



City & Guilds Level 3 End-point Assessment for Engineering Maintenance Technician (Single Discipline) (9331-11)

300 Electrical Engineering Maintenance Technician

Standard: ST1426, EPA Plan: Version 1.0

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Version 1.1

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**Sample Knowledge Test
Sample paper, multiple-choice answer sheet and
mark scheme**

Version	Summary of changes	Section
1.0 May 2026	Document created	N/A
1.1 July 2026	Adjustments made to Questions 10, 19, 20, 24 and 31	Pg 13, 15 and 17

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1 Introduction

Area	Description
What is in this document	This document contains the sample test, answer sheet and mark scheme for the 9331-11 Engineering Maintenance Technician (Single Discipline) Multiple-choice Test (300 Electrical engineering maintenance technician).
Documents included:	• Sample questions • Answer sheet • Mark scheme Apprentices should be provided with the sample questions and the answer sheets. The mark scheme is to be used by employers/training providers/tutors to mark the completed test.

Note to employers/training providers/tutors: 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 handbook for details on how to book and administer live tests.

2 9331-300 End-point Assessment – multiple-choice knowledge test (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.

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 40 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.

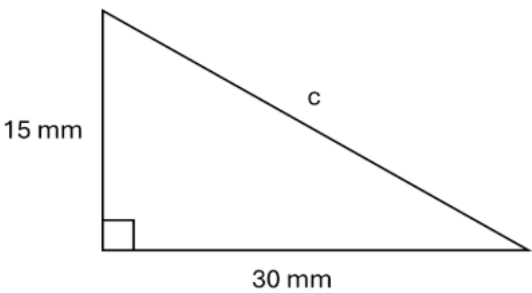
For example, if you decide 'b' is correct, mark your answer with a cross like this:

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 ☐

Spec reference	K13.2.1 (d)
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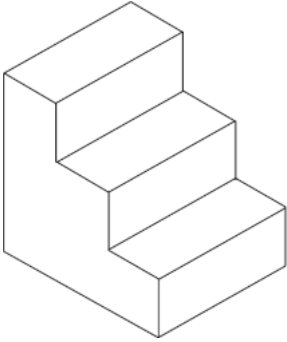
Q10	The support bracket below forms a right angle. What is the length of side c to the nearest whole number using the formula $a^2 + b^2 = c^2$ Image  Not to scale (1 mark)
	a) 28 mm. b) 34 mm. c) 40 mm. d) 45 mm.
Spec reference	17.1.1 (e)

Q11	A series of holes in a material have the diameters shown in the table below. What is the mean diameter of the holes to one decimal place? All dimensions are in mm. <table><tr><td>9.8</td><td>9.9</td><td>9.7</td><td>9.9</td></tr><tr><td>10.0</td><td>9.8</td><td>9.9</td><td>9.7</td></tr></table> (1 mark)	9.8	9.9	9.7	9.9	10.0	9.8	9.9	9.7
9.8	9.9	9.7	9.9						
10.0	9.8	9.9	9.7						
	a) 9.6 mm. b) 9.7 mm.								

	c) 9.8 mm. d) 9.9 mm.
Spec reference	17.2.1 (a)

Q12	What property is described as the ability of material to resist scratches and indentations? (1 mark)
	a) Hardness. b) Magnetism. c) Ductility. d) Strength.
Spec reference	18.1.1 (c)

Q13	What does contact between two incompatible metals in the presence of an electrolyte result in? (1 mark)
	a) Corrosion of both metals at the same speed. b) Faster corrosion of the more active metal. c) Faster corrosion of the less active metal. d) No corrosion of either of the two metals.
Spec reference	18.2.1 (d)

Q14	What type of engineering representation format is shown below?  (1 mark)
	a) Detail. b) Assembly. c) Isometric. d) Orthographic.
Spec reference	21.1.1 (d)

Q15	What does this symbol represent on an electrical circuit diagram?  (1 mark)
	a) Lamp. b) Resistor. c) Signal diode. d) Light emitting diode.
Spec reference	21.2.1 (c)

Q16	Which best describes the application of the Internet of Things (IoT) in maintenance? (1 mark)
	a) Connected sensors that share data in real time. b) Remote access to data via cloud files sharing services. c) Use of physical equipment integrated with digital control. d) Use of pre-programmed robots to perform system repairs.
Spec reference	32.1.1 (b)

Q17	Which technology can be used to analyse data trends to support predictive maintenance? (1 mark)
	a) IoT. b) AI. c) HMI. d) PLC.
Spec reference	32.2.1 (d)

Q18	What is the role of digital twins in maintenance? (1 mark)
	a) To use virtual models to design brand new products from scratch. b) To use physical models of digital systems to simulate their performance. c) To use virtual models of physical systems to simulate their performance. d) To use virtual models to simulate system components that are not physically possible to make.
Spec reference	32.3.1 (c)

Q19	A maintenance engineer has been asked to replace a faulty power supply for a DC motor. The motor has a resistance of $50\ \Omega$ and draws a current of $0.24\ \text{A}$ when in use. What voltage power supply should be used for the DC motor using the formula $V = I R$ (1 mark)
	a) $0.005\ \text{V}$. b) $12\ \text{V}$. c) $50.2\ \text{V}$. d) $208\ \text{V}$.
Spec reference	S13.1.1 (a) (i)

Q20	A maintenance engineer is tightening a bolt as part of re-assembling a machine. They are using a wrench that is $0.2\ \text{metres}$ in length. The engineer applies a force of $90\ \text{N}$ at a right angle to the end of the wrench handle. What is the amount of torque applied to the bolt using the formula $\tau = F \times r \times \sin(\theta)$ (1 mark)
	a) $450\ \text{Nm}$. b) $90.2\ \text{Nm}$. c) $18\ \text{Nm}$. d) $0.002\ \text{Nm}$.
Spec reference	S13.1.1 (a) (iii)

Q21	What is the employee's primary responsibility when working on electrical equipment? (1 mark)
	a) Follow the employer's safety procedures and processes. b) Follow your own safety procedures and processes. c) Follow industry safety procedures and processes. d) Follow the manufacturer's safety procedures and processes.
Spec reference	33.1.2 (a)

Q22	Which statement best defines the relationship between BS7671 and Electricity at Work Regulations (EAWR)? (1 mark)
	a) BS7671 is statutory law and EAWR is a supporting code of practice. b) EAWR and BS7671 are legal acts of parliament that must be followed by law. c) BS7671 provides technical standards that support compliance with EAWR. d) BS7671 sets out employer responsibilities for electrical safety training under EAWR.
Spec reference	33.3.1 (a)

Q23	What is the main purpose of a Permit to Work document? (1 mark)
	a) To provide basic safety guidance for employees who have not received any formal training. b) To authorise and control high risk work and ensure safety measures are in place. c) To increase operational efficiency by removing the need for routine safety checks. d) To ensure employees are provided with guidance on what to do when accidents occur.
Spec reference	33.4.2 (b)

Q24	An AC power supply provides an RMS voltage of 230 V to a circuit with a resistance of 60 Ω. Using Ohms Law $V = I \times R$, what is the current flowing through the circuit to two decimal places? (1 mark)
	a) 0.26 A. b) 0.38 A. c) 3.83 A. d) 13.8 A.
Spec reference	35.1.1 (a)

Q25	Which is not a limitation of a three-phase system? (1 mark)
	a) They require more complex installation and protection equipment. b) They are only suitable for heavy plant and machinery. c) They are costly to produce and install. d) They are unable to supply ordinary domestic loads.
Spec reference	35.3.1 (b)

Q26	What is the basic operating principle of a three-phase motor? (1 mark)
	a) It uses alternating current (AC) which produces a rotating magnetic field that causes the rotor to turn. b) It uses direct current (DC) which produces a rotating magnetic field that causes the rotor to turn. c) It allows current to transfer from a primary coil to a secondary coil without electrical connections which causes the rotor to turn.

Q29	Which of these correctly describes Kirchhoff's Voltage law? (1 mark)
	a) The algebraic sum of all voltages around a closed loop is zero. b) The algebraic sum of currents at a junction is zero, meaning total current entering a node equals total current leaving it. c) The force between two electric charges is directly proportional and inversely proportional to the square of the distance between them. d) The current through a conductor is directly proportional to the voltage across it, provided temperature remains constant.
Spec reference	36.2.2 (b)

Q30	An electrical transformer works on which basic principle? (1 mark)
	a) Electrostatic attraction between conductors. b) Electromagnetic induction between two windings. c) Mechanical rotation of coils. d) Direct current conduction.
Spec reference	36.3.1 (a)

Q31	A DC circuit has a voltage of 12 V and a current of 3 A. Using the formula $P = I \times V$, what is the electrical power consumed by the circuit? (1 mark)
	a) 0.25 Watts. b) 4 Watts. c) 36 Watts. d) 38 Watts.

Spec reference	36.4.1 (a)
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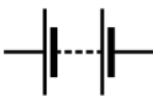
Q32	Which describes a key difference between series and parallel circuits? (1 mark)
	a) In a series circuit, a break in one component stops the flow of current in the circuit. b) In a series circuit, the voltage is the same across all components. c) In a parallel circuit, the current is the same through all components. d) In a parallel circuit, the total resistance remains the same through all components.
Spec reference	37.1.1 (a)

Q3	What is the function of a transistor in an electrical circuit? (1 mark)
	a) To store electrical energy. b) To amplify current or act as a switching device. c) To provide resistive force across an electrical circuit. d) To convert DC voltage to AC voltage.
Spec reference	37.3.1 (a) (ii)

Q34	What is the main purpose of electrical earthing and bonding within an electrical installation? (1 mark)
	a) To increase the electrical voltage used across a circuit. b) To reduce energy consumption in machinery and equipment. c) To help reduce electromagnetic interference. d) To protect people and equipment from the risk of electric shock.

Spec reference	37.4.3 (a)
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Q35	Which diagram is used in industry to show conductor connections and the layout of components? (1 mark)
	a) Schematic diagram. b) Pictorial diagram. c) Wiring diagram. d) Block diagram.
Spec reference	38.1.2 (b)

Q36	Which electrical component does this circuit symbol represent?  (1 mark)
	a) Battery. b) Lamp. c) Resistor. d) Transformer.
Spec reference	38.2.2 (a) (iii)

Q37	When following Standard Operating Procedures (SOPs) in electrical work, why should a wiring diagram be used? (1 mark)
	a) They are mainly referenced during troubleshooting tasks. b) They give the installation and connection details needed for safe work. c) They show component layout and connections to support accurate work. d) They provide information related to isolation procedures.
Spec reference	38.3.3 (a)

Q38	What is the primary application of Steel Wire Armoured (SWA) cables in electrical installations? (1 mark)
	a) To provide mechanical protection for power and auxiliary circuits. b) To supply low voltage applications for illumination including light emitting diodes (LEDs). c) To increase electrical earthing or bonding capacity within electrical installations. d) To provide a temporary means of connecting electrical components prior to testing.
Spec reference	39.1.1 (d)

Q39	According to IET Wiring Regulations, why is it important to follow the guidelines when selecting and installing cables? (1 mark)
	a) To allow unqualified personnel to install electrical systems safely. b) To reduce the length of cable required and help reduce material costs. c) To ensure the cables look neat and match the building décor. d) To prevent overheating, electrical faults, and ensure safety and compliance.
Spec reference	39.2.4 (a)

3 9331-300 End-point Assessment – multiple-choice knowledge test (answer sheet)

Candidate name:

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

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

23	a ☐	b ☐	c ☐	d ☐
24	a ☐	b ☐	c ☐	d ☐
25	a ☐	b ☐	c ☐	d ☐
26	a ☐	b ☐	c ☐	d ☐
27	a ☐	b ☐	c ☐	d ☐
28	a ☐	b ☐	c ☐	d ☐
29	a ☐	b ☐	c ☐	d ☐
30	a ☐	b ☐	c ☐	d ☐
31	a ☐	b ☐	c ☐	d ☐
32	a ☐	b ☐	c ☐	d ☐
33	a ☐	b ☐	c ☐	d ☐
34	a ☐	b ☐	c ☐	d ☐
35	a ☐	b ☐	c ☐	d ☐
36	a ☐	b ☐	c ☐	d ☐
37	a ☐	b ☐	c ☐	d ☐
38	a ☐	b ☐	c ☐	d ☐
39	a ☐	b ☐	c ☐	d ☐
40	a ☐	b ☐	c ☐	d ☐

Number of correct answers: / 40

4 9331-300 End-point Assessment – multiple-choice knowledge test (mark scheme)

Grading

Fail – 27 marks (67.5%)

Pass – 28 marks (70%)

Question number	Key	Question number	Key
1	C	21	A
2	D	22	C
3	D	23	B
4	B	24	C
5	A	25	D
6	D	26	A
7	C	27	C
8	D	28	D
9	A	29	A
10	B	30	B
11	C	31	C
12	A	32	A
13	B	33	B
14	C	34	D
15	A	35	C
16	A	36	A
17	B	37	B
18	C	38	A
19	B	39	D
20	C	40	B

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City & Guilds is the global skills partner, empowering people, organisations and economies to develop the skills they need for growth. With almost 150 years of trusted expertise, we support people into work, help them develop on the job and move into the next job.

We work with Governments, employers, training providers, colleges and industry stakeholders to design and deliver high-quality training, qualifications, assessments and credentials that lead to meaningful career progression. We understand the life changing link between skills development, social mobility and success. Our solutions span critical sectors including construction, engineering, transport, energy and electrical, serving over 1 million learners annually.

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City & Guilds

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