higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 4

(12030544)

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

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
PLUMBING
NQF LEVEL 4
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 only a black or blue pen.
5. Write neatly and legibly.

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QUESTION 1: BASIC BUILDING WORK AND BUILDING MANHOLES

1.1 Draw a neat three-layer sketch showing brick units in stretcher bond. (3)

1.2 What are the dimensions of a traditional clay brick in South Africa? (3)

1.3 What does SANS 10252-2 say about benching and sloping the surface of a manhole floor? (3)

1.4 Where is the *invert level of a pipe*? (1)

[10]

QUESTION 2: BELOW GROUND DRAINAGE SYSTEMS

2.1 Briefly explain the term, *site datum*. (2)

2.2 List TWO precautionary measures that should be in place to ensure the safety of people who are near an excavation site at night. (2)

2.3 Which THREE important points should be remembered when working out the invert level of a pipe? (3)

2.4 Give TWO reasons why drainpipes are at times blocked. (2)

2.5 What is the maximum distance at which a rodding eye should be installed from the municipal sewer connection? (1)

2.6 Name FOUR different soil types. (4)

2.7 Where are access points normally placed in drainpipes? List FIVE places. (5)

2.8 What is one of the main purposes of an air test? (1)

[20]

QUESTION 3: PLUMBING MAINTENANCE AND REPAIRS

3.1 What happens when washers are new and well positioned? (1)

3.2 What is the purpose of a flange? (1)

3.3 At what pressure is water fed into our homes from the municipal supply system? (1)

3.4 List NINE steps that should be followed when repairing a copper pipe with the use of a capillary fitting. (9)

3.5 Which TWO options can be used when repairing a big leak? (2)

3.6 What is the purpose of an element in a geyser? (1)

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3.7 What function does a drain cock have in a geyser? (1)

3.8 When repairing waste, soil and vent pipes which THREE tools can be used? (3)

3.9 With the use of which hand tool can small blockages be removed? (1)

[20]

QUESTION 4: BOX GUTTERS AND CHIMNEY FLASHING

4.1 Draw a neat, labelled sketch of a box gutter. (5)

4.2 Which TWO procedures would be practical to use to prevent a reaction between aluminium and freshly placed cement? (2 x 2) (4)

4.3 Where do we use abutment flashing? (1)

4.4 Name THREE parts that a chimney flashing consists of. (3)

4.5 What are *soakers*? (2)

[15]

QUESTION 5: INSTALL A SOLAR WATER HEATER

5.1 Complete the following sentences/paragraph by choosing a word or words from the list below. Write only the answer next to the question number (5.1.1–5.1.8) in the ANSWER BOOK.

energy from the sun; make us hot; harmful by products; sources of energy; life giving energy; run out; feel every day; radiant energy

Solar energy, or (5.1.1 …) is something we all (5.1.2 …). The rays from the sun (5.1.3 …), because they contain (5.1.4 …). It is a primary source of (5.1.5 …) and unlike other (5.1.6 …), it does not (5.1.7 …) or create (5.1.8 …) (4)

5.2 What is *radiant energy*? (2)

5.3 Briefly explain the difference between *glazed flat plate collectors* and *unglazed flat-plate collectors.* (4)

5.4 Name TWO types of passive solar water heaters. (2)

5.5 Give TWO basic types of solar water heating systems. (2)

5.6 Why do solar water heating systems need a backup? (2)

5.7 Define the term, *demand water heater.* (2)

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5.8 Why is it important that shadows from nearby objects, such as tall trees, not fall directly on the collector? (2)

5.9 List THREE steps that should be followed when installing a solar collector on a roof. (3)

5.10 Why should a check valve be installed at the outlet of the pump? (2)
[25]

QUESTION 6: BASIC BUSINESS CONCEPTS

6.1 Why is it important to do market research before starting a new business? (1)

6.2 Lorna has R200 000 in the bank. She quotes R400 000 for a job that will last for four months.
She needs to buy R100 000 worth of material and pay other expenses.

Material: R100 000
Expenses
Wages: R10 000
Bakkie: R7 000
Rent: R5 000

Draw a graph (bar chart) showing Lorna's cash flow projection and clearly indicate what each bar represents. (7)

6.3 What does the term *clause* mean in a business document? (2)
[10]

TOTAL: 100

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