



8202-535 MARCH 2022

Level 3 Advanced Technical Diploma in Plumbing (450)

Plumbing – Theory exam (1)

If provided, stick your candidate barcode label here.

Thursday 31 March 2022
09:30 – 11:45

Candidate name (first, last)

First

Last

Candidate enrolment number


Date of birth (DDMMYYYY)

Gender (M/F)

Assessment date (DDMMYYYY)

Centre number

Candidate signature and declaration*

- If additional answer sheets are used, enter the additional number of pages in this box. 
- Before taking the examination, **all candidates** must check that their barcode label is in the appropriate box. Incorrectly placed barcodes may cause delays in the marking process.
- Please ensure that you staple additional answer sheets to the **back** of this answer booklet, clearly labelling these 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, unless otherwise instructed.
- 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 examination and that I will not divulge to any person any information about the questions.**

You should have the following for this examination

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

General instructions

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

- This examination contains 19 questions. Answer **all** questions.
- Answer the questions in the space provided.
- The marks for **each** question are shown in brackets.
- Cross through any work you do not want to be marked.



- 1 Explain the categories described in the Water Supply (Water Fittings) Regulations 1999.
- Erroneous measurements
 - Contamination
 - Undue consumption
- (3 marks)

- 2 State the equipment needed to measure flow rate at an outlet. (1 mark)

- 3 Explain why multiple Cold Water Storage Cisterns (CWSC) must be coupled or connected if they are supplying a building consuming large quantities of water. (3 marks)

- 4 State the difference between Direct and Indirect boosted cold water systems. (2 marks)

- 5 State **three** mechanical backflow devices. (3 marks)

- 6 State the Fluid Category risk for each appliance according to Water Supply (Water Fittings) Regulations 1999.
- Hose union tap
 - Washing Machine
 - Rain Water Harvesting
- (3 marks)

- 7 Hot water systems can be divided into two categories, centralised and localised. Give a brief explanation and example of each category.
- (4 marks)

- 8 Explain how unvented systems above 15 Litres allow for the expansion of water.
- (2 marks)

- 9 Explain **three** installation requirements of an unvented hot water cylinder.
- (3 marks)

- 10 What is the **maximum** length of the D1 discharge pipework on an unvented hot water system (UVHWS).
- (1 mark)

11 Explain the operating principles of the following central heating components: (1 mark)

a) Zone valve

b) Automatic by-pass (1 mark)

c) Low loss header. (1 mark)

12 State which regulation sets the provision for conservation of fuel and power. (1 mark)

13 Describe the terms below in relation to heat loss in a dwelling. (1 mark)

a) Ventilation.

b) Building fabric. (1 mark)

14 Describe **two** advantages of underfloor heating. (4 marks)

17 Identify the **two** heat producing micro renewable systems shown in Figures 1 and 2 below. (2 marks)

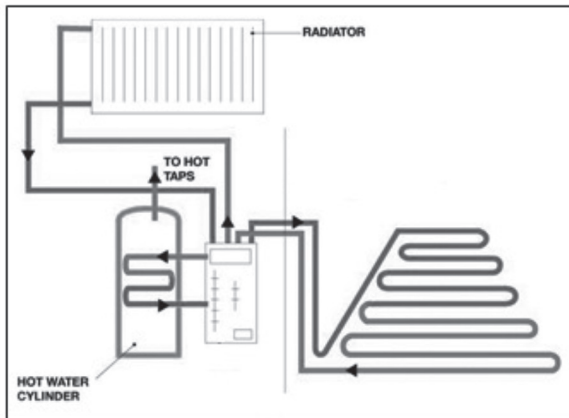


Figure 1

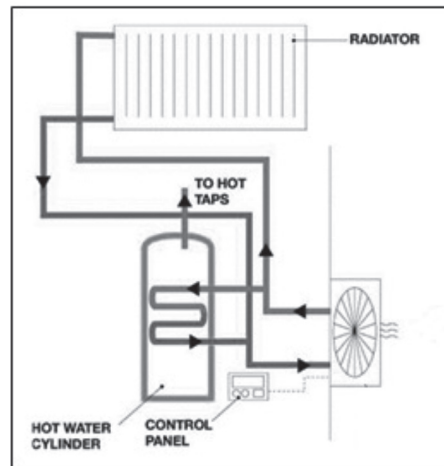


Figure 2

18 Explain the working principles of 'Grey Water Harvesting' and 'Rain Water Harvesting'. (4 marks)
