



## Level 3 Plumbing – Theory Exam

If provided, stick your candidate barcode label here.

**Thursday 22 June 2017**  
**09:00 – 11:00**

Candidate name (first, last)

First

[illegible]

Last

[illegible]

Candidate enrolment number

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Date of birth (DDMMYYYY)

[illegible]

Gender (M/F)



Assessment date (DDMMYYYY)

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Centre number

[illegible]

Candidate signature and declaration\*

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- If any additional answer sheets are used, enter the additional number of pages in this box.
- Please ensure that you **staple** additional answer sheets to the **back** of this answer booklet, clearly labelling them with your full name, enrolment number, centre number and qualification number in BLOCK CAPITALS.
- All candidates need to use a **black blue pen**. Do not use a pencil or gel pen.
- If provided with source documents, these documents **will not** be returned to City & Guilds, and will be shredded. **Do not** write on the source documents.

**\*I declare that I had no prior knowledge of the questions in this assessment and that I will not divulge to any person any information about the questions.**

**You should have the following for this examination**

- non-programmable scientific calculator
- a pen with blue or black ink

## General instructions

**This question paper is the property of City and Guilds of London  
and should be returned after the examination.**

- The maximum marks for each section is shown in brackets.
- Answer **all** questions.

- 1 Under Regulation 5 of the Water Supply (Water fittings) Regulation, consent is required from the water undertaker for the installation of new fittings in buildings and dwellings. Describe **one** installation that requires consent. (1 mark)

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- 2 Provide a description on the requirements to notify the installation of a water fitting. (3 marks)

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- 3 To enable adequate service and maintenance, state **three** locations where service valves should be fitted. (3 marks)

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- 4 Provide a description of the procedure to follow when carrying out commissioning of a cold water system to a domestic property. (5 marks)

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- 5 On commissioning a system, provide **two** possible circumstances when a disinfection procedure may need to be repeated.

(2 marks)

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- 6 Information and guidance on unvented hot water systems can be found in which regulatory document?

(1 mark)

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- 7 Water is heated by a boiler with an efficiency of 93%. The water is stored at 65 °C and is supplied to the cylinder at 5 °C (Specific Heat Capacity of water = 4.19).

Using the formula below calculate the heat input in kW required to heat 120 ltrs of stored water to temperature in two hours.

(2 marks)

$$\frac{\text{S.H.C.} \times \text{Litres of water} \times \text{Temp. difference } (\Delta t) \times \text{Boiler efficiency}}{\text{Time in seconds} \times 100} = \text{kW}$$

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Past Paper

8 a) Explain the operation of components labelled 1, 2, 3, 4 and 5 in Figure 1. (5 marks)

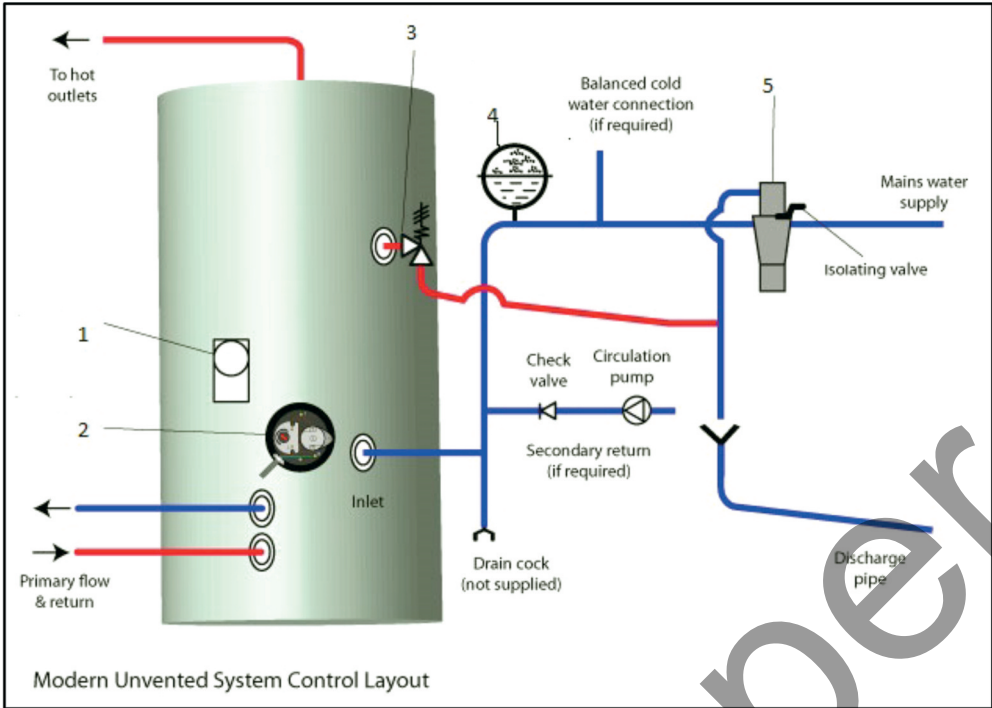


Figure 1

1	Control thermostat and eco
2	Emersion and eco
3	T and P valve
4	Pressure vessel
5	Composite valve

Table 1

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Question 8 a) continued

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b) Explain the reason for the correct termination of D2 discharge pipework. (2 marks)

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9 State the reason for a polarity check. (1 mark)

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Past Paper

10 Explain the benefits of using an S Plus plan system as shown in Figure 2.

(4 marks)

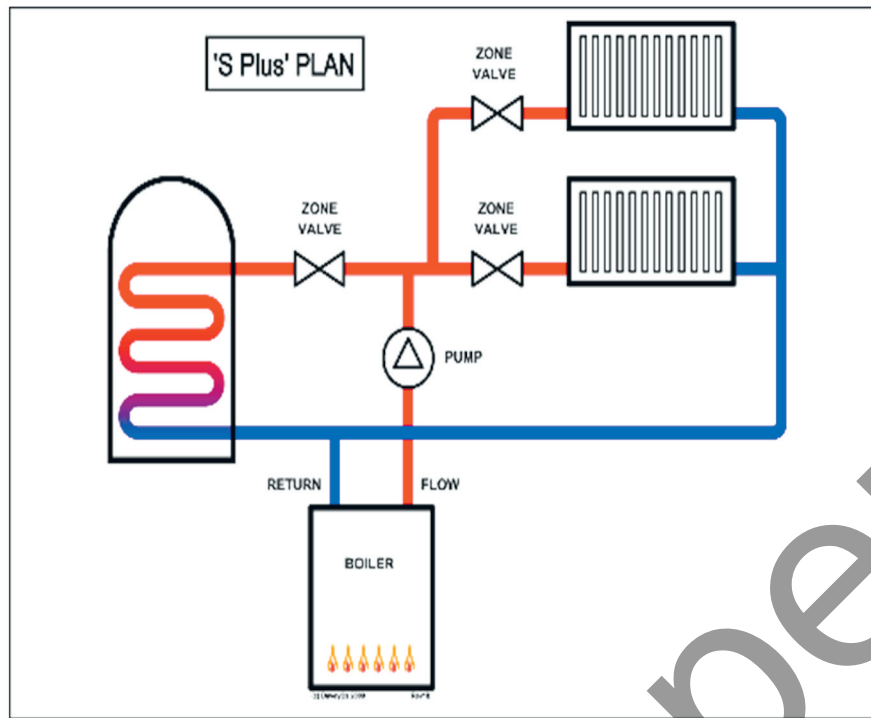
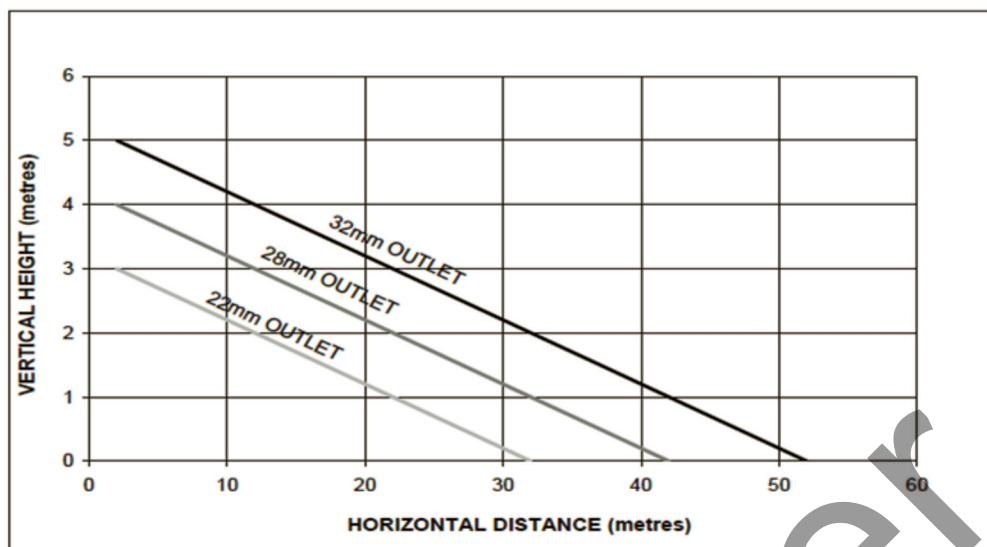


Figure 2

- 11 Explain the installation process of a macerator pump to a new en-suite installation with a vertical lift of 4.5 m using a suitable outlet size from the chart provided.

(7 marks)



- 12 A customer complains of bad smells from a cloak room containing a wc and whb connected to a stub stack. Describe **one** possible fault.

(1 mark)

- 13 To eliminate positive pressure, the **minimum** distance from the base of the stack to the lowest branch connection varies depending on the height of the stack. Complete the table and statement below. (2 marks)

The stack base should use two 45° bends or a bend with a radius of \_\_\_\_\_ or more.

Application	Minimum height
Single dwelling up to three storeys	_____
Up to five storeys	740 mm
More than five storeys	One storey
More than 20 storeys	Two storeys

- 14 Describe the operating principles of **two** heat producing micro renewable technologies. (4 marks)

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- 15 a) Define a risk assessment and a method statement. (2 marks)

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- b) Explain how to **minimise** risks when carrying out jointing techniques. (2 marks)

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- 16 A client has requested an amendment to a small scale plumbing and heating project.  
a) Explain the process of a variation order (2 marks)

(2 marks)

- (2 marks)

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- (9 marks)

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Past Paper