

**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**PLUMBING
NQF LEVEL 3**

NOVEMBER 2011

(12030373)

**21 November (X-Paper)
09:00 – 12:00**

This question paper consists of 5 pages and 1 annexure.

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
 2. Read ALL the questions carefully.
 3. Keep the subsections of questions together.
 4. Sketches should be neat, clear and done in pencil.
 5. Rule off across the page on completion of each subsection.
 6. Start each question on a NEW page.
 7. All work you do not be marked, must be clearly crossed out.
 8. Number the answers according to the numbering system used in this question paper.
 9. Write neatly and legibly.
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QUESTION 1: GENERAL

- 1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1.1 – 1.1.10) in the ANSWER BOOK.
- 1.1.1 If you calculate pipe sizes for the installation of a cold water system you determine the velocity of water that flows through it. (1)
- 1.1.2 Water reticulation describes the pipe layout of sewage flow to the purification dam. (1)
- 1.1.3 As a construction plumber it will be your responsibility to make sure that the installation meets all the necessary national specifications (SANS). (1)
- 1.1.4 Capillary type joints are soldered joints using solder and flux. (1)
- 1.1.5 The backflow (reverse flow) of water supply can be caused by water mains bursts and the water in the pipe line draining off. (1)
- 1.1.6 An indirect cold water cistern is a large storage tank installed inside the room of a house. (1)
- 1.1.7 Any water reticulation to a residential area must have water meters installed by the local authority. (1)
- 1.1.8 The main function of the ball valve (float valve) is to control the incoming of water in a storage tank or a cistern. (1)
- 1.1.9 When laying galvanized mild steel (GMS) pipe underground, special precautions such as lagging or coating the pipe work should be taken to protect the pipe from corrosion. (1)
- 1.1.10 It is commonly known that all plastic pipes for a water supply should not be protected from direct sunlight. (1)
- [10]**

QUESTION 2: HOT WATER RETICULATION

- 2.1 Mention TWO basic requirements for the installation of a hot water supply that is similar to a cold water supply. (4)
- 2.2 List TWO functions of a pressure reducing valve (PVR). (4)
- 2.3 Explain ONE important aspect of designing a pipe layout of a hot water system that does not apply to a cold water system. (4)
- 2.4 Explain how we can protect or prevent our pipes from freezing during winter. (2)

- 2.5 FIGURE 1, ANNEXURE A (attached) shows a diagrammatic layout of a horizontal high-pressure geyser installation. Write the name of each component next to the question number (2.5.1 – 2.5.9) in the ANSWER BOOK. (9)
- 2.6 Draw a neat, labelled sectional sketch of a typical push-through of a hot water geyser. Show all the accompanying valves. (9)
- [32]**

QUESTION 3: ABOVE GROUND DRAINAGE SYSTEM

- 3.1 Explain the following terms:
- 3.1.1 Soil water (2)
- 3.1.2 Waste water (2)
- 3.2 Why are sanitary components always installed with water seal traps? (2)
- 3.3 Mention THREE types of water seal traps we commonly use in plumbing. (6)
- 3.4 In plumbing we commonly use TWO methods to install above ground drainage. Name the two methods that are used. (4)
- 3.5 What are TWO disadvantages of the TWO pipe system regarding installations? (4)
- [20]**

QUESTION 4: SANITARY INSTALLATION

- 4.1 Waste water appliances must be manufactured of good quality material so that they can last long. List THREE important qualities that waste water appliances must have. (6)
- 4.2 What do the following abbreviations stand for:
- 4.2.1 BT (1)
- 4.2.2 GL (1)
- 4.2.3 MH (1)
- 4.2.4 WC (1)
- [10]**

QUESTION 5: RAIN WATER SYSTEM

- 5.1 List THREE materials that are used to manufacture the gutter and rain water pipes. (6)
- 5.2 List any TWO characteristics of a gutter upvc. (2)
- [8]**

QUESTION 6: VENT PIPE FLASHING

- 6.1 Describe THREE materials used to manufacture flashing for roofs. (6)
- 6.2 FIGURE 2, ANNEXURE A shows the right cone. Use the radial line method to develop the pattern for an object with a shape that tapers from its base to its apex of the right cone.
- NOTE: Scale 1:5 (14)
- [20]**

TOTAL: 100

ANNEXURE A

QUESTION 2.5

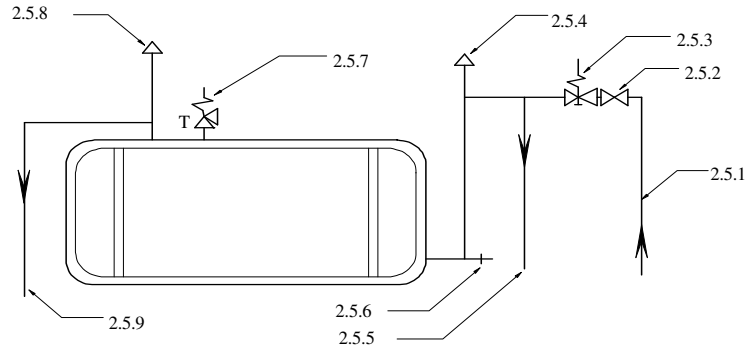


FIGURE 1

QUESTION 6.2

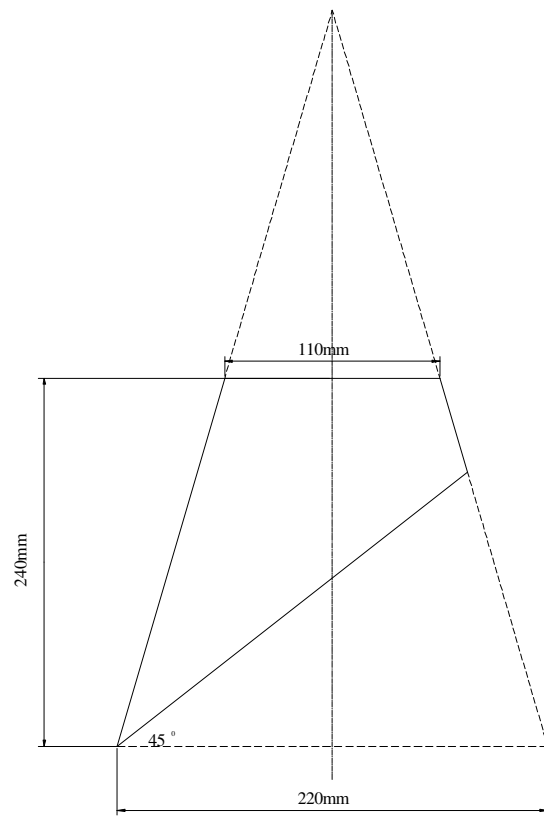


FIGURE 2