higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1380**(E)**(A1) T

NATIONAL CERTIFICATE

PLUMBING THEORY N2

(11022052)

1 August 2018 (X-Paper)
09:00–12:00

Candidates will require drawing instruments.

Calculators may be used.

This question paper consists of 5 pages and 3 diagram sheets.

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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. ALL the questions must be answered in the ANSWER BOOK, except QUESTION 3.5 which must be answered on the attached DIAGRAM SHEET.
5. ALL the sketches and/or diagrams must be neat, reasonably large, in good proportion, fully labelled and done in pencil.
6. ALL the abbreviations and symbols must comply with the latest National Building Regulations and ALL relevant SANS (SABS) codes.
7. Start each question on a NEW page.
8. Rule off across the page on completion of EACH question.
9. Write neatly and legibly.

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QUESTION 1: COLD-WATER SUPPLY

1.1 Name TWO important points of the following plumbing terms:

1.1.1 Sterilisation

1.1.2 Pressure zone

1.1.3 Filtration

(3 × 2) (6)

1.2 Water intended for human consumption must meet acceptable quality standards.

Based on this statement, name FOUR quality requirements for potable water. (4)

1.3 Give a suitable definition for the term *water hammer*. (2)

1.4 What are possible causes for *water hammer?* (3)

1.5 Name THREE remedies that could be applied for *water hammer*. (3)

1.6 Give TWO reasons why air should be extracted from a pipeline. (2)

[20]

QUESTION 2: HOT-WATER SUPPLY

2.1 Relief valves are available in various pressure ratings. What are the colour code for the following pressure ratings?
50 kPa
75 kPa
100 kPa
200 kPa (4)

2.2 What is the purpose of a pressure-control valve in a hot-water installation? (2)

2.3 Name TWO advantages and TWO disadvantages of a combination geyser. (4)

2.4 Why would we find a supply tank in a combination geyser? (1)

2.5 Give ONE reason to indicate why it would not be necessary to install a supply tank on a high-pressure geyser where a pressure-control valve is already used. (2)

2.6 Name FOUR important dependents of solar radiation. (4)

2.7 Name THREE disadvantages of solar water heating panels. (3)

[20]

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QUESTION 3: DRAINAGE

3.1 The NBR (National Building Regulations) prescribe that no person shall put into use any drainage installation before such an installation has been inspected, tested and passed by the local authority or inspector to ensure that it complies with the regulations.

In view of this statement, list FIVE aspects that the drainage inspector must inspect. (5)

3.2 Describe the in-situ permeability test of the soil with particular reference to the excavation and preparation, before the installation of a French drain. (6)

3.3 List FOUR activities related to the biological processes that occur in a septic tank. (4)

3.4 What does the following standard sanitary and miscellaneous abbreviations stand for?

3.4.1 WM

3.4.2 ST

3.4.3 SW

3.4.4 CE

3.4.5 MH

(5 × 1) (5)

3.5 Complete the plan layout on DIAGRAM SHEET 1 (attached) and indicate all the drainage details required to ensure an effective and economical sewage disposal to the sewer.

Label all the required access fittings, functions and relevant pipe sizes.

NOTE: Write your EXAMINATION NUMBER in the given spaces and place the completed DIAGRAM SHEET 1 in the ANSWER BOOK. (15)

[35]

QUESTION 4: SHEET METAL WORK AND FLASHING

Apply the triangulation method of pattern development and develop the pattern of the transition piece shown on DIAGRAM SHEET 2 (attached). Do NOT show any allowance for seams.

Use scale 1 : 10 **[15]**

QUESTION 5: CALCULATIONS

The drawing on DIAGRAM SHEET 3 (attached) shows a hot-water and cold-water supply.

Determine ALL the pipe materials, fittings and types of valves and their quantities required to complete the hot-water and cold-water layout shown. Copy and complete the table below in the ANSWER BOOK.

Assume that class 460/2 copper tubing was used.
The scale used is 1 : 5.

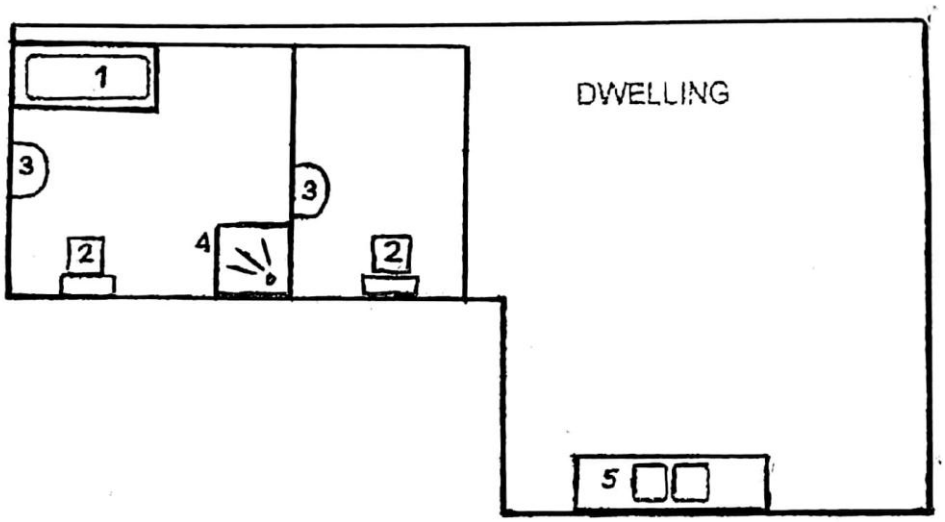
DESCRIPTION	QUANTITY

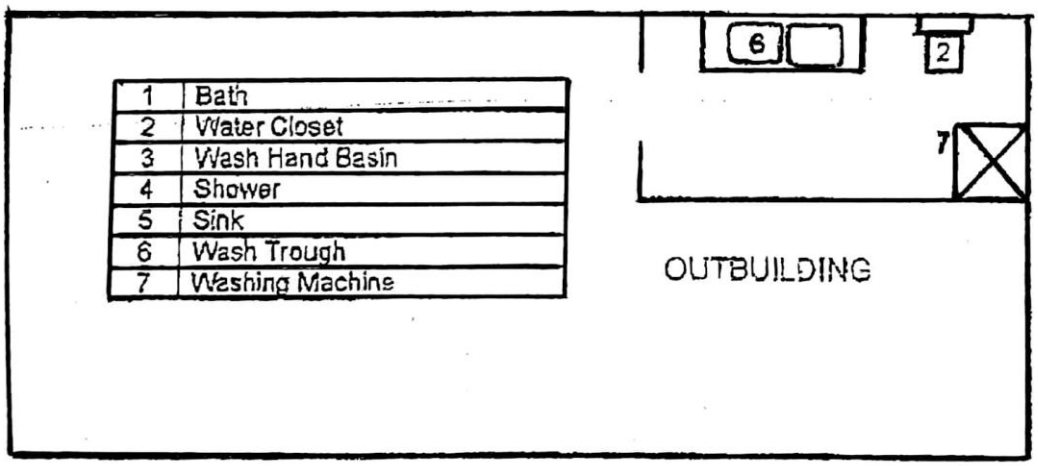
[10]

TOTAL: 100

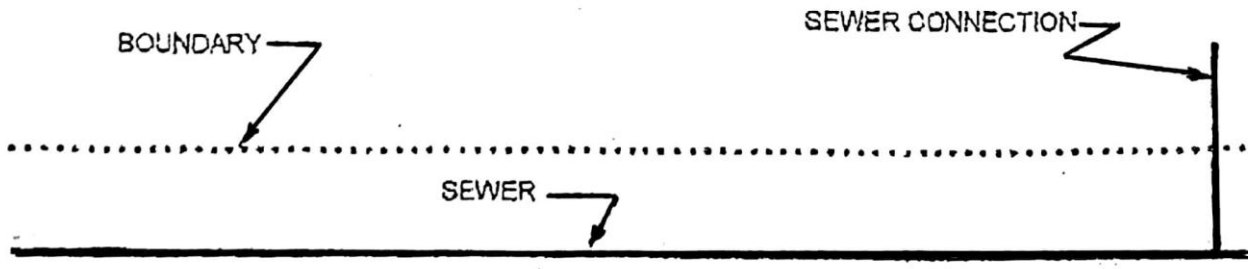
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DIAGRAM SHEET 1 **EXAMINATION NUMBER:**



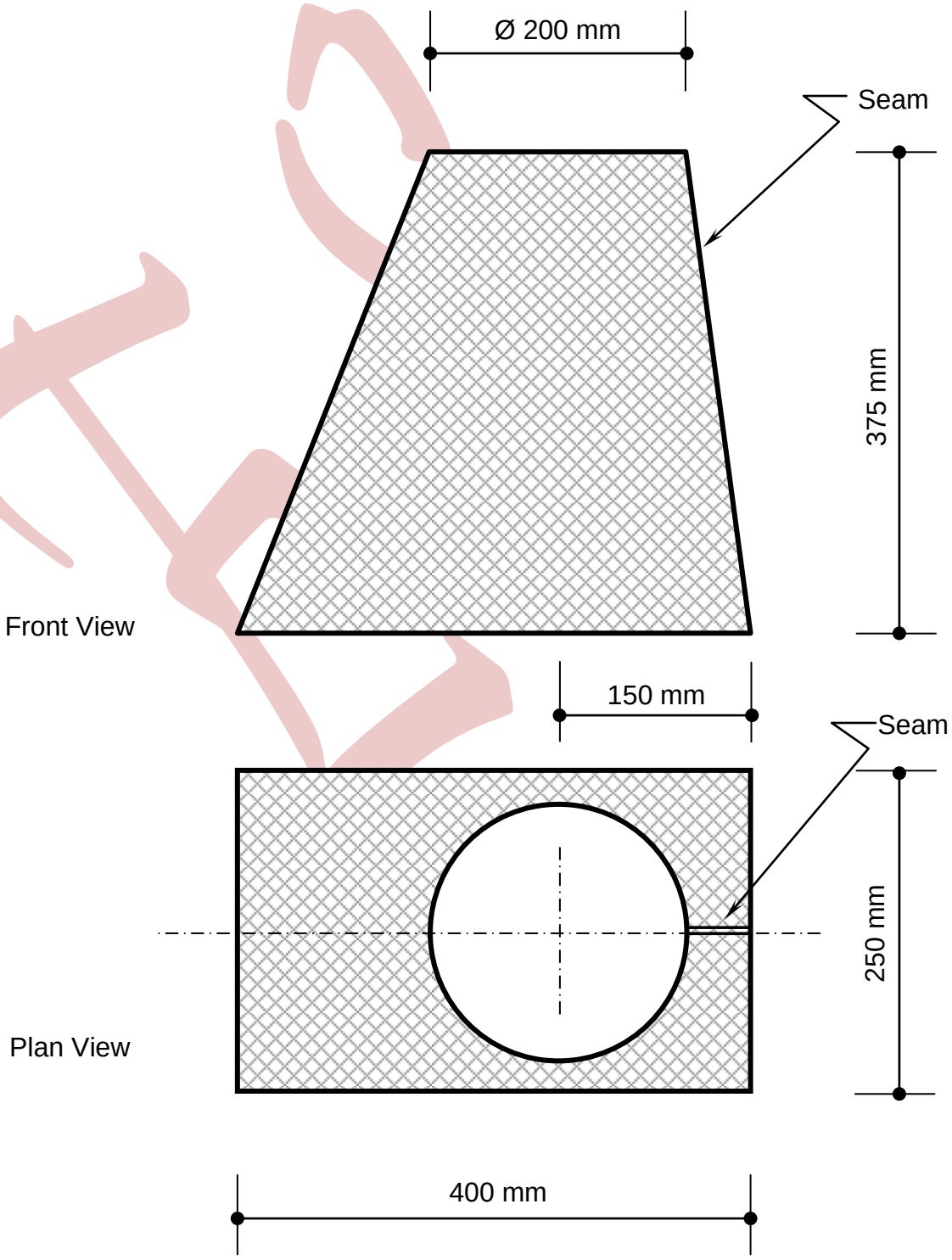


1	Bath
2	Water Closet
3	Wash Hand Basin
4	Shower
5	Sink
6	Wash Trough
7	Washing Machine



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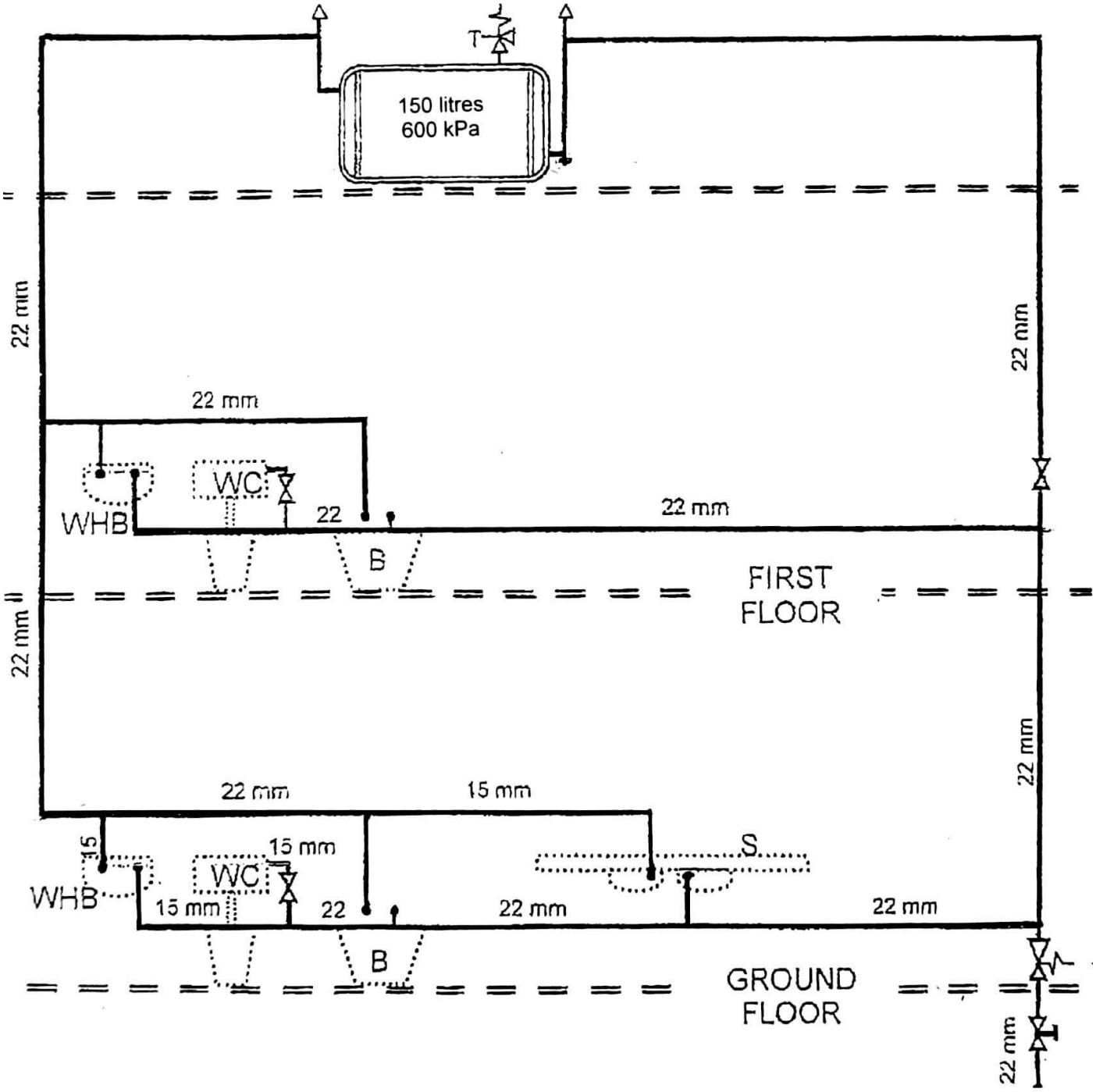
DIAGRAM SHEET 2



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DIAGRAM SHEET 3

ALL branch pipes to terminal points are 15 mm except to the baths that are fed from 22 mm pipes.
Use copper pipes with brass compression fittings.



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