higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1370(**E**)(J31)T

NATIONAL CERTIFICATE

PLUMBING THEORY N1

(11022041)

31 July 2018 (X-Paper)
09:00–12:00

This question paper consists of 6 pages and 1 diagram sheet.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
PLUMBING THEORY N1
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. Write neatly and legibly.

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QUESTION 1: SAFETY AND HOUSEKEEPING

1.1 Name the extinguishing agents recommended in each of the following fires:

1.1.1 An electric fire

1.1.2 A petrol fire

1.1.3 Burning timber

(3 × 1) (3)

1.2 What are the minimum and maximum distances at which a scaffold plank may project over the end of a trestle? (2)

[5]

QUESTION 2: TOOLS AND MACHINE

2.1 To cut small or larger pieces of sheet metal, a certain machine can be used.

Give the correct name of this machine and state TWO safety measures which should be applied when operating this machine. (3)

2.2 Safety signs fall into four main categories, which can be recognised by their shape and colour.

Name the FOUR categories and their shapes. (8)

[11]

QUESTION 3: METALS AND MATERIALS

3.1 The head of a soldering iron is made of a certain type of metal.

Name the metal and state THREE characteristics of that metal. (4)

3.2 List FOUR methods how ferrous metals can be protected against rust. (4)

[8]

QUESTION 4: SOLDERING AND WELDING

4.1 List FOUR components of gas welding plants and FOUR components of arc welding. (8)

4.2 Oxyacetylene welding can be done using three methods.

Name all THREE the methods. (3)

[11]

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QUESTION 5: COLD WATER SUPPLY

5.1 FIGURE 1 below shows a fitment used in the plumbing industry.

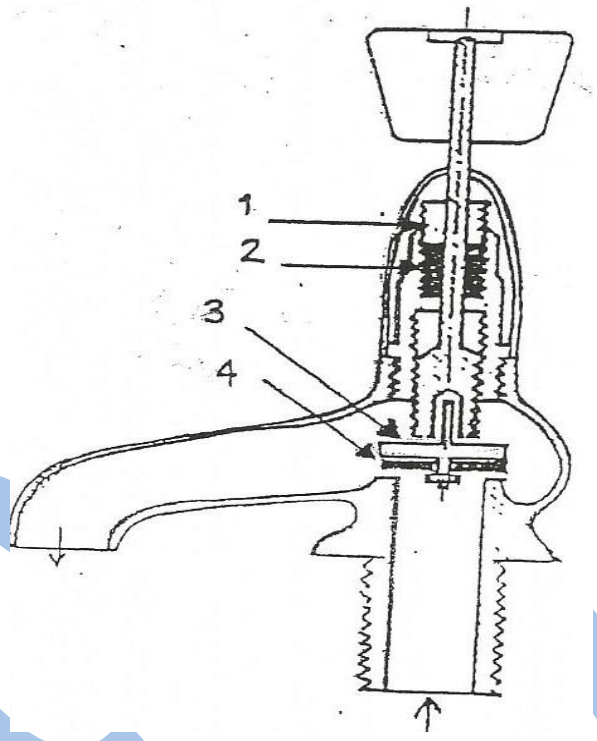


FIGURE 1

5.1.1 Give the correct name of the fitment. (1)

5.1.2 Name ONE place where it may be installed. (1)

5.1.3 Write down the correct names of the numbered components next to the corresponding number (1–4) in the ANSWER BOOK. (4)

5.2 List THREE general quality requirements for potable water. (3)

5.3 Define the term 'w*ater hammer*'. (2)

5.4 Explain the following in relation to cold water supply to a domestic dwelling:

5.4.1 Connection pipe

5.4.2 Supply pipe

5.4.3 Service pipe

(3 × 1) (3)

[14]

QUESTION 6: HOT WATER SUPPLY

6.1 Name TWO advantages and TWO disadvantages of a high pressure geyser. (4)

6.2 State TWO methods to prevent cold water pipes from bursting in extreme cold conditions. (2)

6.3 How is the water heated in a solar heating panel? (1)

6.4 Briefly explain how a combination geyser operates from cold water supply up to the point of hot water draw-off points. (3)

6.5 State ONE advantage and ONE disadvantage of a solar water heating system as compared to an electric hot-water heating system. (2)

[12]

QUESTION 7: DRAINAGE

7.1 Name THREE types of storage cisterns that we can install to supply water to a toilet. (3)

7.2 Why does a water closet not need to be fitted with a water seal trap? (2)

7.3 What is the principle of trap venting? (3)

7.4 Write out the following sanitary fitting abbreviations in full:

7.4.1 ASP

7.4.2 BT

7.4.3 FD

7.4.4 G

(4 × 1) (4)

7.5 What is the difference between a *one-pipe system* and a *two-pipe system* in relation to drainage? (4)

7.6 Give FOUR features of a good trap. (4)

[20]

QUESTION 8: SHEET METAL WORK

DIAGRAM SHEET 1, FIGURE 2 shows the frustum of a right cone where the bottom is not parallel to the base.

Draw to scale 1 : 5 a full pattern development of the frustum right cone. **[12]**

QUESTION 9: CALCULATIONS

A drain pipe is laid at a fall of 1 : 28 and has a length of 12 m between two changes of direction. Calculate the invert level at the bottom end if the invert depth is 385 mm at the head of the pipe.

Calculate the following:

9.1 The intensity of pressure on the closed fullway valve. (4)

9.2 The total pressure on the valve. (3)
[7]

TOTAL: 100

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DIAGRAM SHEET

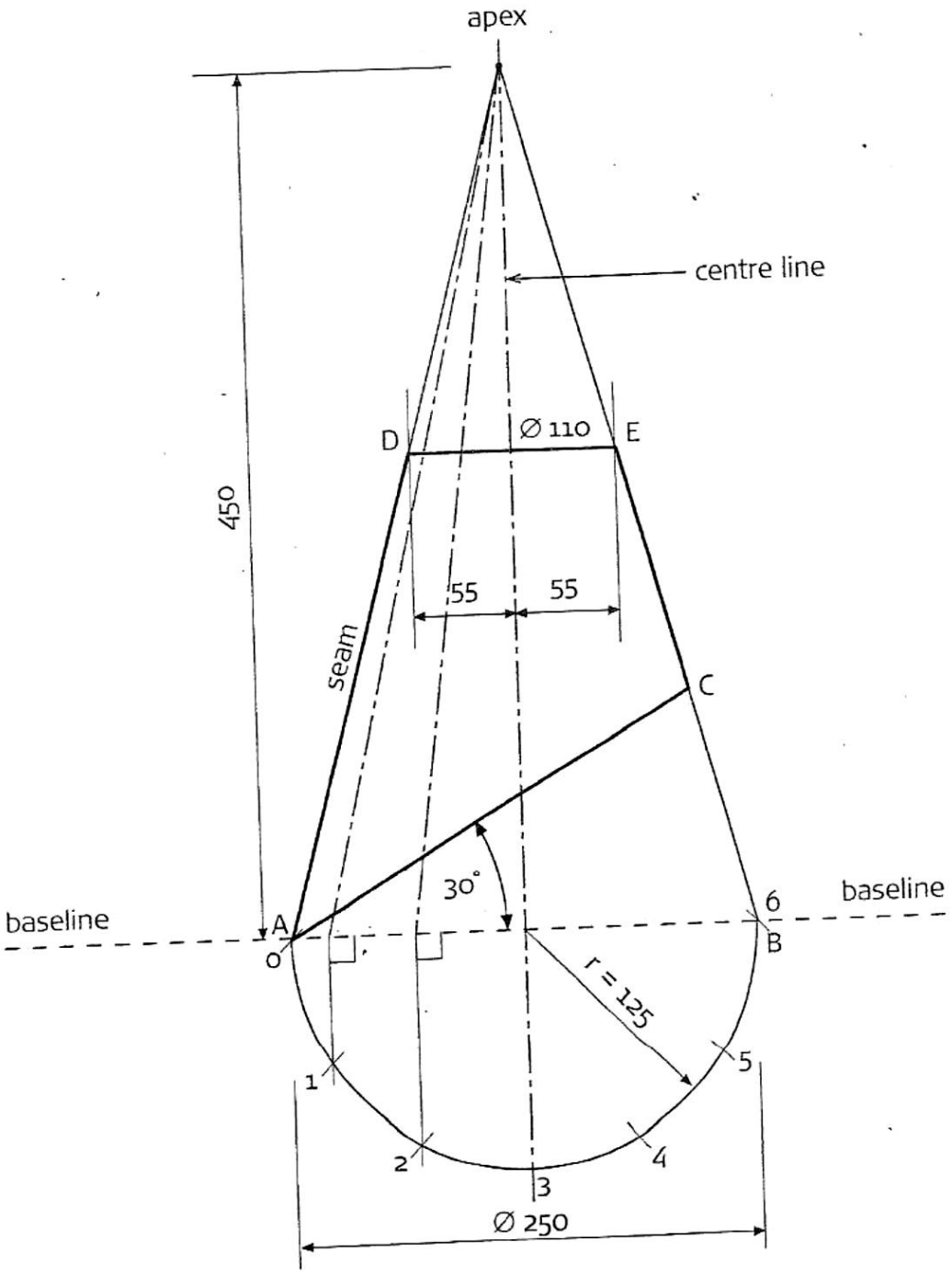


FIGURE 2

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