higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 3

21 November 2024

This marking guideline consists of 5 pages.

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QUESTION 1

1.1 1.1.1 False
1.1.2 True
1.1.3 False
1.1.4 True
1.1.5 True

(5 × 1) (5)

1.2
- Anchor blocks are like thrust blocks and are built above ground to prevent lateral movement of the pipeline.
- Thrust blocks are a form of support or anchoring for water mains. They are used where unbalanced or sudden forces affect parts of a pipe reticulation. (2 × 2) (4)

1.3 Water must flow through a pipe at a certain velocity to ensure a sufficient supply of water at each draw-off point. (2)

1.4
- Underground soil conditions that may affect pipe work.
- Pipe dust in a building.
- Existing concrete floors and slabs.
- Underground root systems of the trees in an area.
- Roof trusses that are in the way.
- Paving or road surfacing where the pipes need to be laid.
- Limited ceiling space.
- Different types of external wall.
- In historical buildings, installation must match the existing pipe work.

(Any 5 × 1) (5)

1.5 1.5.1 Terminal fittings − the water draw-off points inside a building for bath taps, basin taps or washing supply points.

1.5.2 Design velocity − the speed of water flow that will meet the water supply requirements of a pipe installation.

(2 × 2) (4)
[20]

QUESTION 2

2.1 2.1.1 False.✓ A geyser is a hot-water heater used in building to supply hot water to sanitary appliances such as wash basins, sinks, showers, and baths.✓

2.1.2 True.✓ The storage tank supplies the electric geyser with cold water. The water is then heated by the element and rises up the geyser and runs through the hot-water pipe outlet to various draw-off points.✓

(2 × 2) (4)

2.2
- Hot water is available almost immediately.
- Because a push-through geyser is small and compact, it can be installed in a small space.
- Easy to install.
- No major pipes or valves required.
- Expansion pipes and water draw-off pipes is one common pipe.
- No expansion pipes through roof or eaves needed. (Any 5 × 1) (5)

2.3
- A pressure control valve, also known as a pressure reducing valve, is a safety device on a water heater or pressure tank,✓ which automatically reduces the pressure from the water supply main to the stipulated pressure.✓
- A pressure relief valve is a safety device on a water heater,✓ which allows steam or water to escape.✓ (2 × 2) (4)

2.4
- Meet the installation requirements.
- Comply with legislation.
- Work cost-effectively.
- Stay within the budget. (4)

2.5
- The supply pipe running underneath a building must be installed inside a sleeve. The sleeve's diameter must be at least 15 mm bigger than the diameter of the supply pipe.
- There must be no direction changes or junctions in the supply line.
- The supply pipe must not weaken the stability of the building.
- The supply line must not affect any existing built in-services. (Any 3 × 1) (3)

[20]

QUESTION 3

3.1
- Bath
- Shower
- Sink
- Basin (4)

3.2
- Must flush away all soil water.
- No blockages.
- Traps foul or bad-smelling air in the drain.
- Prevents foul air from entering a building (Any 3 × 1) (3)

3.3
- Trap venting is the use of water seal taps and ventilation pipes in a drainage system so that smelly and dangerous gasses✓ building up in it are released outside a building.✓
- A water seal trap is the curved section of a drainpipe that always holds some water,✓ which prevents foul air in the drain from rising and entering a building.✓ (4)

3.4
- It is expensive to install because many pipes are needed.
- It requires more fittings and materials. (2)

3.5 Vertical slope height/fall:
= Distance/gradient
= 2 700/23✓
= 117 mm✓ (2)
[15]

QUESTION 4

4.1
4.1.1 GMS
4.1.2 IE
4.1.3 MH
4.1.4 SW
4.1.5 ABC
4.1.6 G
(6 × 1) (6)

4.2
- A shower tray or base.
- One or two taps for hot and cold water.
- A shower head. (3)

4.3
- A toilet catches and disposes of human waste.
- A bidet is used for personal hygiene after using the toilet. it looks like a shallow toilet and usually has mixing taps and a spout that is aimed at the middle of the bidet pan. (2 × 2) (4)

4.4
- They must be hygienic.
- They must be easy to be clean.
- They must be smooth or rust free. (Any 2 × 1) (2)
[15]

QUESTION 5

5.1
- Internal 90° gutter angles.
- External 90º gutter angles.
- Gutter outlets with nozzles.
- Gutter stop ends that fit into the open sockets at the ends of a gutter. (4)

5.2 False.✓ A rainwater system consists of gutters and downpipes that lead the rainwater down from the roof and away from the house.✓✓ (3)

5.3
- uPVC (unplasticised Polyvinyl Chloride)
- Fibre cement
- GMS (Galvanised mild steel)
- Aluminium (4)

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5.4 5.4.1 A gutter stop prevents the rainwater in the gutter from flowing down at the end of the gutter.

5.4.2 A down-pipe shoe is used to discharge and direct the water away from the external wall of a building.

(2 × 2) (4)
[15]

QUESTION 6

6.1
- Measure, mark out and cut a rectangular base of 500 mm × 600 mm to serve as a cover flashing for the vent pipe flashing.
- Place the frustrum in the centre of the cover flashing.
- Mark off the oval perimeter of the frustrum on the rectangular base.
- Cut along the oval perimeter you have marked.
- Position the frustrum neatly over the hole.
- Use a hammer to knock the inward facing segments flat onto the underside of the cover flashing.
- Fit, align and secure the vent pipe flashing around the 110 mm diameter uPVC vent pipe. (Any 4 × 1) (4)

6.2 6.2.1 Height or length of the cone
6.2.2 Baseline of the cone
6.2.3 Baseline of frustrum
6.2.4 Seam
6.2.5 Diameter of the vent pipe
6.2.6 Roof slope or angle

(6 × 1) (6)
[10]

QUESTION 7

- Timber wedge
- Timber strut
- Wooden walling
- Horizontal sheeting
- Vertical sheeting
- Poling board (Any 5 × 1) **[5]**

TOTAL: 100

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