higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 4

(12030544)

22 November 2018 (Y-Paper)
13:00–16:00

This question paper consists of 6 pages.

NCV

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. Sketches should be neat, labelled and large enough so that ALL details can be seen clearly.
6. ALL abbreviations and symbols must comply with the latest National Building Regulations and ALL relevant SANS (SABS) codes.
7. ALL questions must be answered in the ANSWER BOOK.
8. Write neatly and legibly.

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QUESTION 1: BASIC BUILDING WORK AND BUILDING MANHOLES

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 (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 A double-leaf wall (also called a jointed wall) has two leaves parallel to each other.

1.1.2 A straight edge is used to check flatness on different surfaces.

1.1.3 The purpose of stays on profiles is to keep people from entering a building site.

1.1.4 A manhole is an inspection chamber deeper than 750 mm and big enough for a person to enter the chamber to reach a drain.

1.1.5 The mortar between courses must be 10 mm to 15 mm thick.

(5 × 1) (5)

1.2 Draw a neat sketch of THREE layers showing how brick units are laid in a stretcher bond. (2)

1.3 Which type of joints should the wall of a manhole built with bricks be finished with in each of the following cases:

1.3.1 Plastered

1.3.2 Not plastered

(2 × 1) (2)

1.4 What is the minimum internal diameter of a precast concrete manhole? (1)

[10]

QUESTION 2: BELOW-GROUND DRAINAGE SYSTEMS

2.1 What is the difference between the *soffit* and *invert* of a pipe? (2)

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

2.3 2.3.1 What should the thickness of the bedding below a pipe be?

2.3.2 Why should access points of drains be wide enough?

2.3.3 Give a brief description of an inspection chamber.

2.3.4 Why must there be facilities along the drain?

2.3.5 If a drain is laid correctly the first time, what will we always be assured of?

(5 × 1) (5)

2.4 What is the correct formula to use when calculating the depth of a municipal connection? (1)

2.5 2.5.1 List FOUR identifying characteristics of an *invert level.* (4)

2.5.2 List TWO identifying characteristics of an *invert depth*. (2)

2.6 Briefly explain the term *shoring.* (3)

2.7 What is the main purpose of an air test? (1)

[20]

QUESTION 3: PLUMBING MAINTENANCE AND REPAIRS

3.1 Name TWO suitable tools that can be used to cut a copper pipe. (2)

3.2 If here is no need to remove an entire pipe between couplings, you will need to only remove a ***section of the pipe***. List therefore the SIX sequential steps to complete this procedure. (6)

3.3 Name any THREE procedures (in no particular order) when replacing a pressure-relief valve. (3)

3.4 Why is it advantages to use taps, valves and cocks? (2)

3.5 List FIVE methods that can be applied to remove obstructions or blockages from drainage systems. (5)

3.6 Why can it sometimes be difficult to unscrew a GMS pipe from a fitting, particularly in older installations? (2)

[20]

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QUESTION 4: BOX GUTTERS AND CHIMNEY FLASHINGS

4.1 Briefly explain the term *abutment flashing*. (2)

4.2 Name the most common tool used to GMS sheeting. (1)

4.3 Name TWO methods to follow, that could prevent a reaction between aluminium and freshly placed cement. (2)

4.4 What are *soakers*? (2)

4.5 Chimney flashings consists of THREE parts. Name any TWO of these. (2)

4.6 Give the first THREE steps that must be followed when fabricating box gutters. (3)

4.7 List any THREE steps (in no particular order) when fabricating chimney flashing. (3)
[15]

QUESTION 5: INSTALL SOLAR WATER HEATERS

5.1 What is the difference between *solar energy* and *radiant energy*? (4)

5.2 Give THREE common uses of solar energy. (3)

5.3 What purpose does a solar collector have? (2)

5.4 Name THREE types of solar collectors. (3)

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5.5 Name TWO types of flat-plate collectors. (2)

5.6 What is meant by the term *standby heat loss*? (2)

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

5.8 Briefly explain the difference between *active solar water heaters* and *passive solar water heaters*. (4)

5.9 Why do solar water systems need a backup system? (2)

5.10 Complete the following sentence by writing down the missing words next to the question number (5.10) in the ANSWER BOOK.

… should check that the roof can hold the weight of a solar water storage cylinder, design any additional strengthening for the roof and sign off the construction. (1)

[25]

QUESTION 6: BASIC BUSINESS CONCEPTS

6.1 What is *market research*? (2)

6.2 Name FOUR important aspects to consider when starting a business. (4)

6.3 How would you explain the term *cash flow*? (2)

6.4 Give TWO advantages of using cash. (2)

[10]

TOTAL: 100

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