higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 3

(12030373)

21 November 2024 (X-paper)
09:00–12:00

Nonprogrammable calculators and drawing instruments may be used.

This question paper consists of 6 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
PLUMBING
NQF LEVEL 3
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. All sketches and diagrams must be neat, reasonably large, in good proportion, fully labelled, and drawn in pencil.
5. All abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
6. Use only a black or blue pen.
7. Write neatly and legibly.

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QUESTION 1: COLD WATER RETICULATION PLUMBING

1.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 Diameter is the height of the straight line stretching from one side of a circle to the other.

1.1.2 A by-law is a law made by a local government that people in that specific area must obey.

1.1.3 Water reticulation is the pipe layout for the water supply from a building.

1.1.4 The required speed of water flow that will meet the water supply requirements of a pipe installation is called its design velocity.

1.1.5 An indirect cold-water cistern is a large storage tank installed on the roof of a building.

(5 × 1) (5)

1.2 Briefly explain the difference between *anchor blocks* and *thrust blocks*. (4)

1.3 Why is design velocity important in a water reticulation? (2)

1.4 List FIVE site or structural constrains that may affect the design of a pipe layout for water reticulation. (5)

1.5 State the meaning of the following words commonly used in the plumbing industry:

1.5.1 Terminal fittings

1.5.2 Design velocity

(2 × 2) (4)

[20]

QUESTION 2: HOT WATER RETICULATION PLUMBING

2.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (2.1.1–2.1.2) in the ANSWER BOOK. Give a reason for your answer.

2.1.1 A geyser is a type of kettle used in restaurants and shops to heat water for coffee.

2.1.2 A combination geyser is a water heater made up of a cold-water storage tank and a geyser with an electric element and a thermostat.

(2 × 2) (4)

2.2 Name FIVE advantages of a push-through geyser. (5)

2.3 What is the difference between a *pressure control valve* and a *pressure relief valve?* (4)

2.4 List FOUR factors to consider when you size pipes. (4)

2.5 Name THREE requirements that must be satisfied when a water supply line is installed underneath a building or a concrete slap. (3)

[20]

QUESTION 3: ABOVE-GROUND DRAINAGE SYSTEM

3.1 Name FOUR examples of wastewater fixtures. (4)

3.2 Give THREE requirements for a good drainage system. (3)

3.3 Explain the need for traps and trap vents when above-ground drainage systems are installed. (4)

3.4 State TWO disadvantages of the two-pipe system. (2)

3.5 Calculate the vertical slope height of a branch pipe on a section of a soil-and-vent stack if the length of the branch pipe is 2 700 mm and the required gradient is 1:23. (2)

[15]

QUESTION 4: SANITARY INSTALLATION

4.1 Give the correct SANS abbreviation of the following:

4.1.1 Galvanized mild steel

4.1.2 Inspection eye

4.1.3 Manhole

4.1.4 Shower

4.1.5 Access branch connection

4.1.6 Gully

(6 ×1) (6)

4.2 Name THREE main components of a shower. (3)

4.3 Explain the difference between *a toilet* and *bidet.* (4)

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4.4 Wastewater appliances must be made of a good quality material so that they are durable.

List TWO important qualities that wastewater appliances must have. (2)
[15]



QUESTION 5 : RAINWATER SYSYTEM

5.1 List FOUR GMS fittings that you would commonly use to fit GMS gutters. (4)

5.2 Indicate whether the following statement is TRUE or FALSE by writing only 'True' or 'False' next to the question number (5.2) in your ANSWER BOOK. Give a reason for your answer.

A rainwater system is any kind of pipe used to channel rainwater falling on the ground towards storm water drains in a road. (3)

5.3 List FOUR different materials gutters and their fittings are made of. (4)

5.4 Explain the following parts of a gutter:

5.4.1 A gutter stop



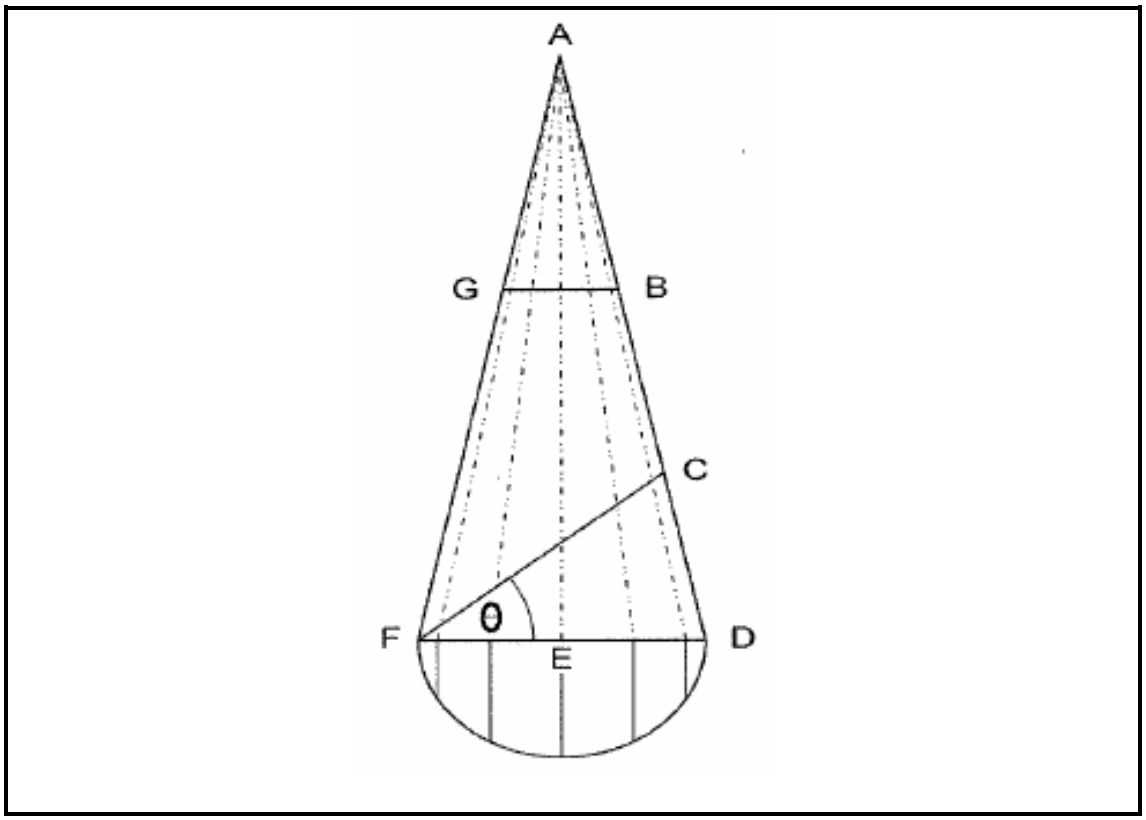
5.4.2 A downpipe shoe

(2 × 2) (4)
[15]

QUESTION 6: VENT PIPE FLASHING

6.1 Name FOUR methods of securing flashing. (4)

6.2 FIGURE 1 below shows stage one in the development of a vent pipe flashing. Answer the questions below by writing the answer next to the number (6.2.1−6.2.6) in the ANSWER BOOK.



6.2.1 What does line AE represent?

6.2.2 What does line FD represent?

6.2.3 What does line FC represent?

6.2.4 What does line FG represent?

6.2.5 What does line GB represent?

6.2.6 What does angle Ø represent?

(6 × 1) (6)
[10]

QUESTION 7: TRENCHING, EXCAVATION AND TRENCH SUPPORT

Name FIVE different types of timber board that are commonly used for shoring. **[5]**

TOTAL: 100

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