higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1370(**E**)(A5)T

NATIONAL CERTIFICATE

PLUMBING THEORY N1

(11022041)

5 April 2018 (X-Paper)
09:00–12:00

This question paper consists of 5 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
PLUMBING THEORY N1
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Use 9,81 for gravitational acceleration.
5. Write neatly and legibly.

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QUESTION 1: SAFETY AND HOUSEKEEPING

1.1 State THREE major points to remember when lifting heavy objects. (3)

1.2 State TWO advantages of collapsible steel trestles. (2)
[5]

QUESTION 2: TOOLS AND MACHINES

2.1 State FIVE safety measures when a grinding wheel is mounted (fitted) on a grinding machine. (5)

2.2 State the correct use and care of a hacksaw. (3)

2.3 Why must a file be equipped with a handle? (2)
[10]

QUESTION 3: METALS AND MATERIALS

3.1 Define the properties of the following:

3.1.1 Ductility

3.1.2 Tenacity

3.1.3 Malleability

3.1.4 Tenability

(4 × 1) (4)

3.2 Name TWO types of corrosion that the plumber should be aware of. (2)

3.3 What is *corrosion*? (2)
[8]

QUESTION 4: SOLDERING AND WELDING

4.1 Name FOUR different types of solder used by plumbers. (4)

4.2 Name ONE type of flame used for hard soldering. (1)

4.3 Briefly describe the difference between *soft soldering* and *hard soldering*. (4)
[9]

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QUESTION 5: COLD-WATER SUPPLY

5.1 Name the components indicated on the sketch of a stopcock shown in FIGURE 1. Write only the answer next to the number (1–5) in the ANSWER BOOK.

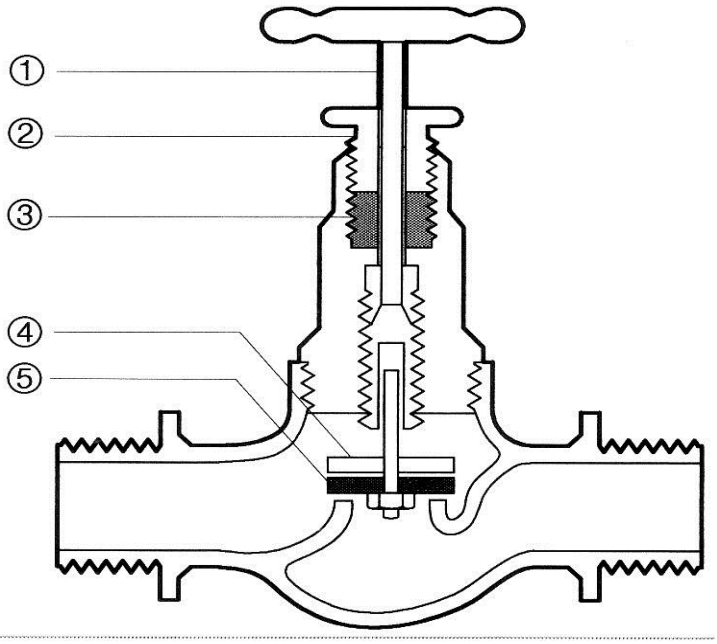

FIGURE 1

(5)

5.2 Name THREE properties that water which is suitable for human consumption (drinking water) must comply with. (3)

5.3 What does the term p*otable water* mean? (1)

5.4 Fitting a galvanised pipe between two fixed points can be a difficult task.

5.4.1 Name TWO fittings used to complete the task. (2)

5.4.2 Name the tools required to complete the task. (2)

5.4.3 What will be used at the joints to ensure that joints are watertight? (1)

5.5 State FOUR methods used to prevent water from freezing in pipes. (4)

5.6 State THREE disadvantages of asbestos cement pipes. (3)

[21]

QUESTION 6: HOT-WATER SUPPLY

6.1 Describe the working principles of a push-through hot-water geyser. (5)

6.2 6.2.1 State TWO causes of water hammers.

6.2.2 State TWO methods to remedy the causes of water hammers.
(2 × 2) (4)

6.3 Can a tap be installed at the draw-off point of a push-through geyser? Motivate the answer. (2)

6.4 What valve controls the incoming cold-water supply to a high-pressure hot-water cylinder? (1)
[12]

QUESTION 7: DRAINAGE

7.1 Make a neat, labelled, longitudinal sectional drawing of a manhole ramp. (10)

7.2 Describe the function of the following:

7.2.1 Gully

7.2.2 Antisiphon pipe

7.2.3 Soil vent pipe

7.2.4 Grease trap
(4 × 1) (4)

7.3 Explain the term *inspection chamber.* (2)
[16]

QUESTION 8: SHEET METAL WORK

8.1 Describe, with the aid of neat sketches, the steps to follow when making a grooved seam joint. (9)

8.2 Name THREE main methods used in pattern developments. (3)
[12]

QUESTION 9: CALCULATIONS

A cold-water supply tank is fitted with a 50 mm diameter full-way valve 4 m below the water level of the tank.

Calculate :

9.1 The intensity of pressure on the closed full-way valve (3)

9.2 The total pressure on the valve (4)
[7]

TOTAL: 100

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