



# **City & Guilds Level 3 End-point Assessment in Plumbing and Domestic Heating Technician (9289-13)**

**Standard: ST0303**

**EPA Plan: Version 1.2**

Version 1.0

Last modified January-2026

## **Knowledge test Paper 2b**

**(9289-302) – Sample paper, multiple-choice answer  
sheet and mark scheme**

<b>Version</b>	<b>Summary of changes</b>	<b>Section</b>
1.0 January 2026	Document created	N/A

## Contents

1	Introduction	4
2	9289-302 End-point Assessment – multiple-choice knowledge test Paper 2b (sample questions)	5
3	9289-302 End-point Assessment – multiple-choice knowledge test (answer sheet)	18
4	9289-302 End-point Assessment – multiple-choice knowledge test (mark scheme)	20

# 1 Introduction

Area	Description
What is in this document	This document contains the sample knowledge test, answer sheet and mark scheme for the City & Guilds Level 3 End-point Assessment in Plumbing and Domestic Heating Technician multiple-choice knowledge test Paper 2b (9289-302).
Documents included:	<ul style="list-style-type: none"><li>• Sample questions</li><li>• Answer sheet</li><li>• Mark scheme</li></ul> <p>Apprentices should be provided with sample questions and the answer sheet.</p> <p>The mark scheme is to be used by employers/training providers/tutors to mark the completed test.</p>

**Note:** this sample paper-based version of the multiple-choice test is to support formative assessment activities.

Live versions of the multiple-choice test will be accessed using City & Guilds E-volve online system. Please refer to the EPA Manual for details on how to book and administer live tests.

## 2 9289-302 End-point Assessment – multiple-choice knowledge test Paper 2b (sample questions)

Test duration: 60 minutes

You should have the following for this test:

- a pen with black or blue ink
- multiple-choice questions answer sheet
- calculator.

Read the following notes before you answer any questions.

- Attempt all questions.
- If you find a question difficult, leave it and return to it later.

This paper contains 30 multiple-choice questions worth 1 mark each.

This test paper is the property of City & Guilds.

### How to complete the multiple-choice answer sheet

Each multiple-choice question shows four possible answers (lettered 'a', 'b', 'c', 'd'); only one is correct.

Decide which one is correct and mark your answer on the answer sheet with your pen.

For example, if you decide 'b' is correct, mark your answer with a cross like this:

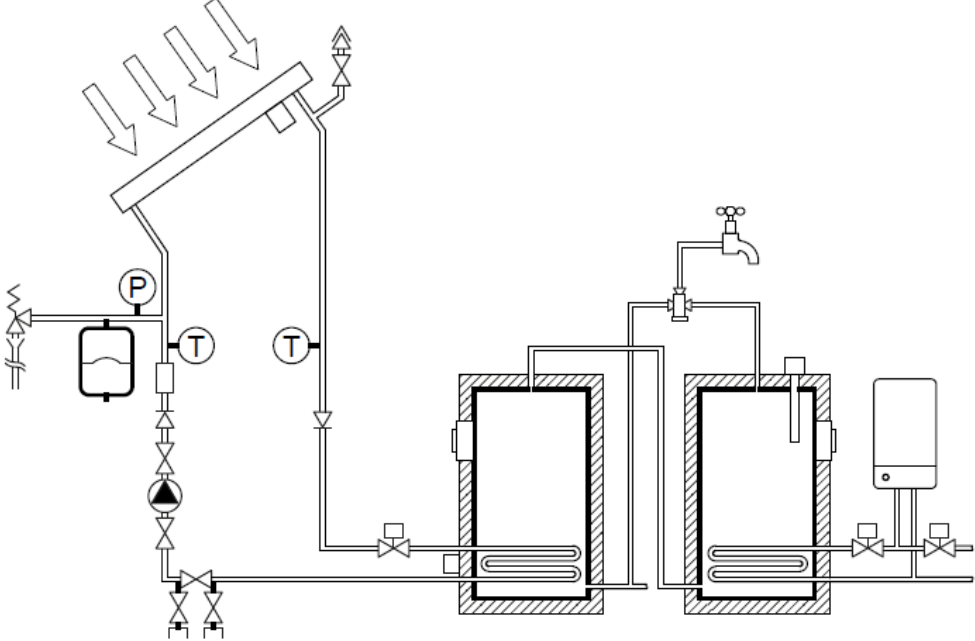
1    a  b  c  d

If you change your answer, cancel your first choice by filling in the box then put a cross in the answer which you have now decided is correct, like this:

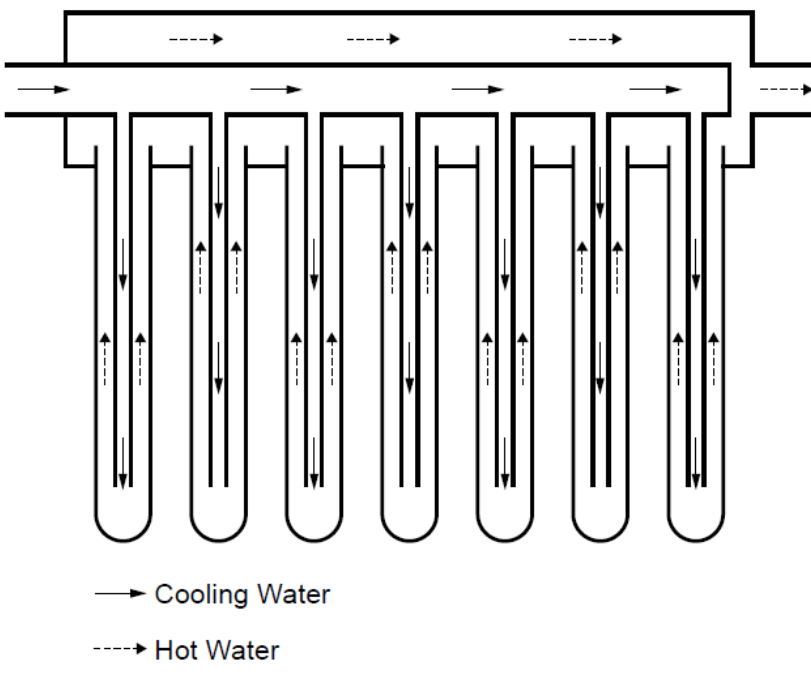
1    a  b  c  d





<p><b>Q6</b></p>	<p>Identify the type of solar thermal hot water system shown in the image.</p>  <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <ul style="list-style-type: none"> <li>a) Indirect, drain back system with thermal store.</li> <li>b) Indirect, drain back system with storage cylinder.</li> <li>c) Indirect, sealed collector circuit, thermal store and storage cistern.</li> <li>d) Indirect, sealed collector circuit, pre-heat cylinder and storage cylinder.</li> </ul>
<p><b>Spec reference</b></p>	<p>AC3.2</p>

<p><b>Q7</b></p>	<p>What type of solar thermal hot water system has the collector positioned lower than the cylinder?</p> <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <ul style="list-style-type: none"> <li>a) Fully filled (active).</li> <li>b) Drain back (active).</li> <li>c) Passive (thermo-siphon).</li> <li>d) Drain back (thermo-siphon).</li> </ul>
<p><b>Spec reference</b></p>	<p>AC3.1</p>

<p><b>Q8</b></p>	<p>Identify the type of solar collector shown in the image.</p>  <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <ul style="list-style-type: none"> <li>a) Evacuated tube.</li> <li>b) Photovoltaic.</li> <li>c) Unglazed.</li> <li>d) Flat plate.</li> </ul>
<p><b>Spec reference</b></p>	<p>AC5.1</p>

<p><b>Q9</b></p>	<p>Which type of collector is considered highly efficient?</p> <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <ul style="list-style-type: none"> <li>a) Unglazed collector.</li> <li>b) Flat plate collector.</li> <li>c) Roof integrated glazed collector.</li> <li>d) Direct flow evacuated tube collector.</li> </ul>
<p><b>Spec reference</b></p>	<p>AC5.3</p>

<b>Q10</b>	What time of day are solar gains at their highest in good weather conditions?  <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <p>a) Between morning and midday.</p> <p>b) Between midday and afternoon.</p> <p>c) Between afternoon and evening.</p> <p>d) Between evening and morning.</p>
<b>Spec reference</b>	AC6.3

<b>Q11</b>	What size cylinder is recommended for a property designed for 3 occupants?  <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <p>a) 85 litres.</p> <p>b) 135 litres.</p> <p>c) 165 litres.</p> <p>d) 205 litres.</p>
<b>Spec reference</b>	AC7.2

<b>Q12</b>	What must the tilt angle match when positioning a solar thermal collector to maximise solar energy absorption?  <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <p>a) Orientation of the installation site.</p> <p>b) Location of the installation site.</p> <p>c) Latitude of the installation site.</p> <p>d) Height of the installation site.</p>
<b>Spec reference</b>	AC7.3

<b>Q13</b>	What factor directly influences the dynamic pressure drop in a solar thermal system? (1 mark)
	Answers  a) Fixing type. b) Jointing method. c) Pipe length. d) Insulation type.
<b>Spec reference</b>	AC7.5

<b>Q14</b>	What information is required to size a drain back vessel? (1 mark)
	Answers  a) Type of pump. b) Net collector area. c) Pipework material. d) Hot water cylinder capacity.
<b>Spec reference</b>	AC7.8

<b>Q15</b>	Which document will provide information relating to circulating pump sizing and settings? (1 mark)
	<p>Answers</p> <p>a) British standards.</p> <p>b) Job specifications.</p> <p>c) Building regulations.</p> <p>d) Manufacturer instructions.</p>
<b>Spec reference</b>	AC7.9

<b>Q16</b>	What must be included when calculating the total solar primary circuit water volume in a solar thermal system? (1 mark)
	<p>Answers</p> <p>a) Solar collector fluid volume + expansion vessel fluid volume.</p> <p>b) Solar collector fluid volume + storage cylinder total volume</p> <p>c) Solar loop pipework fluid volume + heating circuit total volume.</p> <p>d) Solar-loop pipework fluid volume + expansion relief valve fluid volume.</p>
<b>Spec reference</b>	AC7.6

<b>Q17</b>	What factor can affect solar fraction? (1 mark)
	<p>Answers</p> <p>a) Cylinder location.</p> <p>b) Building insulation.</p> <p>c) Load demand.</p> <p>d) Pipework material.</p>
<b>Spec reference</b>	AC8.2

<b>Q18</b>	What type of property is covered under designated land restrictions within permitted development rights??  <p style="text-align: right;">(1 mark)</p>
	Answers  a) Properties in town centres. b) Properties in conservation areas. c) Properties over six metres in height. d) Properties with more than two bedrooms.
<b>Spec reference</b>	AC9.1

<b>Q19</b>	What electrical input service is required for a solar thermal hot water system?  <p style="text-align: right;">(1 mark)</p>
	Answers  a) 24V DC b) 36V DC c) 230V AC d) 415V AC
<b>Spec reference</b>	AC9.2

<b>Q20</b>	What consideration must be included when deciding the location and position of a solar collector during system design?  <p style="text-align: right;">(1 mark)</p>
	Answers  a) Noise issues. b) Overshading issues. c) Overheating issues. d) Vibration issues.
<b>Spec reference</b>	AC9.2







<b>Q30</b>	What minimum test pressure duration must a hot water system be tested at to comply with BS EN 806?  <p style="text-align: right;">(1 mark)</p>
	Answers  a) 10 minutes. b) 30 minutes. c) 60 minutes. d) 90 minutes.
<b>Spec reference</b>	AC13.3

### 3 9289-302 End-point Assessment – multiple-choice knowledge test (answer sheet)

Apprentice name:

Date of test: Click or tap to enter a date.

1	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
2	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
3	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
4	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
5	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
6	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
7	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
8	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
9	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
10	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
11	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
12	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
13	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
14	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
15	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
16	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
17	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
18	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
19	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
20	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
21	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
22	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
23	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>

24	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
25	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
26	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
27	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
28	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
29	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>
30	a <input type="checkbox"/>	b <input type="checkbox"/>	c <input type="checkbox"/>	d <input type="checkbox"/>

**Number of correct answers:**            / 30

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## 4 9289-302 End-point Assessment – multiple-choice knowledge test (mark scheme)

### Grading

Fail – 17 marks

Pass – 18 marks (60 %)

Question Number	Key
1	b
2	c
3	a
4	a
5	b
6	d
7	c
8	a
9	d
10	b
11	b
12	c
13	c
14	b
15	d
16	a
17	c
18	b
19	c
20	b
21	d
22	a
23	b

Question Number	Key
24	d
25	c
26	c
27	d
28	d
29	a
30	a