higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

PLUMBING THEORY N2

(11022052)

1 December 2023 (X-paper)
09:00–12:00

This question paper consists of 5 pages and 1 answer sheet.

225Q1G2301

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
PLUMBING THEORY N2
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 blue or black pen.
5. Answer QUESTION 3.1 on the ANSWER SHEET (attached). A pencil may be used.
6. Write neatly and legibly.

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QUESTION 1: COLD-WATER SUPPLY

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 An underground fire hydrant must be placed so that it is not in the way of traffic or pedestrians but can easily be reached when needed

1.1.2 In a wet-pipe system, water is always present in the pipe up to the sprinkler head.

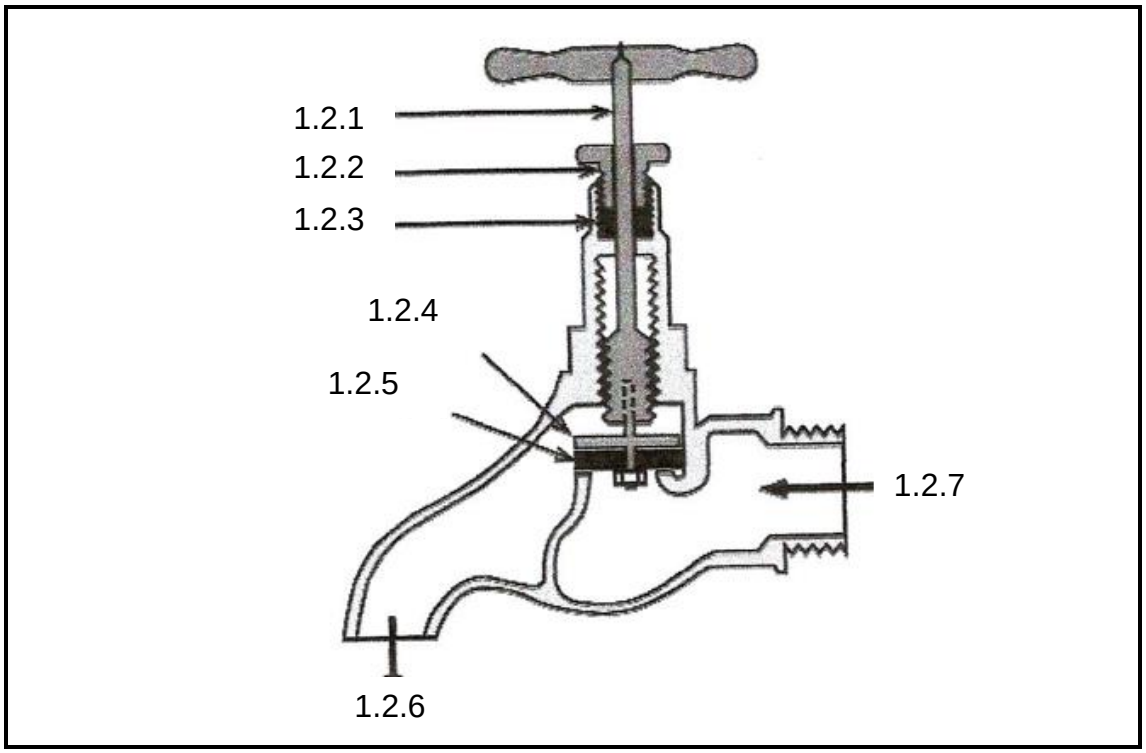
1.1.3 A thermostatic valve is a cheap device that incorporates water when mixing hot and cold water for showers.

1.1.4 A pressure zone refers to the reticulation networks that are supplied to a specific service reservoir.

1.1.5 Filtration is part of the process when laying pipes underground to supply water to the consumers.

(5 × 1) (5)

1.2 Name the parts indicated on the sketch and write only the answer next to the question number (1.2.1–1.2.7) in the ANSWER BOOK.



(7 × 1) (7)

1.3 List THREE functions of a service reservoir. (3)

1.4 Name FIVE factors that will influence the choice of coagulants and flocculants. (5)

[20]

QUESTION 2 : HOT-WATER SUPPLY

2.1 Draw with labelling included, a single-line diagram of a water heating system with a 150-litre vertical geyser with a pressure rating of 400 kPa.

Indicate all the required valves, pipes and fittings and make use of symbols specified by the relevant SANS codes. (8)

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

2.3 What is the difference between a *two-pipe system*, a *one-pipe system* and a *single-stub stack system*. (6)

2.4 Why is it advisable to use a one-pipe system in a dwelling? (2)

[20]

QUESTION3: DRAINAGE

3.1 Answer this question on the attached ANSWER SHEET (attached). Write your EXAMINATION NUMBER in the space provided, detach it from the question paper and hand it in with the ANSWER BOOK.

The plan indicates details of a house with an outbuilding. Complete the underground drainage detail to ensure an effective economical sewage disposal system to the septic tank and French drain. Make use of a one-pipe drain system. (15)

3.2 The invert level of a drain is 600 mm at the head of a drain.

Calculate the invert depth at the first change of direction if the length of the first section of pipe is 15 m and the fall is 1:40. (5)

3.3 List FOUR advantages of a manhole when comparing it with a rodding eye. (4)

3.4 Why should a French drain not be covered with waterproofing material? (1)

3.5 Give TWO suitable reasons for connecting a French drain to a septic tank. (2)

3.6 What is the difference between a manhole and an inspection chamber? (3)

3.7 Name TWO methods of inspecting and testing drains. (2)

3.8 Explain what is meant by the term "*drainage installation".* (3)

[35]

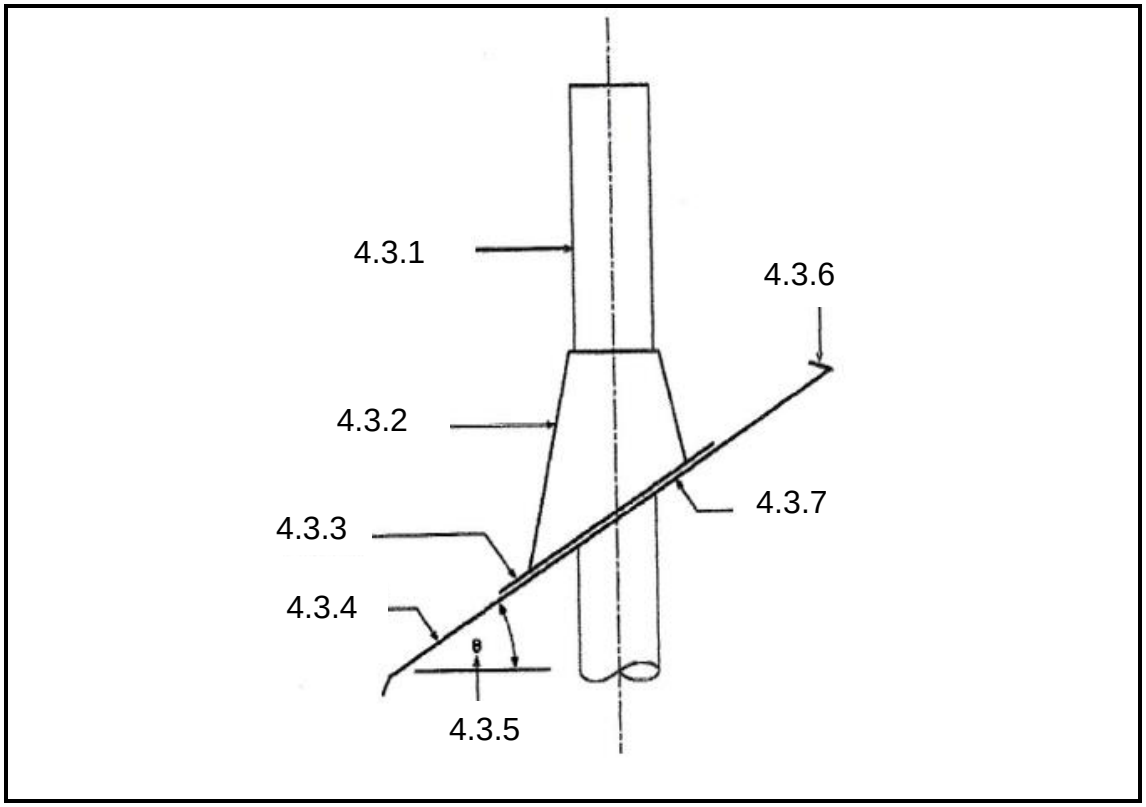
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QUESTION 4: SHEET METAL WORK AND FLASHINGS

4.1 Name TWO common areas that are secured with flashing on a roof. (2)

4.2 What is a vent pipe flashing and where is it used? (2)

4.3 The diagram below shows vent pipe flashing with its parts. Name the parts on the diagram and write only the answer next to the question numbers (4.3.1–4.3.7) in the ANSWER BOOK.



(7 × 1) (7)

4.4 Name FOUR types of flashing. (4)

[15]

QUESTION 5: CALCULATIONS

A water supply tank has an area of 1,4 m by 1,4 m with a height of 900 mm. The overflow outlet is 150 mm from the top of the tank.

Calculate the following:

5.1 The maximum volume of water that the tank can hold (3)

5.2 The mass of the tank when it is full of water (Mass of empty tank is 250 kg) (4)

5.3 The total area of material in m² required to manufacture the tank. Ignore any allowance for seams or a lid. (3)

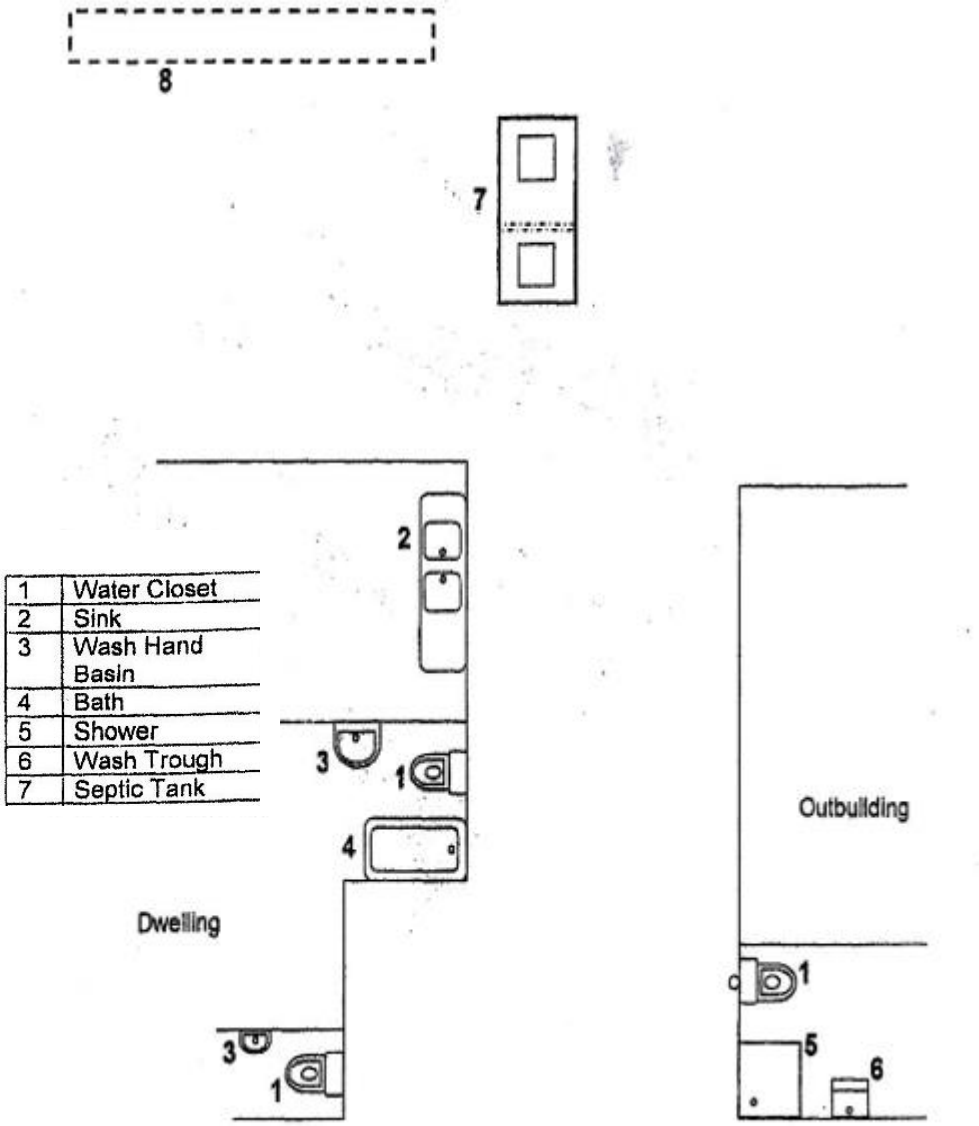
[10]

TOTAL: 100

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ANSWER SHEET **EXAMINATION NUMBER:**



1	Water Closet
2	Sink
3	Wash Hand Basin
4	Bath
5	Shower
6	Wash Trough
7	Septic Tank

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