

QUESTION 1

Describe SIX safety methods for protecting workers in a **deep** trench.

- (1) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (2) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (3) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (4) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (5) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (6) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(6 marks)

(Question 1 Total 6 marks)

QUESTION 2

(a) (i) Why must equipotential bonding be maintained in a plumbing installation?

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(1 mark)

(ii) State the action which must be taken to prevent electric shock when cutting a metal water service pipe.

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(1 mark)

(iii) Name TWO sanitary fixtures for which equipotential bonding is required.

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(1 mark)

(b) Name THREE items of general safety equipment that should be available to a plumber while working in the foundations of a construction site.

(1) \_\_\_\_\_

(2) \_\_\_\_\_

(3) \_\_\_\_\_

(3 marks)

**(Turn over**

- (c) In a domestic dwelling, hot water must be delivered at a controlled temperature. Name the most common method of control, name THREE sanitary fixtures that require control and state the maximum allowable temperature.

(i) Method of control

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(ii) Sanitary fixtures

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(iii) Temperature

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(2 marks)

(Question 2 Total 8 marks)

QUESTION 3

State the precautionary requirements when a building contains both potable and non-potable water supply systems.

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(2 marks)

(Question 3 Total 2 marks)

**(Turn over**

QUESTION 4

(a) State FOUR causes of corrosion in metal pipes.

- (1) \_\_\_\_\_  
\_\_\_\_\_
- (2) \_\_\_\_\_  
\_\_\_\_\_
- (3) \_\_\_\_\_  
\_\_\_\_\_
- (4) \_\_\_\_\_  
\_\_\_\_\_

(2 marks)

(b) State the reasons for providing seismic restraint for water storage tanks.

- \_\_\_\_\_
- \_\_\_\_\_

(1 mark)

(c) State TWO reasons why is it necessary to have correct pipe sizing when designing a water pipe system?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

(2 marks)

(Question 4 Total 5 marks)

QUESTION 5

State FIVE causes of resistance to flow in water supply pipe systems.

- (1) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (2) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (3) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (4) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- (5) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(5 marks)

(Question 5 Total 5 marks)

**(Turn over**

QUESTION 6

Explain the meaning of EACH of the following in relation to plumbing.

(a) Potable water.

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(1 mark)

(b) Break tank.

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(1 mark)

(c) Contaminant.

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(1 mark)

(d) Upstream.

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(1 mark)

(e) Downstream.

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(1 mark)

(Question 6 Total 5 marks)

QUESTION 7

State the FIVE conditions that must be considered when determining the location of a **reduced pressure zone principle** back-flow prevention device.

- (1) \_\_\_\_\_  
\_\_\_\_\_
- (2) \_\_\_\_\_  
\_\_\_\_\_
- (3) \_\_\_\_\_  
\_\_\_\_\_
- (4) \_\_\_\_\_  
\_\_\_\_\_
- (5) \_\_\_\_\_  
\_\_\_\_\_

(5 marks)

(Question 7 Total 5 marks)

**(Turn over**



QUESTION 8

- (a) Draw the side elevation of an above ground water meter installation and name all the components. Indicate the direction of flow.

(4 marks)

- (b) On an industrial building where continuity of supply is required 24 hours a day, seven days a week, state the two provisions required for **servicing the water meter equipment**.

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(2 marks)

(Question 8 Total 6 marks)

## QUESTION 9

**All working must be shown for each question**

(YOUR ANSWERS ARE TO BE CORRECT TO **THREE DECIMAL PLACES**)

- (a) Calculate the volume of a cylinder, 1.5 metres high with a **radius** of 550 millimetres.

Formula :  $V = 0.7854 \times D^2 \times H$

Where V = Volume in cubic metres

D = Diameter of the cylinder

H = Height of cylinder

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(2 marks)

**(Turn over**



- (c) Calculate the square area of zinalume sheet required to make up a U-section tapered roof gutter that has the following measurements. Make **no** allowance for stop ends or laps.

Length = 4.7 metres

Width = 300 millimetres

Depth at deep end = 250 millimetres

Depth at shallow end = 100 millimetres

Formula: Area = L x B

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(3 marks)

(Question 9 Total 9 marks)

**(Turn over**

## QUESTION 10

- (a) Which way is the socketed end of a solid fuel heater flue installed (up or down) and why.

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(2 marks)

(Question 10 Total 2 marks)

QUESTION 11

(a) List FOUR functions of a full air-conditioning system.

(1) \_\_\_\_\_  
\_\_\_\_\_

(2) \_\_\_\_\_  
\_\_\_\_\_

(3) \_\_\_\_\_  
\_\_\_\_\_

(4) \_\_\_\_\_  
\_\_\_\_\_

(4 marks)

(b) Describe what is required of the water spray in an air-conditioning system and the requirements in regard to water supply to, and disposal from, the unit.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(3 marks)

(Question 11 Total 7 marks)

**(Turn over**

## QUESTION 12

State the minimum distance, recommended by the New Zealand Building Code acceptable solution, that the termination point of a foul water drain vent pipe should be from:

(a) Ground level

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(1 mark)

(b) Windows and other openings.

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(2 marks)

(c) Roof level.

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(1 mark)

(d) Decking with pedestrian access

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(1 mark)

(e) Eaves or parapets

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(1 mark)

(f) Air intakes

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(1 mark)

(g) Chimneys

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(3 marks)

(Question 12 Total 10 marks)

QUESTION 13

- (a) Describe TWO acceptable installation methods for the disposal of condensate waste from refrigerated and/or deep freeze compartments and ice-making machines.

(1) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(2) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(6 marks)

- (b) Describe an acceptable installation for drainage from autopsy tables.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(4 marks)

(Question 13 Total 10 marks)

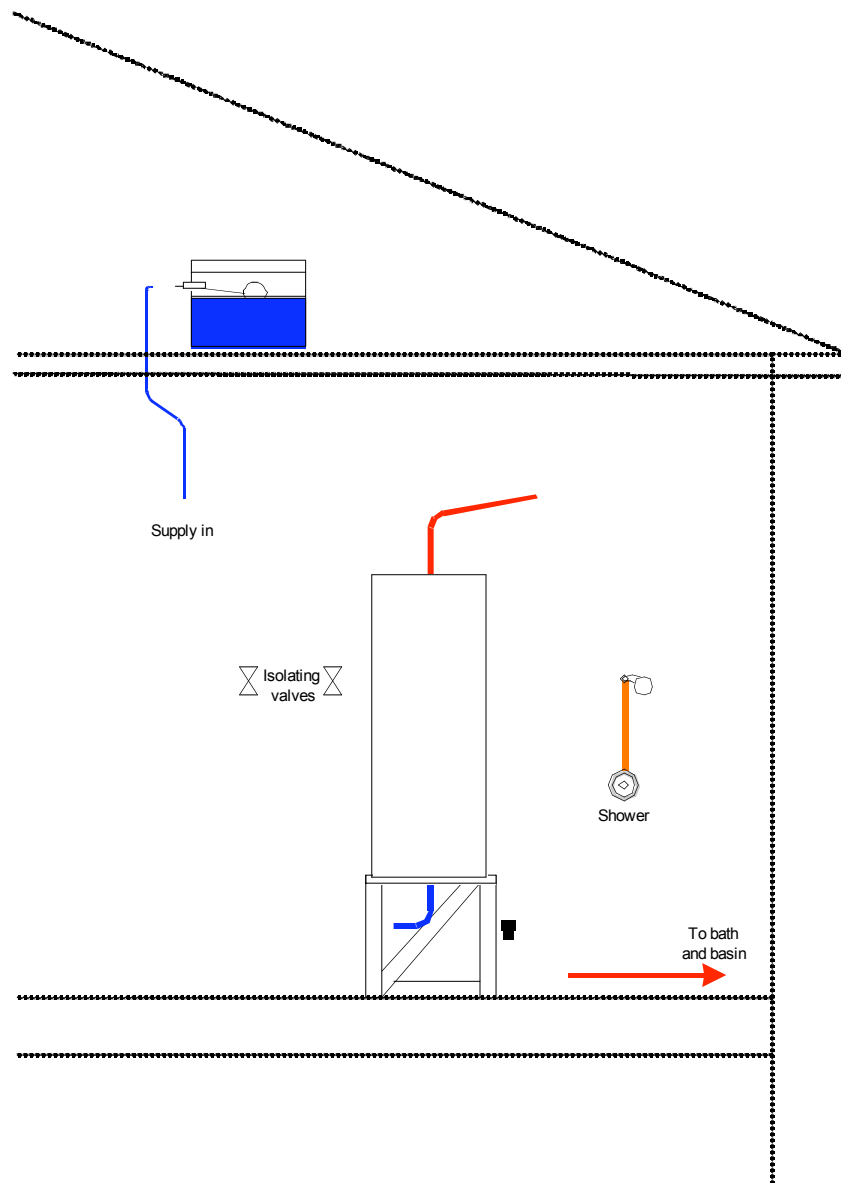
**(Turn over**



## QUESTION 14

Using your knowledge of NZBC G12 AS1 neatly draw a diagram showing all valves and associated components of a low pressure, open vented, hot water system that uses a supply tank servicing a single unit that is located in an upper storey of a multiunit complex. The shower mixer is to be equal low pressure.

Note: 2 marks for neatness and accuracy.



(12 marks)

(Question 14 Total 12 marks)

QUESTION 15

- (a) Except for the specific exemptions referred to in the relevant sections of the Plumbers, Gasfitters and Drainlayers Act 1976, state the legal requirement that must be met by any person wishing to undertake sanitary plumbing.

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(1 mark)

- (b) Unless otherwise specifically provided for in a Building consent, state the minimum notice required to be given to a territorial authority in the following circumstances:

- (i) Before the date on which it is intended to commence work.

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- (ii) Before the covering up or closing in of any plumbing or drainage work.

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(2 marks)

(Question 15 Total 3 marks)

**(Turn over**

QUESTION 16

- (a) State the THREE steps required by the Plumbers, Gasfitters and Drainlayers Registration Board to register as a plumber/gasfitter.

- (1) \_\_\_\_\_  
\_\_\_\_\_
- (2) \_\_\_\_\_  
\_\_\_\_\_
- (3) \_\_\_\_\_  
\_\_\_\_\_

(3 marks)

- (b) Having applied to the Plumbers, Gasfitters and Drainlayers Board for registration and your first practicing license, what is then required of you on an annual basis as required under the Plumbers, Gasfitters and Drainlayers Act 1976?

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(2 marks)

(Question 16 Total 5 marks)

## For Candidate's use

Number of EXTRA sheets used (write NIL if none have been used).	
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## For Examiner's use only

Questions Answered	Marks
1	
2	
3	
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11	
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