
<b>TOTAL:</b>	<b>8</b>

(8)

- 5.6
- A – Needle ✓
  - B – Straining sill ✓
  - C – Inclining strut/Raking strut ✓
  - D – Horizontal shore ✓
  - E – Folding wedge ✓
  - F – Wall plate ✓

(6 x 1) (6)

5.7



ASSESSMENT CRITERIA	MARK
Stile	1
Top rail	1
Haunch	3
Application of scale	1
<b>TOTAL:</b>	<b>6</b>

(6)

**TOTAL: 30**

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

6.1 6.1.1 D ✓ (1)

6.1.2 D ✓ (1)

6.1.3 A ✓ (1)

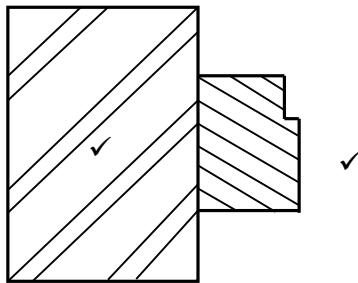
6.1.4 A ✓ (1)

6.1.5 B ✓ (1)

6.2 6.2.1 Double bareface mortise and tenon joint ✓ (1)

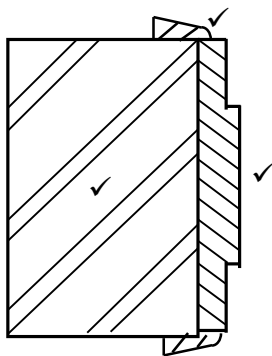
6.2.2 Framed ledge braced batten door ✓ (1)

6.3



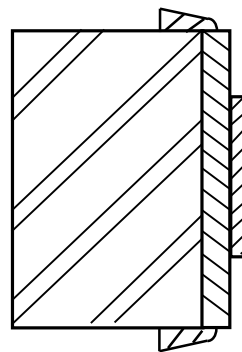
Doorframe ✓

(3)



Jamb lining

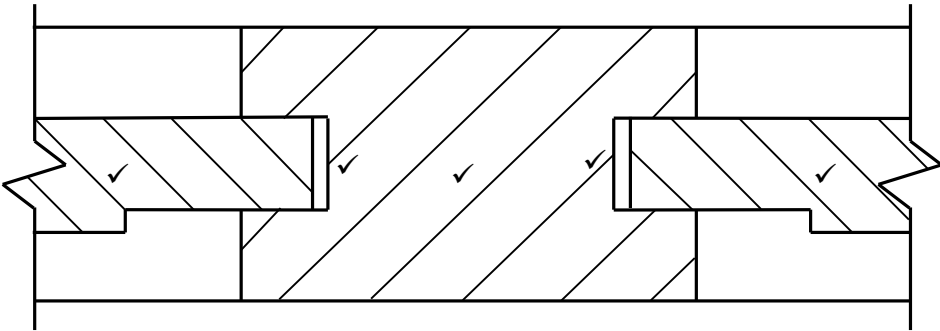
OR



(3)

ASSESSMENT CRITERIA	MARK
Walls	2
Frame profile of door	1
Jamb lining profile	1
Title	1
Architraves	1
<b>TOTAL:</b>	<b>6</b>

6.4



ASSESSMENT CRITERIA	MARK
Muntin	1
Raised panels	2
Space for expansion and shrinkage	1
Hatching	1
Correctness of drawing	1
<b>TOTAL:</b>	<b>6</b>

Correctness ✓

(6)

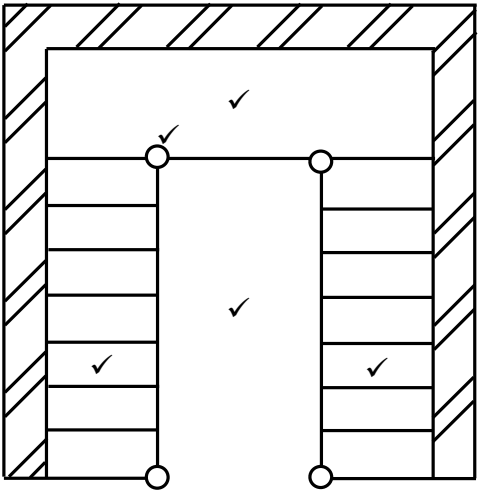
- 6.5
- On a cupboard door ✓
  - On a drawer ✓

(2)

6.6 Night latch ✓

(1)

6.7

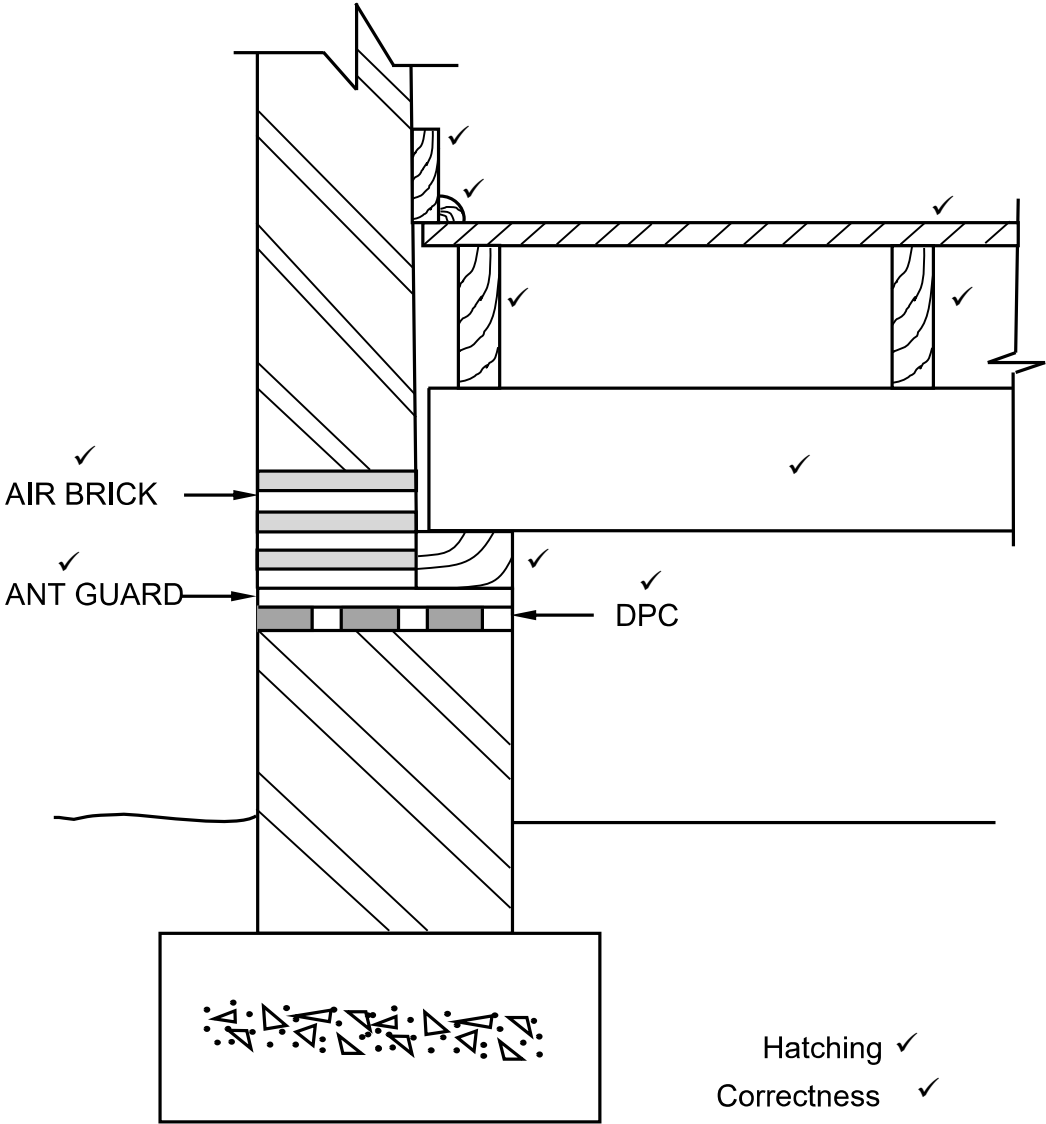


Correctness ✓

ASSESSMENT CRITERIA	MARK
Treads on each flight of stairs	2
Half-landing	1
Newel post	1
Open well	1
Correctness of drawing	1
<b>TOTAL:</b>	<b>6</b>

(6)

6.8



ASSESSMENT CRITERIA	MARK
Bearer	1
Joists	2
Wall plate	1
Tongue and groove floorboard	1
Skirting	1
Quadrant	1
Hatching	1
Labels for: Ant guard	1
Air brick	1
DPC	1
Correctness of drawing	1
<b>TOTAL:</b>	<b>12</b>

(12)  
[40]

TOTAL: 200