



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

BUILDING AND CIVIL TECHNOLOGY N3

4 December 2023

This marking guideline consists of 6 pages.

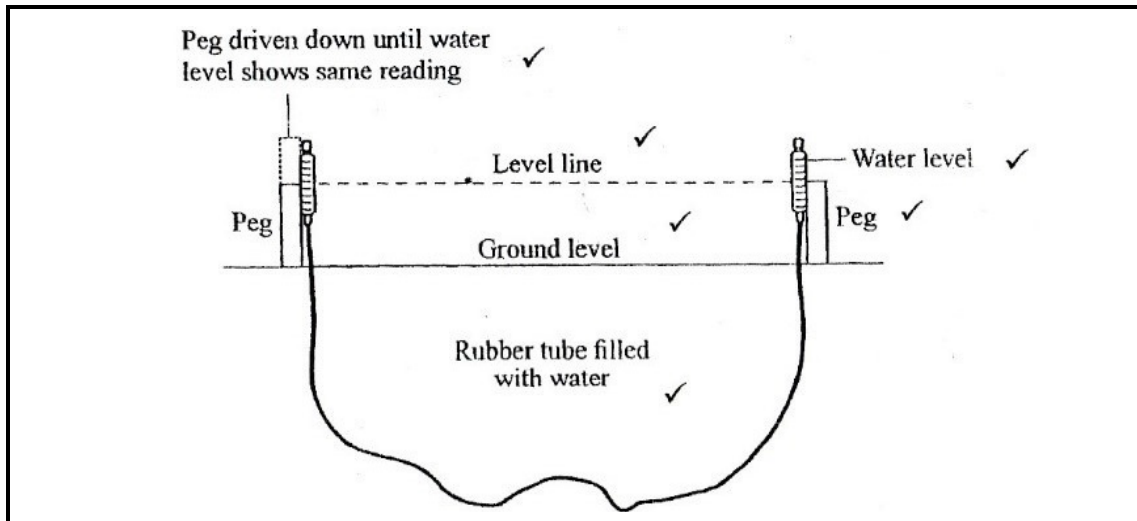
QUESTION 1

- 1.1
- Appropriate vocational skill, knowledge and experience.
 - An ability to use their skill and knowledge in practice.
 - A desire for continuous personal improvement in all areas.
 - An ability to allocate duties and responsibilities to staff.
 - An ability to demonstrate how the work should be done.
 - Willingness to accept full responsibility for their actions.
 - Ability to acquire experience and build on it.
 - An ability to supervise, encourage, and criticize where ever necessary
 - An appreciation of his / her obligation to management, superiors and worker
- To see that all work is executed according to the contract documents
(Any 6 × 1) (6)
- 1.2
- | | |
|--------|---|
| 1.2.1 | D |
| 1.2.2 | C |
| 1.2.3 | D |
| 1.2.4 | B |
| 1.2.5 | C |
| 1.2.6 | B |
| 1.1.7 | D |
| 1.1.8 | D |
| 1.1.9 | C |
| 1.1.10 | B |
- (10 × 1) (10)
[16]

QUESTION 2

- 2.1
- Main bars
 - Starter bars
 - Weak concrete blinding
 - Reinforced concrete foundation
 - Pad or isolated foundation
 - Ground floor position
 - 75 mm kicker
- (7)

2.2



(6)

2.3

Stepped foundation can be neatly marked out from the original foundation heights.✓ On a slope, it is advised to step the foundations to save on unnecessary wastage of concrete.✓ When a step in the foundation is planned, care should be taken not to weaken the joint in the foundation strip.✓

(3)

[16]

QUESTION 3

3.1

- The mix should not dry out on its way.
- Segregation of materials should be avoided at all times.
- Cast concrete should be properly compacted in its final position as soon as possible.
- Mixture of concrete be taken from mixer in one operation and not bit by bit.
- The run on the surface should be fairly even or smooth so that vibration is overdue during transportation because vibration will cause mixture to become segregated.

(3)

3.2

$$\begin{aligned}
 \text{Mass of water} &= \text{ratio} \times \text{cement} \checkmark \\
 &= 0,5 \times 100 \checkmark \\
 &= 50 \text{ kg} \\
 &= 50 \text{ litres} \checkmark
 \end{aligned}$$

(3)

3.3

- Know the soil condition
- Be aware of sources of vibration
- Look to see where ground has been previously disturbed
- Secure the way into and out of the trench
- Be aware of any moisture source, cables and sewers
- Position your heavy equipment safely
- Watch closely to see what the weather is doing

(7)

3.4

$$\begin{aligned}
 \text{Mass of water} &= 15 \text{ m} \times 0,710 \text{ m} \checkmark \times 0,400 \text{ m} \checkmark \\
 &= 4,260 \text{ m}^3 \checkmark
 \end{aligned}$$

(3)

[16]

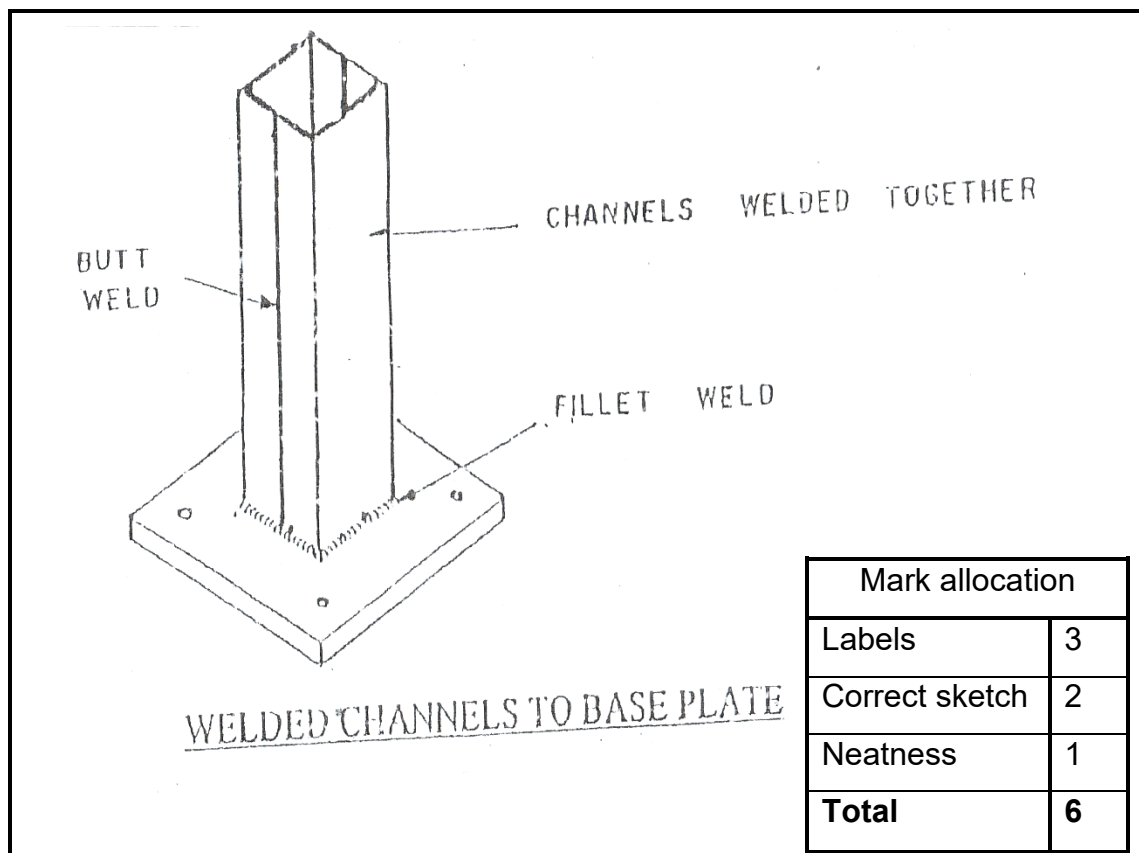
QUESTION 4

- 4.1
- It requires no expansion pipe in its system.
 - It does not rely on a supply tank for its feed.
 - It is cheaper because it requires less labour and fewer materials for its installations and functioning.
 - It is compact, because it requires very little space, it can be installed in confined spaces.
 - Provide satisfactory pressure at the hot water taps as it is a gravity type geyser.
 - There are very seldom any problems with airlocks.
- (4)

- 4.2
- 4.2.1 Strength grade (visual)
- 4.2.2 Strength grade (mechanical)
- (2 × 1) (2)

- 4.3
- Knots warp the thread and decrease the strength.
 - They are harder than the surrounding wood and cause the saw blade to stick.
 - Knots cause a wastage of wood when they have to be cut out.
 - Knots can crack or get loose from the surrounding wood and affect the appearance of the timber.
- (4)

4.4



(6)
[16]

QUESTION 5

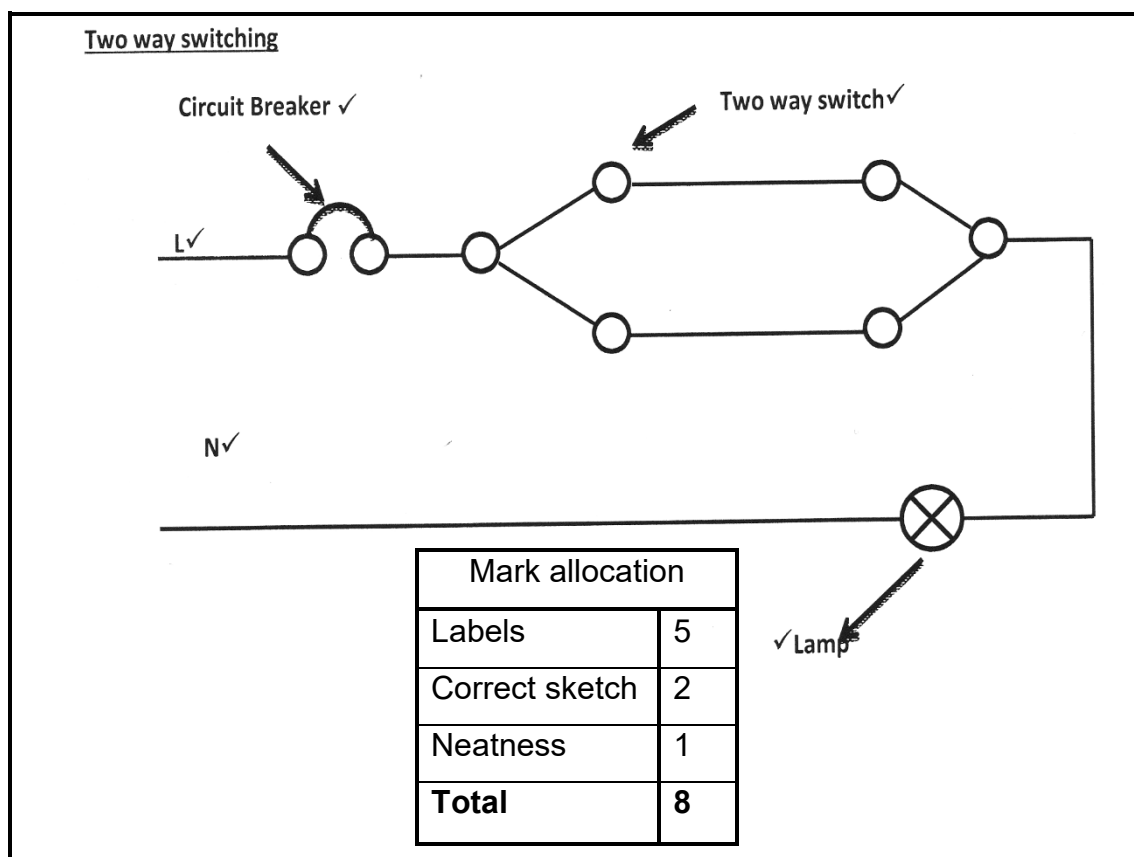
- 5.1 5.1.1 4 rooms
 5.1.2 2 rooms
 5.1.3 3 rooms
 5.1.4 5 rooms

(4 × 1) (4)

- 5.2 • Plaster forms a base on which other decoration materials such as paint, tiles, and panelling may be placed.
 • Plaster protects brickwork against penetration by moisture.
 • Plaster strengthens the surface of a wall.
 • Plaster substitutes for bricks facing and thereby lowers the cost of building.
 • Plaster can be used to straighten walls that are poorly built or damaged.

(Any 4 × 1) (4)

5.3

(8)
[16]**QUESTION 6**

- 6.1 • Base course
 • Surface (wearing course)
 • Formation
 • Subbase
 • Subgrade

(5)

6.2	• Paving is used to make paths for people to walk in the garden. • Paving enhances the appearance of the property or area. • Paving is used for roads. • Paving is used in driveways or at entrances that are subjected to heavy traffic. • Paving is used where the natural soil of the site is unsuitable for other purposes (such as gardening). • Paving is used in areas where a hard-wearing surface with low maintenance is required.	(Any 3 × 1)	(3)
6.3	6.3.1 $= \frac{11\,500}{100} \checkmark$ $= 115\text{ m}^2 \checkmark$ 6.3.2 $= 115 \times 275 \checkmark$ $= R31\,625 \checkmark$	(2 × 2)	(4)
6.4	6.4.1 Number of bricks = $180 \times 100 \checkmark$ $= 18\,000 \text{ bricks} \checkmark$ 6.4.2 Amount of sand = $18\,000 \div 1\,000 \checkmark$ $= 18 \text{ tons} \checkmark$	(2 × 2)	(4)
6.5	Concrete foundation = $25 \times 0,600 \times 0,25 \checkmark$ Amount of concrete = $3,75\text{ m}^3 \checkmark$ Cost of concrete = $3,75 \times 475 \checkmark$ $= R\,1\,781,25 \checkmark$		(4)
			[20]
TOTAL:			100