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**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2023

**CIVIL TECHNOLOGY: WOODWORKING
MARKING GUIDELINE**

MARKS: 200

This marking guideline consists of 17 pages including 4 answer sheets

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QUESTION 1: SAFETY AND MATERIALS (GENERIC)

- 1.1 The purpose of the OHS Act is to ensure the health of the workers **or** their right to a working environment free of hazards. (1)
- 1.2 Unsafe acts (1) and unsafe conditions (1). (2)
- 1.3 **Any ONE reason for inspecting a scaffold:**
- To ensure it is stable in all directions
 - To ensure it is able to carry the mass of the load
 - To ensure it is free of any defects (1 x 1) (1)
- 1.4 1.4.1 **A** – Guardrail
- B** – Kickboard **OR** toe-board
- C** – Base (3 x 1) (3)
- 1.4.2 Independent scaffolding (1)
- 1.4.3 1 m **OR** 1 000 mm (1)
- 1.5 1.5.1 **Any ONE way to transport waste material from higher levels:**
- Chute
 - Conveyor belt
 - Lift **OR** hoist (1 x 1) (1)
- 1.5.2 Safety net **OR** a catch platform (1)
- 1.6 1.6.1 False (1)
- 1.6.2 True (1)
- 1.6.3 False (1)
- 1.6.4 False (1)
- 1.7 Water-based paint (1) and oil-based paint (1) (2 x 1) (2)
- 1.8 It protects the metal against rust/corrosion. (1)
- 1.9 **Any TWO advantages of curing (concrete):**
- Allow adhesive bonding
 - Prevent the concrete from drying out too quickly
 - Assures the effective hardening of the concrete (2 x 1) (2)
- [20]**



QUESTION 2: GRAPHICS, JOINING AND EQUIPMENT (GENERIC)

- 2.1
- Window numbers
 - Door swings
 - Names of rooms
 - Stair directions
 - Sliding doors
 - Floor covering
- (6 x 1) (6)
- 2.2 FIGURE 2.2 on ANSWER SHEET A shows the incomplete elevation of a building.
Complete the elevation by drawing in the following parts on scale 1 : 50.
- 2.2.1 A window with a length of 1 800 mm and a height of 900 mm.
The window is built in 700 mm from the right-hand side and one third of the right side of the window can open. (7)
- 2.2.2 A door according to standard measurements, 900 mm from the left-hand side of the building. The door opens to the left. There is one step to the ground level. (5)
- 2.2.3 The barge board against the gable end. (2)
- 2.3 2.3.1 Unfinished wood (1)
- 2.3.2 Two-way switch (1)
- 2.4 2.4.1 Water meter
- 
- (2)
- 2.4.2 Plaster
- 
- (2)
- 2.4.3 Invert level
- 
- (2)
- 2.5 When driven into place (1) it cannot be turned (1). (2)
- 2.6 **R-RBL** – Anchor name
- M06** – Thread diameter
- 18** – Thickness (3 x 1) (3)

- 2.7 To set the telescope of the instrument level. (1)
- 2.8 **A** – Vertical hair
- B** – Horizontal hair
- C** – Stage hairs (3 x 1) (3)
- 2.9 **Any TWO uses:**
- Determine differences between levels and vertical heights
 - Determine slopes
 - Setting out buildings
 - Transfer of levels and heights (2 x 1) (2)
- 2.8 It can affect the measuring function of the tool. (1)
- [40]**

TOTAL SECTION A: 60

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

- | | | | |
|-----|---------------------|---|-------------|
| 3.1 | 3.1.1 | Mullion ✓ | (1) |
| | 3.1.2 | Fanlight ✓ | (1) |
| | 3.1.3 | Drip groove ✓ | (1) |
| | 3.1.4 | Transom ✓ | (1) |
| | 3.1.5 | Tongue and groove ✓ | (1) |
| 3.2 | 3.2.1 | A – Wood / Timber ✓ | (1) |
| | | B – Glass / Perspex ✓ | (1) |
| | 3.2.2 | To hold glass or window pane in its place. | (1) |
| 3.3 | 3.3.1 | D – Shelves ✓ | (1) |
| | | E – Drawer ✓ | (1) |
| | 3.3.2 | Free-standing cupboard: Can be moved around to change the appearance of a room. ✓ | (1) |
| | | Built-in-cupboard: Fastened against the wall. ✓ | (1) |
| | 3.3.3 | 520 mm – 570 mm ✓ | (1) |
| | 3.3.4 | They provide additional storage space in the top unit. | (1) |
| | 3.3.5 | Any TWO below: (Melamine instead of Chipboard) | |
| | | • Waterproof ✓ | |
| | | • Easy to clean ✓ | |
| | | • More durable | |
| | | • Has a smooth finish | |
| | | • Enhance the appearance | (2 x 1) (2) |
| 3.4 | See ANSWER SHEET B. | | (5) |
| 3.5 | See ANSWER SHEET C. | | (9) |
| | | | [30] |



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

4.1 4.1.1 C ✓ (1)

4.1.2 E ✓ (1)

4.1.3 D ✓ (1)

4.1.4 B ✓ (1)

4.1.5 F ✓ (1)

4.2 4.2.1 B – Purlin ✓

D – Valley ✓ (2 x 1) (2)

4.2.2 It is a roof with two slanting ends, sometimes across a short, flat gable. ✓ (1)

4.2.3 Prevent dirt / dust / insects / rain from entering into the roof space. ✓✓ (2)

4.2.4 Allow rain water to be directed into the gutter. ✓ (1)

4.2.5

	HIPPED ROOF	GABLE ROOF	
MATERIAL	- More timber is used because of complex design - More roof covering is used - More cutting and waste Any ONE (1)	- Less timber is used because of simple design - Less roof covering is used - Less cutting and waste Any ONE (1)	
CONSTRUCTION	- Construction is complex - Roof is stronger - Roof takes longer to construct - Slopes down in all sides Any ONE (1)	- Design is simple - Roof is not strong because less timber is used - Roof is constructed fast - Slopes down in two sides Any ONE (1)	(4)

4.3 **Any TWO purposes of roof underlay:**

- Allows rain that is blown in under the tiles to flow to the gutter ✓
- Acts as a thermal barrier by providing insulation ✓
- Provides effective barrier against wind driven rain and dust
- Reduces the risk of wind lifting the tiles

(2 x 1) (2)

- 4.4 Step 1 – Sand the wood with different grades of sand paper. ✓
- Step 2 – Sand until the wood is smooth and free from scratches. ✓
- Step 3 – Remove dust ✓ (3 x 1) (3)
- 4.5 **Any TWO:**
- Good roof covering should resist weather conditions such as wind and rain ✓
 - Looks durable and enhance the appearance of the building ✓
 - Be fire resistance
 - Provides insulation against heat and cold (2 x 1) (2)
- 4.6
- Timber framework ✓
 - Panel ✓
 - Cover strips ✓ (3 x 1) (3)
- 4.7 Hurricane clips:
- Any ONE:**
- To fix purlins to rafters ✓
 - To fix trusses to wall plate
 - Used at eaves overhangs
 - Where members of trusses meet at 90°
 - To fix opposite faces of members (1 x 1) (1)
- Storm clips:
- Any ONE:**
- To secure roof tiles to the brandering ✓
 - To fasten ridge tiles to each other
 - To prevent tiles from being lifted by strong winds
 - To fasten ceiling tiles (1 x 1) (1)
- 4.8 4.8.1 Portable electric plane ✓ (1)
- 4.8.2 **Any TWO:**
- Safety goggles ✓
 - Dust mask ✓
 - Respiratory mask (2 x 1) (2)
- 4.8.3 **Any TWO:**
- Store in a safe dry place ✓
 - Wooden or plastic box away from moisture ✓
 - Place on its side to prevent damage from the blade
 - Retract the blade (2 x 1) (2)
- 4.8.4 **Any TWO:**
- Check timber for loose knots ✓
 - Check for sand ✓
 - Check nails (2 x 1) (2)



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- 4.9 4.9.1 **Any THREE below or any similar answer:**
- Avoid making adjustments while the blade is turning ✓
 - Keep your fingers away from the rotating blade ✓
 - Ensure that all clamps and locking devices are locked ✓
 - Check the wood for loose knots/nails/screws
 - Ensure that the blade is properly fastened (3 x 1) (3)
- 4.9.2 **Any TWO:**
- Check the wood for any metal objects before cutting commences ✓
 - Make sure that the teeth of the blade are sharp ✓
 - Ensure that the blade is properly fastened
 - Do not force the material on the blade (2 x 1) (2)
- 4.10 Letter – Grading method ✓ (1)
- Number – Strength ✓ (1)
- [40]**

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

- 5.1 **A** – Concrete / Concrete beam ✓ (1)
- B** – Brace / Strut ✓ (1)
- C** – Prop / Adjustable prop ✓ (1)
- D** – Sole plate ✓ (1)
- 5.2 **Any TWO:**
- Block board ✓
 - Shutter board ✓
 - Laminated board
 - Plywood
 - Hardboard / Masonite (2 x 1) (2)
- 5.3 5.3.1 Tie – To make formwork sides sturdy. ✓ (1)
- 5.3.2 Fish plate – To strengthen the fixing between the prop and the bearer / head tree. ✓ (1)
- 5.4 **Any ONE:**
- It has to support the weight of fresh concrete ✓
 - It supports more weight. (1 x 1) (1)
- 5.5 5.5.1 **Any ONE:**
Double flying shore:
- Provides temporary support where one or both walls show signs of failure. ✓
 - It gives temporary support to two parallel defective walls that are located between 9 to 15 metres apart. (1 x 1) (1)
- 5.5.2 **Any ONE:**
Dead shore:
- Support existing walls when new or large openings are to be cut into the existing wall.
 - Wall on the lower level is defective and underpinning is needed during restoration of the wall.
 - Support structure / transfer the weight of the structure to firm ground during structural renovations. (1 x 1) (1)



- 5.6 5.6.1 **Any ONE:**
- Spread the weight transferred by the props over a wider area ✓
 - Prevent the props from sinking into the ground
 - Provide a level area where props rest on (1 x 1) (1)
- 5.6.2 To strengthen or brace the floor and ceiling. ✓ (1)
- 5.6.3 Secure the joint between prop and the needle. ✓ (1)
- 5.7 45° ✓ (1)
- 5.8 5.8.1 **A – Ribs** ✓
- B – Bearer** ✓
- C – Folding wedges** ✓
- D – Prop** ✓ (4 x 1) (4)
- 5.8.2 The top part of the ribs is formed to look exactly like the soffit of the arch. ✓ (1)
- 5.8.3 **Any TWO:**
- Support the centre/ construction above ✓
 - Raise or lower the centre to the required height ✓
 - Facilitate the removal of the centre after completion of the arch (2 x 1) (2)
- 5.8.4 To support the centre/ construction above. ✓ (1)
- 5.9 See ANSWER SHEET D. (7)
- [30]**

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

6.1 6.1.1 B ✓ (1)

6.1.2 D ✓ (1)

6.1.3 C ✓ (1)

6.1.4 A ✓ (1)

6.1.5 C ✓ (1)

6.2 6.2.1 A – Wall plate ✓ (1)

B – Floor joist ✓ (1)

C – Brick pier ✓ (1)

D – Bearer ✓ (1)

6.2.2 Concrete base must be wider than the brick pier in order to distribute the load (1) imposed on it to the ground (1). (2 x 1) (2)

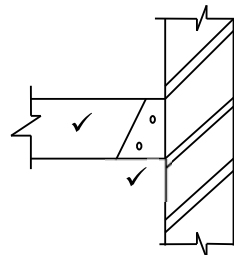
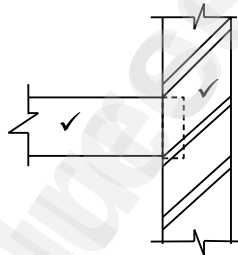
6.3

- Span of the floor. (1)
- Centre –centre spacing between the floor joist. (1)
- Grade of timber. (1)

(3 x 1) (3)

6.4 To allow movement. (1)

6.5

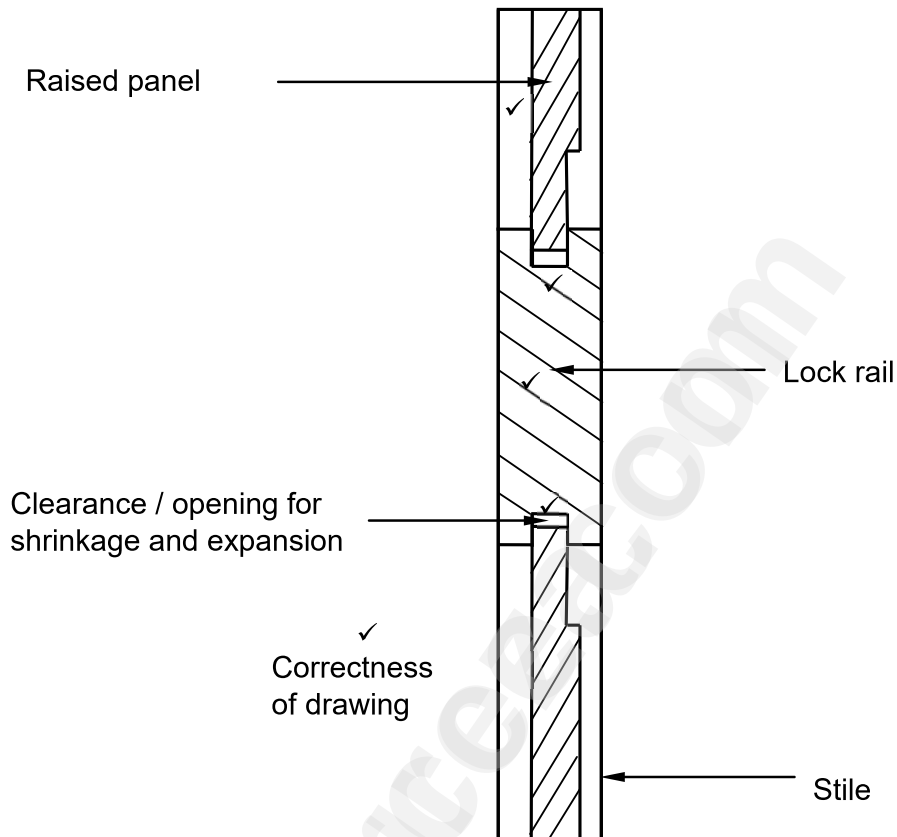


Floor joist built into the wall Floor joist bolted to the wall with truss hangers (4)

6.6 Mortise lock – Mortised into one of the door stiles. (1)

Night latch – Mounted onto the internal surface of the door. (1) (2 x 1) (2)

6.7



ASSESSMENT CRITERIA	MARK
Raised panels	2
Lock rail	1
Clearance/opening for shrinkage and expansion	2
Correctness of drawing	1
TOTAL:	6

(6)

6.8 6.8.1 Framed ledged and braced batten door. ✓

(1)

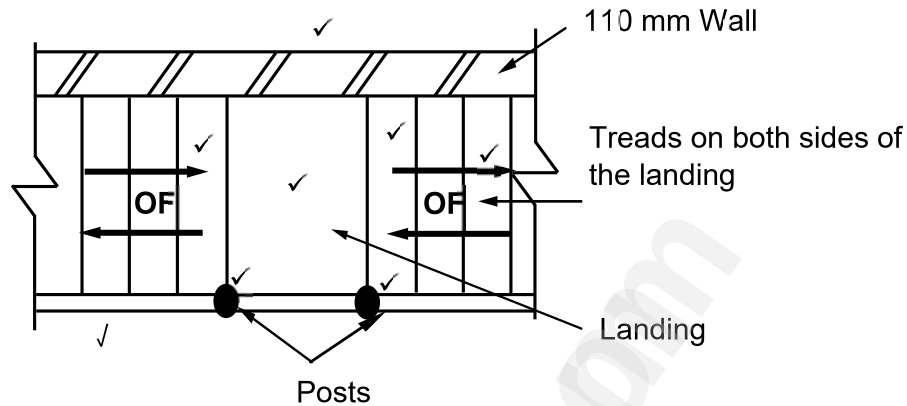
6.8.2 Prevent rain from penetrating the grooves of the bottom rail. ✓

(1)

6.8.3 Stub mortise and tenon joint. ✓

(1)

6.9



ASSESSMENT CRITERIA	MARK
110 mm Wall	1
Three treads on both sides of the landing	2
Landing	1
Handrail	1
TWO newel posts	2
Arrow – indicating the rise of the staircase	1
TOTAL:	8

(8)

6.10 Any ONE:

- Landing allows the user to pause when ascending and descending stairs / serves as resting place ✓
- Ideal when staircases change the direction

(1 x 1) (1)

6.11 Not less than 2 100 mm.

(1)

[40]**TOTAL: 200**

ANSWER SHEET A	CIVIL TECHNOLOGY GENERIC	NAME:	

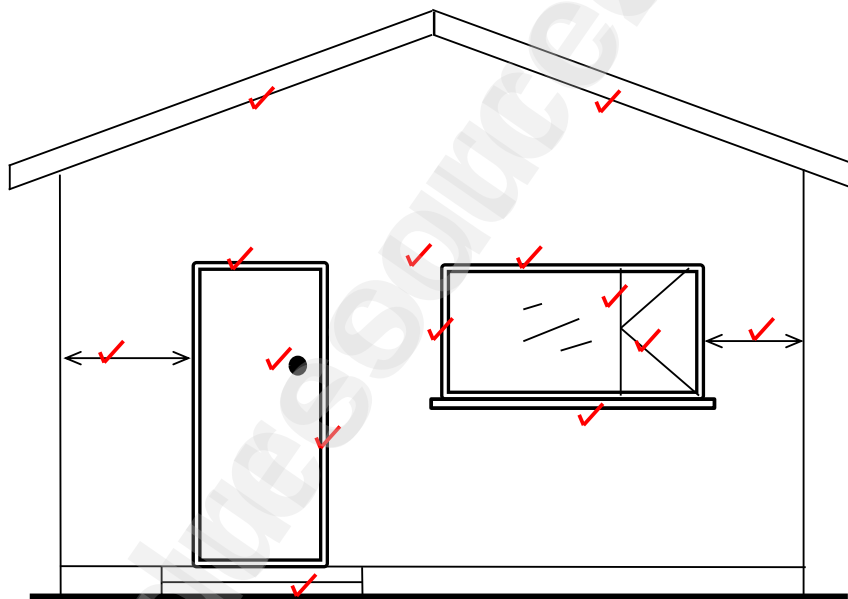
2.2 FIGURE 2.2 on ANSWER SHEET A shows the incomplete elevation of a building.

Complete the elevation by drawing in the following parts on scale 1 : 50.

2.2.1 A window with a length of 1 800 mm and a height of 900 mm. The window is built in 700 mm from the right-hand side and one third of the right side of the window can open. (7)

2.2.2 A door according to standard measurements, 900 mm from the left side of the building. The door opens to the left. There is one step to the ground level. (5)

2.2.3 The barge board against the gable end. (2)



Window	7	
Door	5	
Barge board	2	
TOTAL:	14	

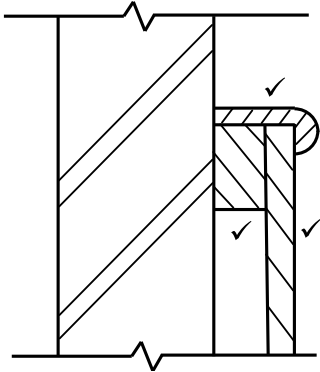
FIGURE 2.2

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ANSWER SHEET B	CIVIL TECHNOLOGY SPECIFIC	NAME:	

Use ANSWER SHEET B and draw in good proportion a neat sketch of a vertical section through the wall panelling that ends half way between the floor and ceiling. Show any TWO labels.

3.4



ASSESSMENT CRITERIA	MARK
Capping	1
Rough ground	1
Tongue and groove board	1
Any TWO labels	2
TOTAL:	5

ANSWER SHEET	C	CIVIL TECHNOLOGY SPECIFIC	NAME:	

Dimension paper

3.5 3.5.1

A	B	C	D
Length of the fascia board:			
			$= 9\,000\text{ mm} + 300\text{ mm} + 9\,000\text{ mm} + 300\text{ mm}$ $= 18.6\text{ m} \checkmark$
			OR $(9\,000\text{ mm} + 300\text{ mm}) \times 2 = 18.6\text{ m} \checkmark$
			OR $(150\text{ mm} + 9\,000\text{ mm} + 150\text{ mm}) \times 2$ $= 18\,600\text{ mm}$ $= 18.6\text{ m} \checkmark$
			(4)

3.5.2

Length of ONE corrugated roof sheet:			
			$= \text{Length of rafter} + \text{overhang for gutter}$ $= 2\,900\text{ mm} + 50\text{ mm} \checkmark$ $= 2\,950\text{ mm} \checkmark$
			(2)

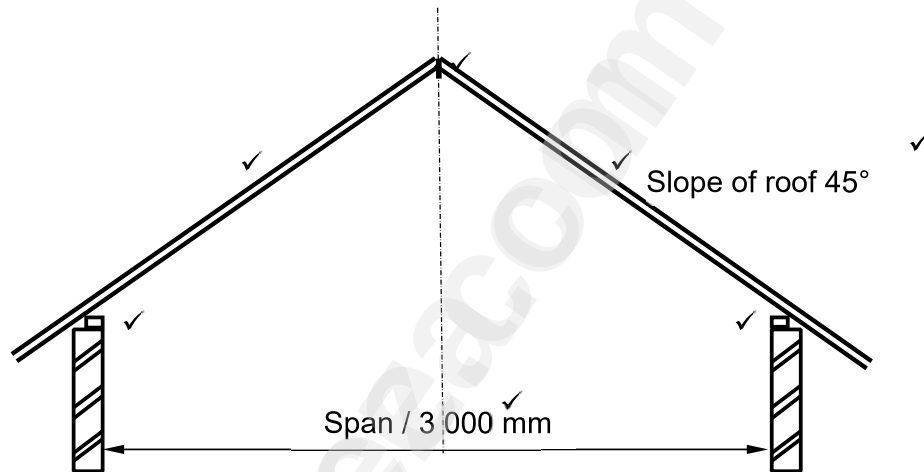
3.5.3

Number of ridge capping:			
			$= \frac{\text{Width of roof}}{\text{Length of one ridge capping}}$
			$= \frac{9300\text{ mm}}{2350\text{ mm}} \checkmark$ $= 3.9 \checkmark$ $= 4\text{ ridge capping of } 2\,350\text{ mm is required} \checkmark$
			(3)



ANSWER SHEET D	CIVIL TECHNOLOGY SPECIFIC	NAME:	

5.9



ASSESSMENT CRITERIA	MARK	LEARNER'S MARK
Span	1	
Wall plates	2	
Rafters	2	
Ridge beam	1	
Slope of the roof 45°	1	
TOTAL:	7	

(7)