Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2024

CIVIL TECHNOLOGY: WOODWORKING MARKING GUIDELINE

MARKS: **200**

This marking guideline consists of 20 pages.

INSTRUCTIONS FOR 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.
  - However, if for example candidate is required to explain or describe a process, we need to consider that that candidates may write a long description, not necessarily well organised. 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.
- Mark what the candidate wrote and do not interpret or predict responses.
- 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 or similar questions.
- Accept incorrect spelling in one-word answers unless the spelling changes the meaning of the answer.
- If a learner writes two or more answers separated by a slash (/) mark only the first response, unless the additional answer/s are different names for the same item e.g., Yale lock/Night latch. In this case, the answer for the response should be awarded and the slash (/) should NOT be considered as an additional answer.

2. **For calculations:**

- A mark is only awarded if the correct unit is written next to the answer. If the question states that the answer must be in a specific unit, a mark will ONLY be awarded if the answer has the correct unit as indicated in the question.
- Marks will only be allocated for the correct values if the candidates add instead of multiply. NO marks will be awarded for the calculations and the answer.
- Where an incorrect answer is correctly carried over, the marker must recalculate the values, using the incorrect answer from the first calculation. If correctly used, the candidate should receive the full marks for subsequent calculations.
- Alternative methods of calculations must be considered, provided that the correct answer is obtained.
- For the calculation of quantities marks will be awarded for the correct use of the dimension paper.

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.
- If the incorrect/wrong drawing was drawn, the candidate can be awarded for only what was provided for on the marking guideline.
- If a line diagram or an orthographic view instead of a pictorial drawing (isometric/oblique/perspective) is drawn, the first assessment criteria for each member will be marked wrong, but marks will be awarded for the subsequent members if TWO or more marks are awarded for the same member.
- If candidates draw/give more information than what is required, mark strictly according to the assessment criteria.

4. Incorrect numbering of questions:

- If a candidate numbered an answer incorrectly, but the answer is in the correct position according to the sequence of the questions in the question paper, circle then the incorrect numbering and mark the response.
- If questions were answered randomly not following the same sequence as in the question paper and the learner numbered incorrectly, the response should NOT be marked.

5. Duplication of responses and questions answered in the correct place:

- If a question has been answered twice, mark the first response.
- If a question should be answered on an answer sheet and the candidate answered it on both the answer sheet and in the answer book, mark the response on the answer sheet and cancel the response in the answer book.
- If the question has been answered in the answer book instead of on the answer sheet, mark the response in the answer book according to the assessment criteria on the marking guideline.

QUESTION 1: SAFETY AND MATERIAL (GENERIC)

1.1 1.1.1 2 (1)

1.1.2 228 mm (1)

1.1.3 900 mm (1)

1.1.4 150 mm (1)

1.1.5 Non-slippery layer (1)

1.2 **Similar answer:**
Prevent horizontal movement between the platform and structure. (1)

1.3 **Identify THREE of the following requirements that are applicable to the supplier of hazardous chemical substances:**

1.3.1 First-aid measures must be shown. (1)

1.3.4 Fire-fighting measures must be shown. (1)

1.3.6 Storage instructions must be shown. (1)

1.4 Minimum = 30° (1) and maximum = 50° (1) (2)

1.5 **Similar answer:**
Aluminium conducts electricity, (1) and workers who use the ladder could be shocked. (1) (2)

1.6 **Describe the difference between the surface finish of a water-based paint and an oil-based paint.**
- Water-based – provides an elastic, flexible finish. (1)
- Oil-base – provides a hard, durable finish. (1) (2)

1.7 **Any THREE advantages of curing concrete:**
- Increases strength
- Decreases permeability
- Improves durability
- Reduces cracks
- Makes concrete more watertight
- Provides volume stability
- Concrete can carry more weight (Any 3 x 1) (3)

1.8 **Briefly describe the powder-coating process.**
Plastic finish in powdered form, (1) is applied by means of a compressed air spray-gun. (1) (2)

[20]

QUESTION 2: GRAPHICS, JOINING AND EQUIPMENT

2.1 **Use the information on ANSWER SHEET A and complete the site plan on a scale of 1 : 200 according to the following requirements:**

2.1.1 The site boundaries are measured from point **A**
The site boundaries in front and back are 23 m long
The site boundaries on the sides are 25 m long (2)
2.1.2 The front building line is 4 m from the site boundary
The back and side building lines are 2 m from the site boundaries (2)
2.1.3 Show the site entrance, 3 m from the western site boundary (1)
2.1.4 Show the datum level in the north-eastern corner of the site (1)
Complete the sewage lay-out and abbreviations of the sewage appliances according to the following requirements:
2.1.5 The main sewage from the bathroom to the municipal connection (2)
2.1.6 The branch sewage to the bathroom and kitchen (2)
2.1.7 Manhole on the site, before the municipal connection (2)
2.1.8 Rodding eyes (4)
2.1.9 Inspection eye (4)

2.2
- Length of shank
- Diameter
- Type of thread
- Head size (4 x 1) (4)

2.3 When square shoulder is driven in, (1) it will resist rotation. (1) (2)

2.4
A – Nut
B – Thread
C – Runout
D – Shank (4 x 1) (4)

2.5 **Any TWO requirements to which a trestle scaffold must comply.**
- Soundly constructed with a solid material.
- Prevent spreading of supporting legs.
- Not higher than 3 m.
- Consists of not more than two tiers. (Any 2 x 1) (2)

2.6 **Name TWO precautionary measures when transporting a ladder.**
- Not protruding excessively.
- End marked with a red or orange flag. (2 x 1) (2)

2.7 **Similar answer.**
Paint will cover (1) weaknesses. (1) (2)

2.8 **Briefly describe any ONE use of the dumpy level**.
- Determine (1) height differences. (1)
- Determine (1) levels and slopes. (1)
- Setting out (1) of buildings. (1)
- Transferring of (1) levels and heights. (1)
- Determine horizontal (1) distances. (1) (Any 1 x 2) (2)

2.9 **Any TWO materials which can be detected in walls by a multi-detector.**

- Ferrous metals
- Non-ferrous metals
- WS-wiring
- Timber
- Metal pegs
- Steel rods
- Copper pipes (Any 2 x 1) (2)

[40]

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

3.1	3.1.1	Bottom rail of fanlight	(1)
	3.1.2	Transom	(1)
	3.1.3	Wood/Wooden (glazing) bead/Quadrant/Quarter round	(1)
	3.1.4	To enhance the appearance of the casement/to provide a good finish.	(1)
	3.1.5	Fanlight is a small window that is built above the opening of a door or window.	(1)
	3.1.6	To prevent rainwater from being blown into the casement and penetrating the room.	(1)
3.2		See ANSWER SHEET B.	(9)
3.3		See ANSWER SHEET C.	(8)
3.4		Built-in cupboard – 550 mm – 600	(1)
		Free-standing cupboard – 520 mm – 570 mm	(1)
3.5	3.5.1	A – Cornice	(1)
		B – Horizontal rough grounds	(1)
		C – Quadrant mould	(1)
	3.5.2	To cover the gap between the skirting and floor covering.	(1)
	3.5.3	To lend an aesthetic appearance.	(1)

[30]

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

4.1 4.1.1 B (1)

4.1.2 F (1)

4.1.3 D (1)

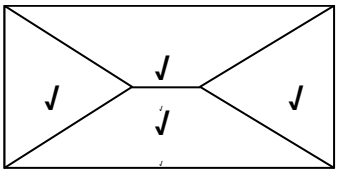
4.1.4 E (1)

4.1.5 C (1)

4.2 4.2.1 Building **A** – Gable roof (1)

Building **B** – Hipped roof (1)

4.2.2 Top view of a hipped roof



(4)

4.2.3 **Any THREE characteristics of a good roof covering:**

- Good roof covering should resist weather conditions such as wind and rain.
- Looks durable and enhance the appearance of the building.
- Be fire resistant.
- Provide insulation against heat and cold. (Any 3 x 1) (3)

4.3 4.3.1 **Any ONE purpose of underlay for concrete or clay roof tiles:**

- Provide highly effective barrier against the ingress of wind-driven rain and dust.
- Allow rain that is blown under the tiles to flow to the gutters.
- Lowers the suction pressure under the tiles and reduces the risk of the wind lifting the tiles.
- Acts as a thermal barrier by improving insulation. (Any 1 x 1) (1)

4.3.2 **Any one purpose of underlay for a thatched roof**:

- To delay the spread of fire. (1)

4.3.3 **Any ONE purpose of underlay for IBR and corrugated iron sheeting:**

- Reduces the amount of dust inside the roof space
- Makes the roof waterproof (Any 1 x 1) (1)

4.4 **Any ONE use of a truss hanger:**

- To join members of roof trusses at 45 or 90 angles
- To join beams, joists or trusses of hipped roofs, pergolas, carports and floor joists or trusses to wall
- Suitable for T-junction where beams are affixed to a wall or where two beams are joined (Any 1 x 1) (1)

Any ONE use of a gang nail:

- To connect different members of roof trusses
- Used on each side of the roof truss members that are joined (Any 1 x 1) (1)

4.5 If the area of a thatched roof exceeds 20 m² the roof must be constructed at least 4,5 metres from any boundary or neighbouring structures. (1)

4.6 Eaves are the portions of a roof that projects beyond the outside walls of a building. (1)

4.7 **Any TWO advantages of mechanical grading:**

- Machine stress-grading is highly effective and more accurate.
- It provides a reliable and consistent method of grading timber.
- It is mostly used in engineering connector plate roof trusses.
- It is a fast process. (Any 2 x 1) (2)

4.8 5
3
2
7
4
6
1 (7 x 1) (7)

4.9 A – Tie-beam (1)

B – Brandering (1)

C – Trap door (1)

D – Cover strip (1)

4.10 610 mm x 610 mm (1)

4.11 4.11.1 Portable woodworking machines (1)

4.11.2 B – Router (1)

C – Electric plane (1)

4.11.3 **Any ONE:**

- Clean the jig saw blade after use.
- Do not force the jig saw blade.
- Avoid the use of blunt blades.
- Keep the power cord away from the blade.
- Use the correct blade for specific work.
- Always plan your cuts carefully – make pre-cuts if necessary to prevent the blade from breaking.
- Unplug the device when replacing the saw blade.
- Make sure that the blade has stopped moving before you leave the jig saw unattended. (Any 1 x 1) (1)

4.11.4 **Any ONE:**

- Safe dry place.
- Wooden or plastic box away from moisture. (Any 1 x 1) (1)

[40]

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

5.1 5.1.1 A – Inclined (1)

5.1.2 C – yokes (1)

5.1.3 B – landing (1)

5.1.4 A – head of the props/struts to the bearer (1)

5.1.5 D – All the above-mentioned (1)

5.2 5.2.1 **Any TWO**:
- Plastic
- Metal sheeting
- Hardboard
- Fibreglass (Any 2 x 1) (2)

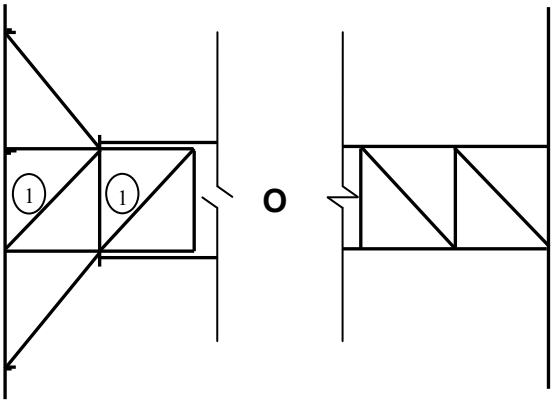
5.2.2 The pressure of the liquid concrete is concentrated at the bottom of the formwork. (1)

5.2.3 **Any ONE**:
- It is stronger than a wooden prop.
- It can be adjusted much easier than a wooden prop.
- Provide much more accurate height adjustment during installation. (Any 1 x 1) (1)

5.3 5.3.1 Double flying shore (1)

5.3.2 Cleat/needle (1)

5.3.3



NO.	ASSESSMENT CRITERIA	MARK
1	Braces/Diagonal struts	2
	TOTAL:	**2**

(2)

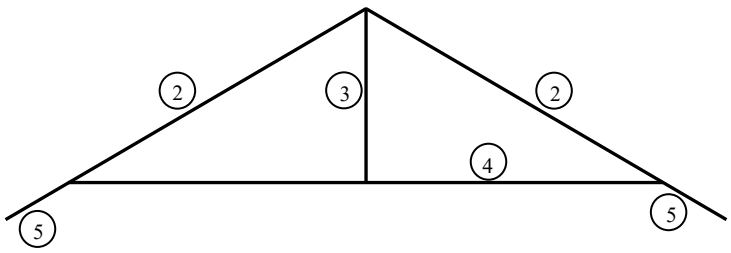
5.4 5.4.1 To support the weight of the wall/floor or roof (1)

5.4.2 **Any ONE:**

- To tighten the dead shores and props
- To allow height adjustment
- To ease the removal of the members of the shores

(Any 1 x 1) (1)

5.5



NO.	ASSESSMENT CRITERIA	MARK
1	Correctness of king post roof truss	2
2	Rafters	2
3	King post	1
4	Tie beam	1
5	Overhang	2
	TOTAL:	**8**

(8)

5.6 5.6.1
- Inserted at the ends
- Under the bearer
- On top of the props (3 x 1) (3)

5.6.2 **Any TWO**:
- To support the centre.
- Raise or lower the centre to the required height.
- Facilitate the removal of the centre after completion of the arch. (Any 2 x 1) (2)

5.6.3 Rough arch – Open laggings (1)

Gauged arch – Closed laggings (1)

[30]

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

6.1 6.1.1 Night latch/lock (1)

6.1.2 Mortise lock (1)

6.1.3 Rim lock (1)

6.1.4 Straight cupboard lock (1)

6.2
- Cut cupboard lock has a neater appearance because it fits flush with the internal surface of the door.
- It is stronger than straight cupboard locks because it is fitted in a recess on the internal surface of the cupboard. (2 x 1) (2)

6.3 6.3.1 Between legs and the rails (2)

6.3.2 See attached ANSWER SHEET 6.3.2. (8)

6.4 6.4.1 Horizontal sectional view through the Muntin and raised panel. (1)

6.4.2 A – Muntin (1)

B – Raised panel (1)

C – Clearance (1)

6.4.3 Muntin is a vertical member that is inserted between the stiles to house extra panels. (1)

6.4.4 To allow for the shrinkage and expansion of wood. (1)

6.5 See attached ANSWER SHEET 6.5. (12)

6.6 6.6.1 A – Handrail (1)

B – Newel post (1)

F – Stringer (1)

6.6.2 **Straight flight of stairs:**
Any ONE:

- Run in one direction
- Uninterrupted flight of stairs that directly connects two floors
- Suitable for long flights
- Require long straight area for construction (1)

Half landing staircases:
Any ONE:

- Known as U-shaped
- Has two parallel flights of stairs that are connected by a landing that makes a 180° turn when one ascends or descends
- Need less floor space as it occupies shorter but wider floor area (1)

6.6.3 **Any ONE:**

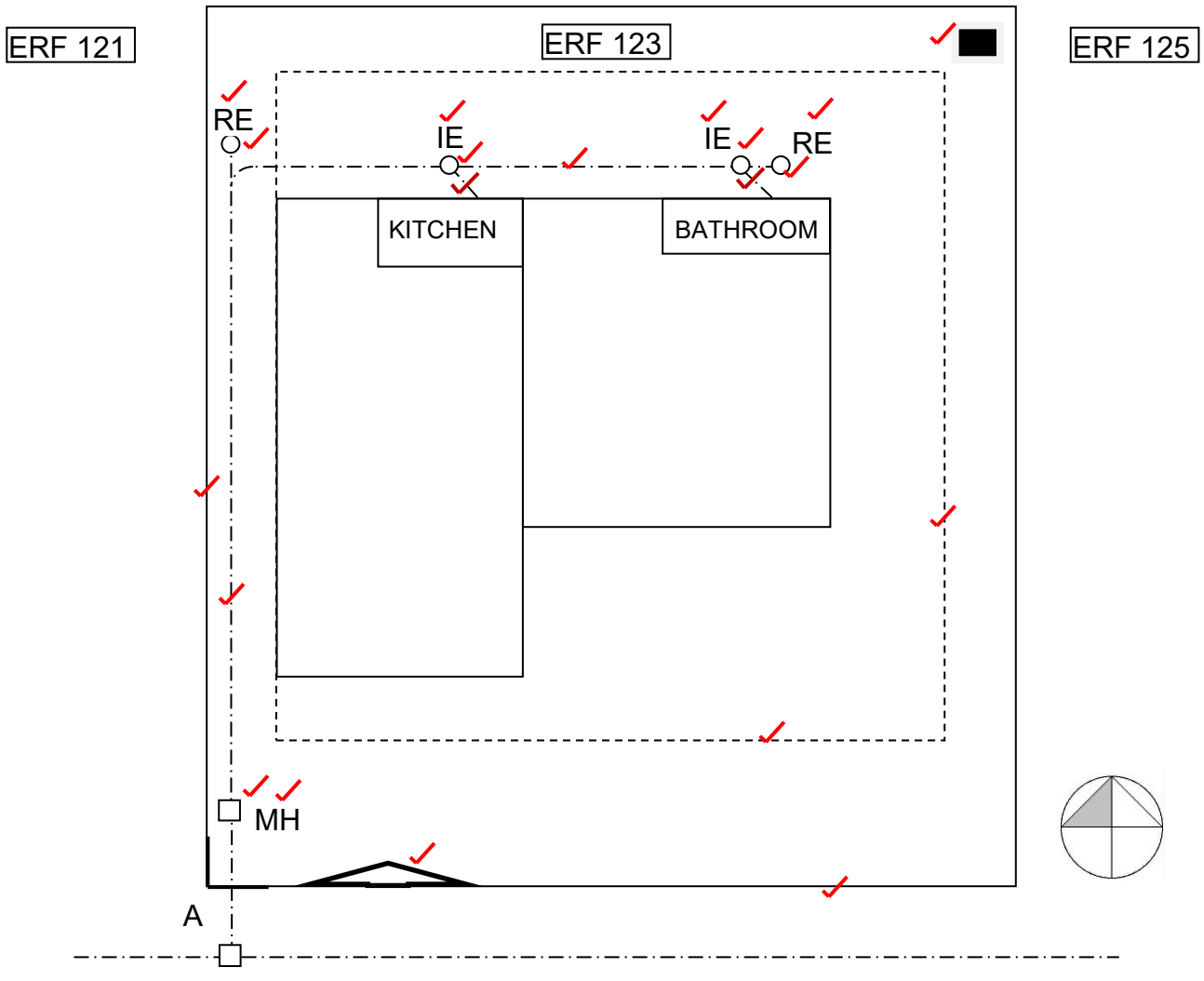
- Ideal when staircases change the direction.
- Serves as resting place/allow the user to pause when ascending and descending stairs. (1)

[40]

TOTAL: 200

ANSWER SHEET	A	CIVIL TECHNOLOGY GENERIC	NAME AND SURNAME:	

2.1 Use the information on ANSWER SHEET A and complete the site plan on a scale of 1 : 200.



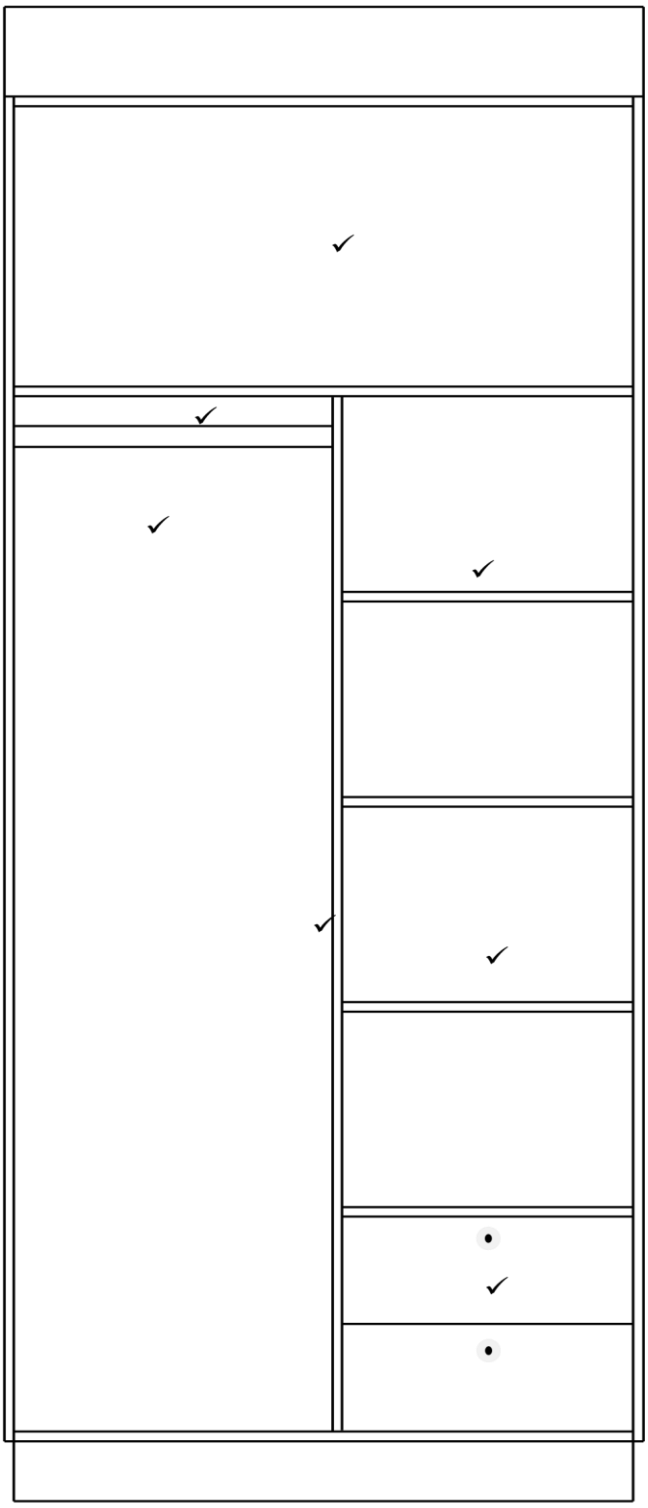
Site boundaries	2	
Building lines	2	
Site entrance	1	
Datum level	1	
Main sewerage	2	
Branch sewerage	2	
Manhole	2	
Rodding eyes	4	
Inspection eyes	4	
TOTAL:	**20**	

ANSWER SHEET (3.2)	B	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	

Dimension paper

	A	B	C	D	
3.2.1				**Total length of wall plate needed for the building**	
				Internal measurements:	
				8 000 mm – 2/220 = 7 560 mm √	
				Total length of wall plate needed:	
	2/ √	7,56 √	15,12 m √	Internal length between gable ends = 7 560 mm	
				15,12 m wall plate is needed	(4)
				Total length of timber required for the tie-beam.	
	8/ √	5.28 √	42,24 m √	42,24 m tie-beam is needed	(3)
3.2.2					
				Correct use of dimension paper	(1)

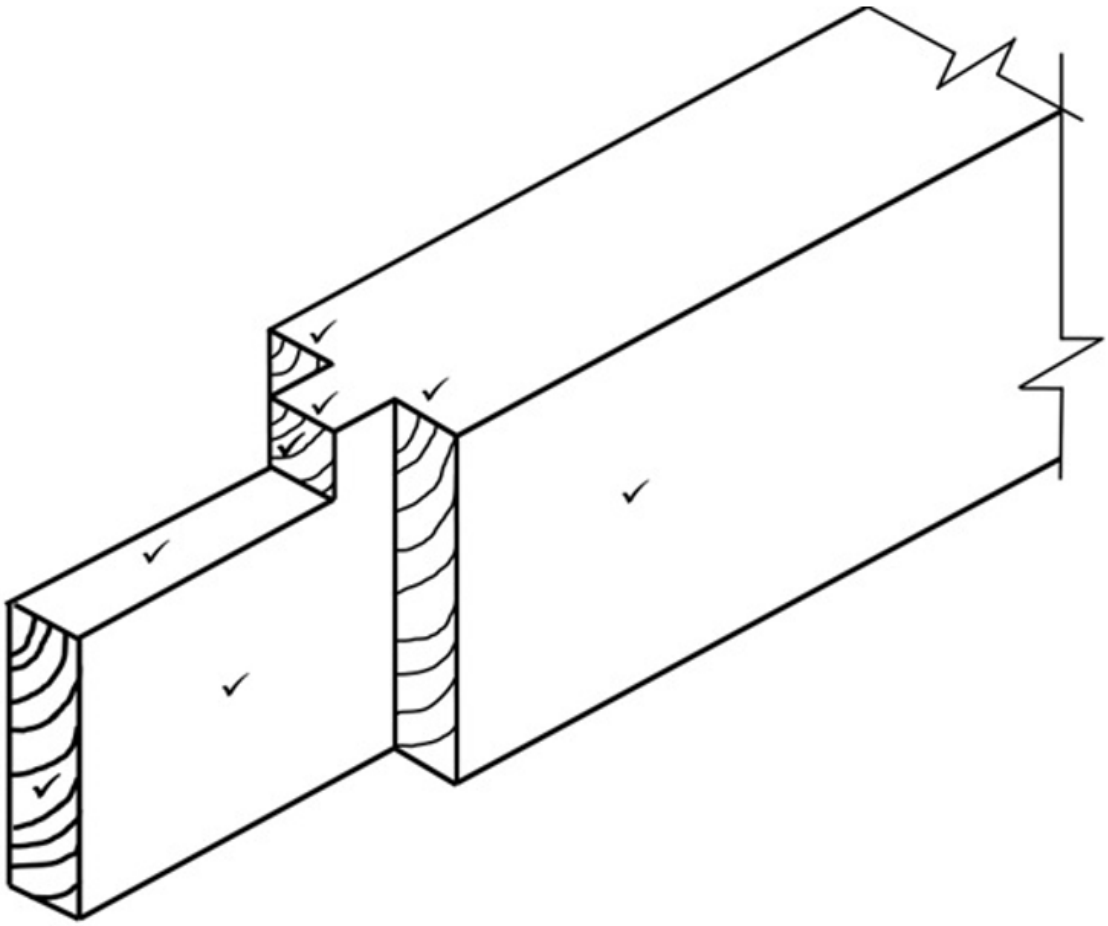
ANSWER SHEET (3.3)	C	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



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

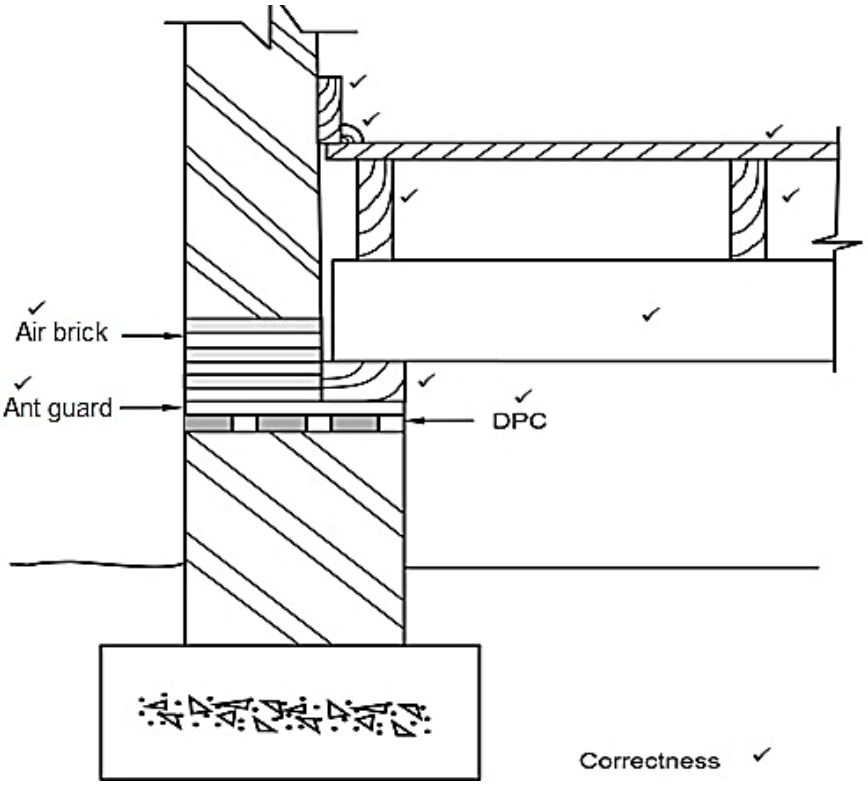
Correctness ✓

ANSWER SHEET (6.3.2) **D**	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:



ASSESSMENT CRITERIA	MARK
Correctness of drawing	
Rail	1
Haunch	4
Tenon	3
TOTAL:	**8**

ANSWER SHEET (6.5) **E**	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:



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 Air brick DPC	1 1 1
Correctness of drawing	1
TOTAL:	**12**