higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PLUMBING THEORY N1

2 AUGUST 2019

This marking guideline consists of 6 pages.

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QUESTION 1: SAFETY AND HOUSEKEEPING

- Review the effectiveness of health and safety measures.
- Identify potential hazards and potential major incidents at the workplace.
- Investigate any complaints by any employee relating to that employee's health and safety at work.
- Make representations to a health and safety committee on matters that are unsuccessful to an inspector.
- Inspect the workplace and safety equipment with a view to health and safety of employees. **[5]**

QUESTION 2: TOOLS AND MACHINES

2.1 2.1.1 The centre punch is made from steel✓ and is tapered while the tip is at an angle of 45 degrees.✓

2.1.2 The prick punch is shorter✓ and thinner than the centre punch and the tip is at an angle of 60 degrees.✓

(2 × 2) (4)

2.2 2.2.1 Used to attach flanges to metals
2.2.2 Used to compact earth filling
2.2.3 Cutting sheet metal quickly, accurately and straight
2.2.4 Bending metal sheets into cylinders

(4 × 1) (4)

2.3
- Pipe wrench
- Stillson wrench (Any 1 × 1) (1)

2.4 Ii is an electrical drill with a stand and a base plate and is used to drill sheet metal. (1)

[10]

QUESTION 3: METALS AND MATERIALS

3.1 3.1.1 Capacity to return to its original form, after being stretched and the force is removed.

3.1.2 A material such as copper has a very high coefficient of expansion.

(2 × 2) (4)

3.2
- Metallic coating such as galvanising
- Anticorrosive paint coatings
- Thermoplastic coatings
- Anodising of aluminium and its alloys (4)

[8]

QUESTION 4: SOLDERING AND WELDING

4.1 4.1.1 When the gas with the higher pressure flows back through the torch into the hose with a low pressure, it creates a dangerous mixture of gases in the lower-pressure hose.

4.1.2 An oxyfuel flame with an excess of fuel

4.1.3 An approximate one-to-one mixture of oxygen and acetylene, resulting in a flame that is chemically neutral.

(3 × 2) (6)

4.2
- Torch body (handle)
- Two separate gas tubes
- Separate control valves
- Mixer chamber
- Flame tube
- Welding tip (Any 2 × 1) (2)

[8]

QUESTION 5: COLD-WATER SUPPLY

5.1 5.1.1 Bib taps are designed to be fitted into the wall over appliances.

5.1.2 Billar taps are designed to be fitted directly into the sanitary appliance and secured by a back nut.

(2 × 2) (4)

5.2 5.2.1 Portion of pipe from service mains to behind the meter
5.2.2 Portion of pipe between meter and premises
5.2.3 Pipe from service mains to the premises

(3 × 2) (6)

5.3
- Class 0✓ – yellow end cap✓
- Class 1✓ – orange end cap✓
- Class 2✓ – brown end cap✓
- Class 3✓ – no caps✓ (4 × 2) (8)

[18]

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QUESTION 6: HOT-WATER SUPPLY

6.1
- Radiation✓ – transfer of heat from one body to another not in contact✓
- Conduction✓ – the distribution of heat through the layers of a substances in contact with one another✓
- Convection✓ – the distribution of heat by circulation of a liquid or a gas✓

. (3 × 2) (6)

6.2 Advantages
- It takes up little space.
- It reduces labour and material costs.
- The valve is easily accessible for repairs. (Any 2 × 1) (2)

Disadvantages
- It malfunctions when grains of sand filter through the system.
- Those made of plastic can easily break when not handled with care.
- It is very expensive to repair. (Any 2 × 1) (2)

6.3 Advantages
- A decrease in electricity consumption is more environment-friendly.
- Solar energy is used to heat the water. There is a marked decrease in electricity consumption. It is cost-saving. (Any 1 × 1) (1)

Disadvantages
- Not very effective in periods of no direct sunlight (cloudy periods)
- Installation is costly
- Unsightly on roofs
- Added weight to the structure (Any 1 × 1) (1)

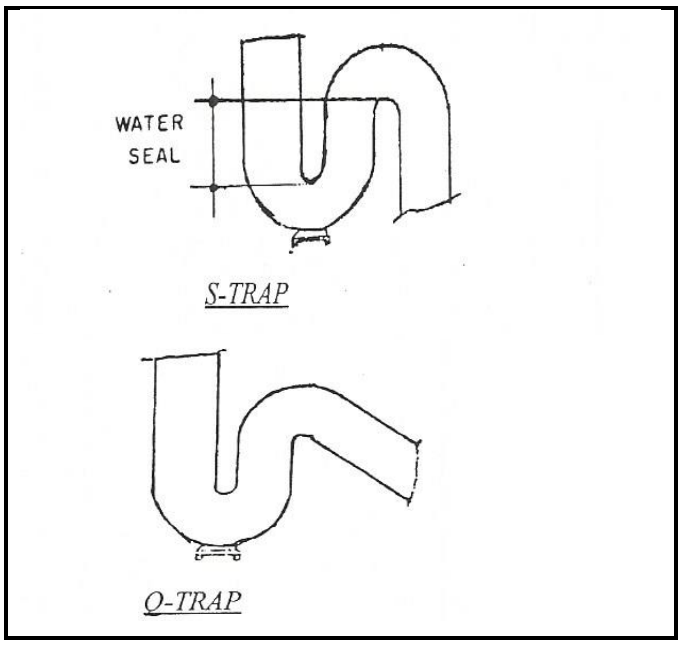
[12]

QUESTION 7: DRAINAGE

7.1
- At a point within 1,5 m from the connection to the point of disposal
- Within every 25 m on a straight run of the drain
- At the head of all drains
- At the head of any branch drain longer than 6 m
- At the change of direction that exceeds 45° if a long radius bend is not used
- On a stubstack in a closed drainage system (Any 5 × 1) (5)

7.2
- Air test
- Water test (2)

7.3



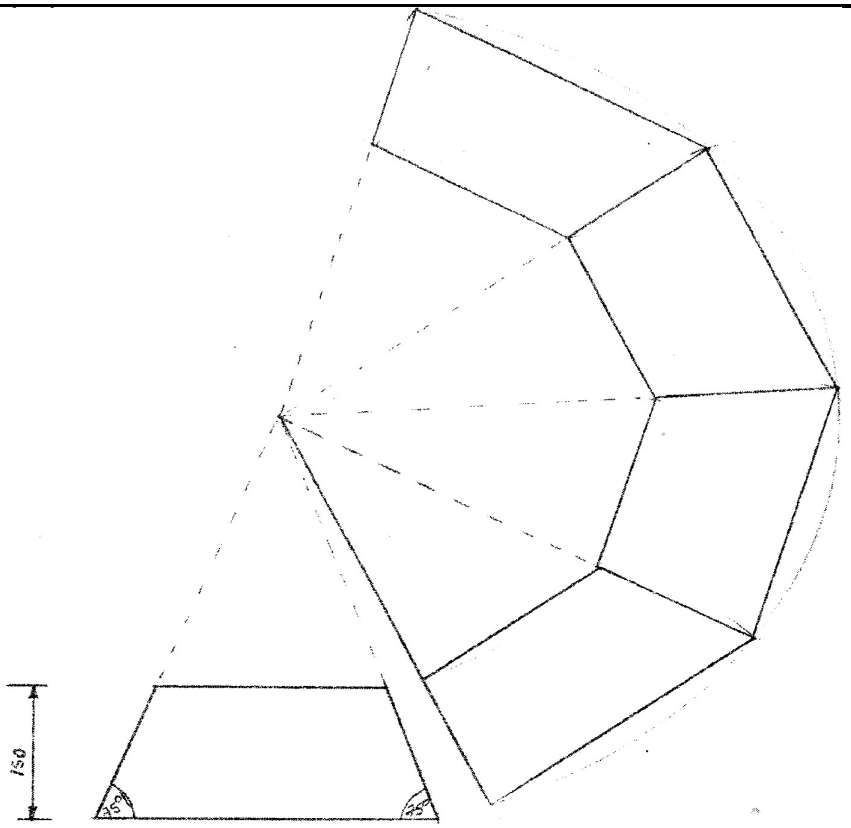
(6)

7.4
- Close-coupled suite
- Low-level suite
- High-level suite (3)

7.5
7.5.1 Soil vent pipe
7.5.2 Unplasticised polyvinylchloride
7.5.3 Water meter

(3 × 1) (3)
[19]

QUESTION 8: SHEET METALWORK



MARK ALLOCATION:
SCALE 1:10 (1)
SIDE VIEW: (2)
TOP VIEW: (2)
PATTERN: (7)

TOTAL: (12)

[12]

QUESTION 9: CALCULATIONS

9.1 The area of the sheet = length × width✓
= 100 × 85✓
= 8 500 m^2✓ (3)

9.2 Circumference of sheet = 2 × length + 2 × width✓
or = 2 × (length + width)✓
= 2 (100 + 85)✓
= 2 × 185✓
= 370 m✓ (5)
[8]

TOTAL: 100

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