



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

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Knowledge test Paper 2a

**(9289-301) – Sample paper, multiple-choice answer
sheet and mark scheme**

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

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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 2a (9289-301).
Documents included:	<ul style="list-style-type: none">• Sample questions• Answer sheet• Mark scheme <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 9289-301 End-point Assessment – multiple-choice knowledge test Paper 2a (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>Q1</p>	<p>What is component 3 of the vapour compression refrigeration cycle for an air source heat pump, as shown in the image?</p> <div data-bbox="592 264 1177 533" data-label="Diagram"> </div> <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <ul style="list-style-type: none"> a) Expansion valve. b) Compressor. c) Refrigerant. d) Evaporator.
<p>Spec reference</p>	<p>AC1.1</p>

<p>Q2</p>	<p>What happens when the refrigerant passes through the evaporator in a heat pump?</p> <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <ul style="list-style-type: none"> a) It increases the temperature and pressure of the refrigerant. b) It absorbs heat and the refrigerant evaporates. c) It turns from a high-pressure vapour into a high-pressure liquid. d) It changes to a low-pressure and low-temperature liquid.
<p>Spec reference</p>	<p>AC1.2</p>

Q6	What factor can affect the Seasonal Coefficient of Performance (SCoP) of a heat pump? (1 mark)
	Answers a) Cold water inlet pressure. b) System flow temperature. c) Hot water outlet pressure. d) Secondary circulation temperature.
Spec reference	AC3.5

Q7	What effect does oversizing the heat pump have on heat pump operation? (1 mark)
	Answers a) Increased performance. b) Lower electrical consumption. c) Reduced wear and tear. d) Higher maintenance costs.
Spec reference	AC3.10

Q8	What is meant by the term system efficiency? (1 mark)
	Answers a) The ratio between the heating demand and the outside air temperature supplied to the heat pump over a season. b) The outdoor temperature at which the heat pump's capacity is sufficient to meet partial hot water demand. c) The indoor temperature at which the heat pumps capacity is sufficient to meet the entire heating demand. d) The total energy output of the whole energy generating system in relation to the electrical energy used to achieve the energy output.
Spec reference	AC3.7

Q18	What is the insulation requirement for heat pump system pipework? <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <p>a) Insulation is optional for external pipework if the pipe diameter is below 50 mm</p> <p>b) Only internal pipework is subject to thermal loss and requires insulation.</p> <p>c) External pipework must be insulated to meet minimum thermal performance standards.</p> <p>d) Insulation is only required for internal pipework if the pipe diameter is below 75 mm</p>
Spec reference	AC6.10

Q19	What size property requires multiple heating zones for a hydraulic heating system? <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <p>a) Larger than 150 m²</p> <p>b) Larger than 125 m²</p> <p>c) Larger than 90 m²</p> <p>d) Larger than 75 m²</p>
Spec reference	AC6.2

Q20	Which system configuration is found in an underfloor heating system? <p style="text-align: right;">(1 mark)</p>
	<p>Answers</p> <p>a) One-pipe systems with thermostatic radiator valves.</p> <p>b) Manifold-based system with multiple loops mixed with buffer or blending valves.</p> <p>c) Two-pipe system with electrical supply for fan operation.</p> <p>d) Zoned system with towel radiators and blending valves.</p>
Spec reference	AC6.3

Q30	What task forms part of the pre-commissioning process of a heat pump system? <p style="text-align: right;">(1 mark)</p>
	Answers a) Flushing and cleaning to remove debris. b) Pipe sizing of the emitter circuit. c) Installation of thermostatic controls. d) Informing the District Network Operator.
Spec reference	AC11.1

3 9289-301 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

4 9289-301 End-point Assessment – multiple-choice knowledge test (mark scheme)

Grading

Fail – 17 marks

Pass – 18 marks (60 %)

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

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