higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PLUMBING THEORY N2

6 August 2021

This marking guideline consists of 7 pages.

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QUESTION 1: COLD-WATER SUPPLY

1.1
1.1.1 True
1.1.2 False
1.1.3 True
1.1.4 False
1.1.5 True
1.1.6 False
1.1.7 True
1.1.8 True
1.1.9 False
1.1.10 True

(10 × 1) (10)

1.2 Water should be:
- Safe to drink
- Free of taste
- Free of odour
- Attractive in appearance (4)

1.3 A pressure zone refers to the reticulation networks✓ that are supplied from a specific service reservoir.✓ (2)

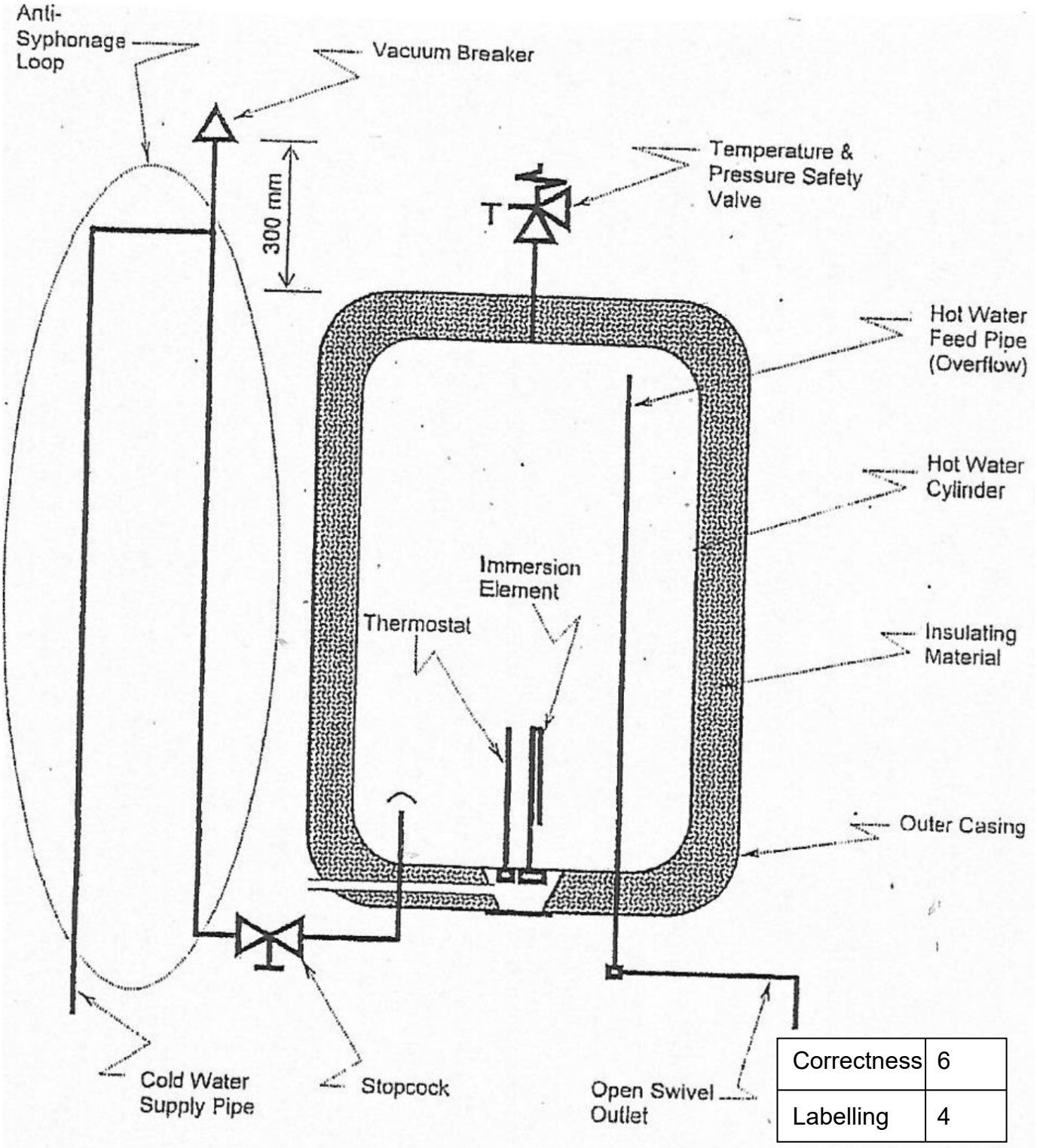
1.4 Temporary hardness is caused by bicarbonates✓ of calcium and/or magnesium✓ held in solution by carbon dioxide.✓ (3)

1.5
- Algae, which releases characteristic odours and tastes.
- Disinfecting chlorine, which may produce objectionable taste unless chlorination is well managed.
- Carbon dioxide that enables water to take up calcium, magnesium and lead into solution.
- Disease-producing organisms of enteric origin.
- Organic matter that produces odours and taste such as the odour of hydrogen sulphide upon decomposition. (Any ONE) (1)

[20]

QUESTION 2: HOT-WATER SUPPLY

2.1



Correctness	6
Labelling	4

(10)

2.2 2.2.1 Yellow
2.2.2 Red
2.2.3 Orange

(3 × 1) (3)

2.3
- To reduce the incoming main pressure.
- To control the pressure when the system is not in use.
- To pre-set the pressure rating and to maintain it. (3)

2.4 Advantages:

- It reduces labour and material costs.
- The valve is easily accessible for repairs.

Disadvantages:

- It is costly to replace.
- If sand grains filter through the supply system, the pressure-reducing valve starts malfunctioning. (2 × 2) (4)

[20]

QUESTION 3: DRAINAGE

3.1
- Drain is laid according to approved plan.
- The alignment is true.
- The invert depths are correct.
- Drain has effective self-cleansing gradient.
- Soil cover will be at least 300 mm.
- Sufficient access is provided.
- Rodding eyes and gullies are properly compacted and supported.
- Drain is laid on a solid base. (Any 6 × 1) (6)

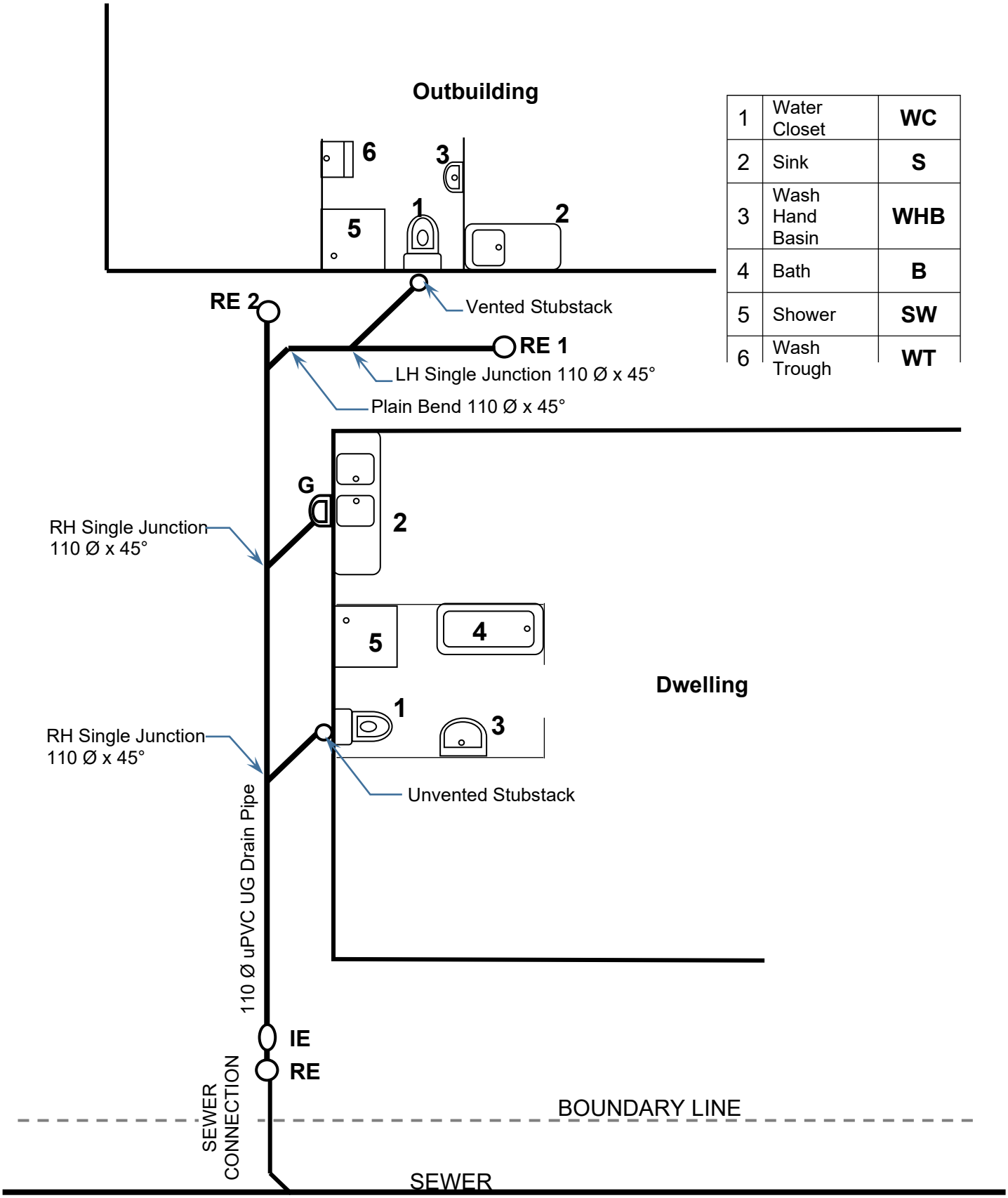
3.2 3.2.1 Access branch connection
3.2.2 Sink
3.2.3 Rodding eye
3.2.4 Gulley
3.2.5 Septic tank

(5 × 1) (5)

3.3 To prevent pathogenic gasses, unpleasant odours and cockroaches from entering the building via the sanitary fitment. (3)

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3.4



1	Water Closet	**WC**
2	Sink	**S**
3	Wash Hand Basin	**WHB**
4	Bath	**B**
5	Shower	**SW**
6	Wash Trough	**WT**

(15)

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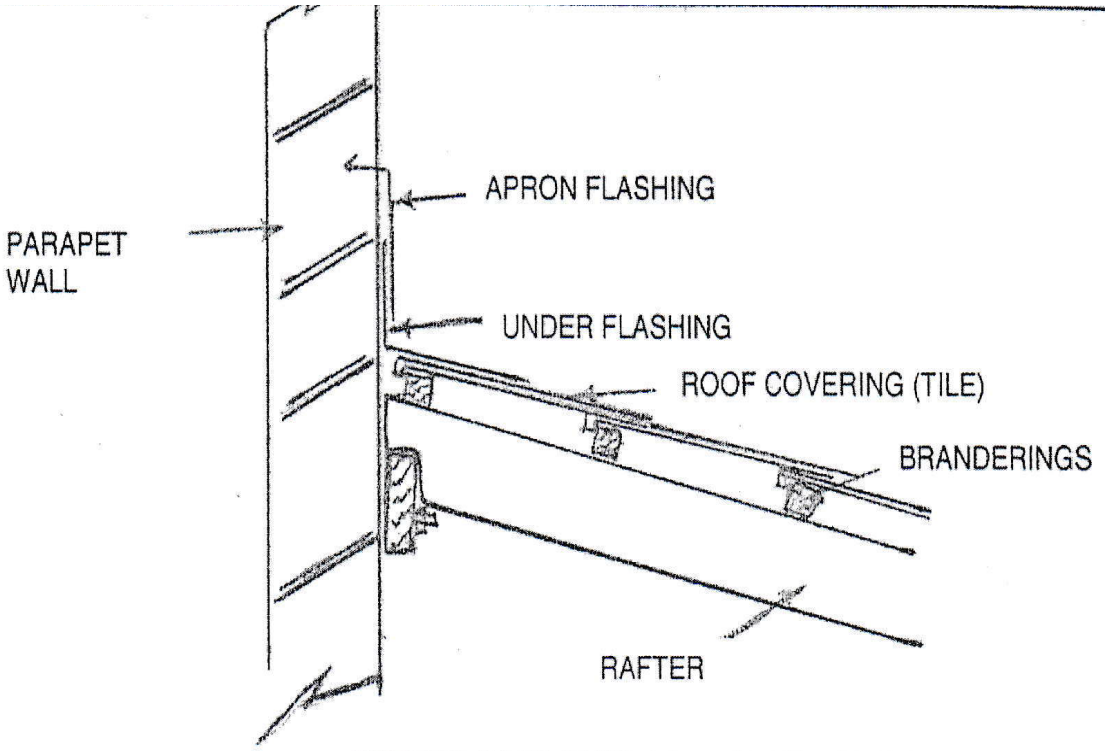
3.5
- Each test hole shall have a diameter of approximately 150 mm and shall have a depth of approximately 400 mm.
- Remove all loose materials from the test holes.
- Line each test hole with a polyester filter fabric and cover its bottom with a 50 mm layer of pea sized gravel.
- Fill the test holes with water to a depth of 300 mm above the layer.
- Maintain the level for at least 8 hours until the percolation rate of the soil becomes constant.
- Measure the percolation rate as prescribed in SABS 0250-2. (6)

[35]

QUESTION 4: SHEET-METAL WORK AND FLASHING

4.1 Flashing is a strip of material that covers a join between the roof and the brickwork✓ for waterproofing.✓ (2)

4.2 Sketch = 5
Labels = 6 x ½ =3



PITCHED ROOF FIXED AGAINST VERTICAL WALL

(8)

4.3
- Between the brickwork of a chimney stack and the roof.
- Around vent pipes.
- At the bottom of dormer windows and the roof.
- Around skylights and the roof and
- Where parapet walls extend up next to the roof. (5)

[15]

QUESTION 5: CALCULATIONS

5.1 Fall of pipe = Length x Fall ratio
= 10 m × $\frac{1}{28}$ ✓
= 0,357 m ✓
= 357 mm ✓

Invert level depth of pipe = 357 + 370 ✓
= 727 mm ✓ (5)

5.2 Material required = Area of side × Area of base ✓
= π × diameter × height + π × (radius)^2 ✓
= (π x 1,3 × 0,9) + (π × 0,65 × 0,65) ✓
= 3,676 + 1.327 ✓
= 5,003 m^2 ✓ (5)
[10]

TOTAL: 100

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