higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 4

17 November 2022

This marking guideline consists of 5 pages.

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QUESTION 1: BASIC BUILDING WORK AND BUILDING MANHOLES

1.1 1.1.1 True
1.1.2 False
1.1.3 True
1.1.4 True
1.1.5 False (5 × 1) (5)

1.2 Mortar or another acceptable seal that has been designed to work on that kind of concrete. (1)

1.3 Soffit is the top point of the inside open section of pipe. (2)

1.4 1.4.1 1:3
1.4.2 25 mm/20 mm
(2 × 1) (2)
[10]

QUESTION 2: BELOW GROUND DRAINAGE SYSTEMS

2.1
- The site datum/Datum level/Reference point
- Invert level/Invert depth of drain or excavation (2)

2.2
- An inspection chamber is an access point smaller than a manhole✓ that allows workers to inspect, test and maintain drains from the surface (ground level).✓
- A manhole is an inspection chamber deeper than 750 mm✓ and big enough for a person to enter the chamber to reach a drain.✓ (2 × 2) (4)

2.3 1:40 (1)

2.4 Where the slope is greater than 1:10 (1)

2.5
- Highest point
- Any 90° turn must have an access point from where it can be reached
- Drain junctions
- Changes of direction
- 90° junctions – where a subdrain flows into another drain, you will need an access point
- If the pipe is long (Any 5 × 1) (5)

2.6 Because this may damage the pipe or change the levels or direction of the pipe (2)

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2.7
- A water level
- Boning rods and sight rails
- A dumpy level with a tripod and measuring staff
- A spirit level, a straight edge, a wooden gradient template and metal or wooden pegs, profile boards, measuring tape, club hammer and pegs.

(Any 3 × 1) (3)

2.8
- One for pipelines above the water level
- One for pipelines below the water level (2)

[20]

QUESTION 3: PLUMBING MAINTENANCE AND REPAIRS

3.1 600 kPa or more (1)

3.2 It is to cut the leaking piece out of the pipe and replace it with a new pipe.✓ (2)

3.3
- Hacksaw
- Pipe cutter
- Hacksaw blade (3)

3.4
- Close the stop cock feeding water into the tap, or close the main valve feeding water into the premises from municipality.
- Remove the head of the tap by loosening the screw that holds it to the rod.
- Loosen the flange with a shifting spanner. By taking off the flange, you will expose the base of tap.
- First open the tap fully to allow for the easy removal of the base.
- Loosen the base of the tap with a shifting spanner.
- Pull out the base, which in turn will expose the perish washer.
- Remove the washer from the rod.
- The old washer will simply slip down to the bottom of the rod.
- Use a reaming tool to grind away any dirt build-up that may have collected on the seat of the tap. (Any 8 × 1) (8)

3.5 You should drain all water from the geyser. (1)

3.6
- A plunger
- Rods
- A kinetic ram gun
- Coring and scraping
- Chemical cleaning (Any 3 × 1) (3)

3.7 To create a smooth, bevelled edge that will not damage the rubber ring on the fitting to be placed over it. (2)

[20]

QUESTION 4: BOX GUTTERS AND CHIMNEY FLASHING

4.1 A stop end is a gutter component that is fitted at the two✓ ends of a gutter installation to prevent water draining out at the wrong point✓ (2)

4.2 A = Cover flashing ✓
B = Roof ✓
C = Abutment flashing ✓ (3)

4.3
- Guillotine
- Tin snip (2)

4.4 Abutment flashing prevents rainwater from seeping in between the roof and the brickwork✓ or gutter to the inside of the building.✓ (2)

4.5
- Apron flashing
- Step flashing
- Back gutter (3)

4.6 You should be careful not to mix any of the materials if they are going to touch. (3)
[15]

QUESTION 5: INSTALL A SOLAR WATER HEATER

5.1 Solar energy is the energy given off by the sun in the form of heat and light. (2)

5.2 It absorbs sunlight and creates an electric current. (1)

5.3
- The solar heating system must be in a sunny location so that the collector receives enough hours of sunlight every day.
- The sun should shine on the collector between 9:00 and 15:00. (2)

5.4
- Flat-plate collectors
- Evacuated cube solar collectors
- Batch collectors (3)

5.5
5.5.1 natural convection
5.5.2 rising
5.5.3 water
5.5.4 tank
5.5.5 collector
5.5.6 heats
5.5.7 lighter
5.5.8 cooler

(8 × 1) (8)

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5.6 A demand water heater heats the water at the time of demand.✓✓ (2)

5.7
- The position of the collector
- Is the collector facing true North?
- Tilt the collector at an angle above the horizon equal to the latitude of the site plus 10° (3)

5.8
- Glazed flat-plate collectors are insulated, weather-proof boxes that contain a dark absorber plate under more glasses or plastic (polymer) covers.✓ There are flow tubes or channels in the plate through which the water circulates and is heated in the process.✓
- Unglazed flat-plate collectors have a darker absorber plate made of metal or polymers.✓ They have no cover or enclosure and are typically used for solar pool heating.✓ (2 × 2) (4)

[25]

QUESTION 6: BASIC BUSINESS CONCEPTS

6.1 Business plan (1)

6.2 Market research is a business activity that involves collecting information on what goods and services people buy,✓ and why they buy them.✓ (2)

6.3
- How many other businesses offer the same service in this area?
  - Are they good?
  - Can I do a better job?✓
- Are they busy?
  - Will there be enough work for all of us?
  - Will I be able to take some work away from them?✓ (2)

6.4 Profit is the amount of money a business makes after having paid for all the expenses. (2)

6.5
- It can be stolen.
- If the notes are marked with blue ink, the bank may not accept them.
- It is expensive to deposit cash into your account. (3)

[10]

TOTAL: 100

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