higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 3

(12030373)

10 March 2020 (Y-paper)
13:00–16:00

This question paper consists of 5 pages.

403Q1S2010

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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. Start each question on a new page.
5. Use only a black or blue pen.
6. Write neatly and legibly.

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QUESTION 1: COLD-WATER RETICULATION

1.1 Explain the advantage of using an isometric drawing instead of a layout plan to calculate quantities of materials for a cold-water system. (3)

1.2 List SIX site and structural constraints when designing a piping layout for a residential cold-water system. (6)

1.3 Define the term *design velocity*. (2)

1.4 What is *static pressure* in a cold-water system? (2)

1.5 Give TWO advantages of water reticulation. (2)

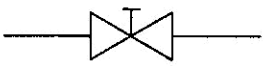
1.6 List THREE general-quality requirements for drinking water. (3)

1.7 State the minimum and maximum depth of underground-water service mains. (2)

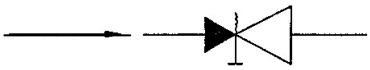
[20]

QUESTION 2: HOT-WATER RETICULATION

2.1 Give the correct name of each of the following valves used in hot-water systems:

2.1.1 

2.1.2 

2.1.3 

2.1.4 

(4 × 1) (4)

2.2 Give FOUR advantages of a push-through geyser. (4)

2.3 Briefly explain the purpose of installing a pressure-control valve. (3)

2.4 Make a neat, labelled, single-line diagrammatic sketch of a water-heating system with a 100 litre horizontal geyser with a pressure rating of 400 kPa. Indicate all required valves, pipes and fittings. Use symbols specified by the relevant SANS codes. (9)

[20]

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QUESTION 3: ABOVE-GROUND DRAINAGE SYSTEMS

3.1 Explain *trap venting* and state why it is used in above-ground drainage systems. (4)

3.2 Differentiate between a *one-pipe system* and a *two-pipe system* in relation to drainage. (3 + 3) (6)

3.3 Explain how to prevent gasses that build up in a drain from escaping into the building. (5)

[15]

QUESTION 4: SANITARY INSTALLATION

4.1 What is the *splashback* of a kitchen sink? (3)

4.2 Make a sketch of a vertical section through a double-trap siphonic water-closet pan. (6)

4.3 Why should an installed bath rest on bricks or a bedding made from a sand and cement mix? (2)

4.4 Explain each of the following terms:

4.4.1 Toilet

4.4.2 Bidet

(2 × 2) (4)

[15]

QUESTION 5: RAINWATER SYSTEM

5.1 What is a *fascia bracket*? (2)

5.2 At which gradient should gutters be installed? Give a reason for the answer. (3)

5.3 Give FOUR advantages of using uPVC gutters for a rainwater system. (4)

5.4 Explain THREE ways to join GMS gutters and fittings. (3)

5.5 Explain the function of each of the following:

5.5.1 Gutter stop

5.5.2 Downpipe shoe

(2 × 2) (4)

[16]

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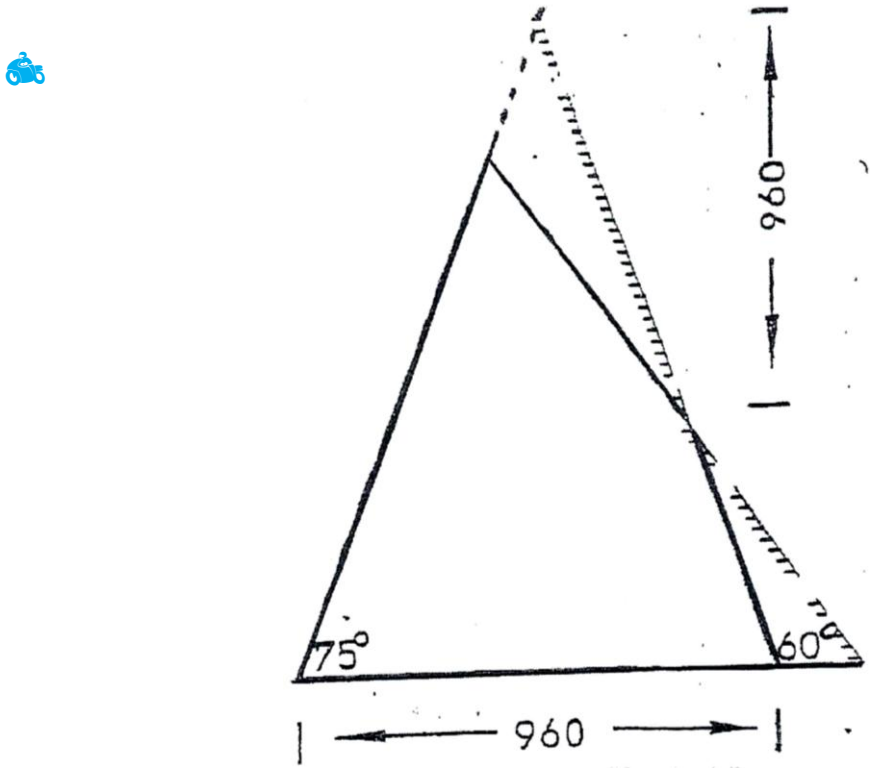
QUESTION 6: VENT-PIPE FLUSHING

Below is a diagram of a right cone obliquely truncated at the top.



FRONT ELEVATION **[10]**

Use the radial-line method to develop, to scale 1:5, the full pattern. Ignore the allowance for the seam.

QUESTION 7: TRENCHING, EXCAVATION AND TRENCH SUPPORT

7.1 Why is it important to support excavations in accordance with Occupational Health and Safety regulations? (2)

7.2 Name TWO types of timber boards commonly used for shoring (timbering) of trenches. (2)

[4]

TOTAL: 100

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