Qualification awaiting accreditation

CAMBRIDGE OCR

Sample assessment material

Cambridge OCR Level 3 V Level in Digital Systems and Data

H101

Unit F015: Digital systems and security

Version 0.1 | November 2026

ocr.org.uk/V Levels

Introduction

This sample assessment material (SAM) is an example exam paper published alongside the specification. It's designed to show the style and structure you can expect from our question papers.

As the qualification develops, we may update the question paper template. To make sure you're working with the most up-to-date information, we recommend using the latest set of past papers where possible.

To help you get the most from this SAM, we also provide two supporting resources:

- **Assessment story** – this explains the structure of the qualification and our approach to both examined and non-exam assessment.
- **Annotated SAMs** – these guide you through the key features of the exam paper and highlight the different types of questions students will encounter in the exam.

Summary of updates

Section	Change	Version	Date
N/A	First draft – Awaiting accreditation.	0.1	4th November 2026

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Cambridge OCR Level 3 V Level in Digital Systems and Data

H101

Unit F015: Digital systems and security

Sample question paper

Time allowed: 1 hour 15 minutes

No extra materials are needed.

Please write clearly in black ink.

Centre number | | | | | | Candidate number | | | | |

First name(s) _____

Last name _____

Instructions

- Use black ink.
- Write your answer to each question in the space provided. You can use extra paper if you need to, but you must clearly show your candidate number, the centre number and the question numbers.
- In the live exam there might be lined pages at the end of the question paper for you to use if you need extra space. Remember, you must clearly show the question numbers.
- Answer **all** the questions.

Information

- The total mark for this paper is **60**.
- The marks for each question are shown in brackets [ ].
- This document has **10** pages.

Advice

- Read each question carefully before you start your answer.

Sample

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Version 0.1

Section A

1 Which is an element of a command line interface (CLI)?

Tick (✓) **one** box.

Menu ☐

Text ☐

Toolbar ☐

[1] (AO1.1)

2 The table shows examples of each element of the CIA triad.

Tick (✓) **one** box in each row to identify the correct example for each **element of the CIA triad**.

Example	Confidentiality	Integrity	Availability
Ensure the file can be accessed during network disruption.			
Check if the document has been maliciously changed.			
Only authorised people can see a document.			

[3] (AO1.3)

Sample

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3 Complete the sentences to describe how system software works.

Use **three** words from the list.

application external hardware internal software user-level

System software controls a computer's …… functions and manages …….. It acts as a bridge between hardware and …… programmes.

[3] (AO1.3)

4 The table shows examples of resource management processes.

Tick (✓) **one** box in each row to identify the correct example for each **type of resource management process**.

Example	CPU scheduling	Device control	Memory allocation
Allocating RAM to a web browser when you open it.			
Sending a document to a printer.			
Switching between applications.			

[3] (AO1.1)

5 Which is an output device?

Tick (✓) **one** box.

Microphone ☐

Mouse ☐

Speakers ☐

[1] (AO1.1)

Sample

6 Complete the sentences to describe the traceroute diagnostic tool.

Use **two** words from the list.

connection hardware route storage

The traceroute diagnostic tool shows the …….. data takes across a network.

This can help find …… problems.

[2] (AO1.3)

7 Which internal component synchronises internal components?

Tick (✓) **one** box.

Arithmetic Logic Unit (ALU) ☐

Control Unit (CU) ☐

Read Only Memory (ROM) ☐

[1] (AO1.1)

8 Which digital system provides resources to client computers?

Tick (✓) **one** box.

Desktop ☐

Distributed ☐

Server ☐

[1] (AO1.2)

Sample

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9 Complete the sentences to explain the relationship between authentication and authorisation.

Use **three** words from the list.

malware **resources** **security** **usability** **validates** **verifies**

A company uses authentication and authorisation together to increase network ……. Authentication …… the identity of a user, while authorisation determines which …… the user can access.

[3] (AO1.2)

10 Identify **two** system vulnerabilities.

1 .....

2 .....

[2] (AO1.1)

11 The table shows examples of each element of testing processes.

Tick (✓) **one** box in each row to identify the correct example for each **type of testing process**.

Example	Performance	Usability	Acceptance
Can users access the services they need?			
Can many users login at the same time?			
Can users find the buttons they need?			

[3] (AO1.3)

Sample

12 Identify **two** types of technical faults.

1 .....

2 .....

[2] (AO1.1)

Sample

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Section B

13

(a) Identify **two** characteristics of a desktop digital system.

1 .....

2 .....

[2] (AO1.1)

(b) Identify **one other** digital system.

..... **[1]**

(AO1.1)

14 A school uses network storage to store documents.

(a) Describe **one** advantage to the school of using network storage.

.....

.....

.....

.....

[2] (AO2.1)

(b) Identify **one other** data storage type.

..... **[1]**

(AO1.1)

Sample

15 School staff must comply with data protection legislation when handling student data.

Analyse the impacts of non-compliance with data protection legislation.

.....

.....

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.....

[6] (AO3.2)

16 A secure network storage area is being created for sensitive documents at a school.
The secure area will be accessed using a login screen.

Complete the test plan to show **two** tests that could be used to validate a user's password.

A password must:

- Be a minimum of 10 characters.
- Include at least 1 special character and 1 number.
- Include a mixture of upper and lower case letters.

Test number	Test data	Test description	Expected output
1			
2			

[6] (AO2.5)

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Sample

17

(a) Students need to access their work from home.

Explain the network service that should be activated to allow access to the school server from home.

Network service

.....

Explanation

.....

..... **[2]**

(AO1.2/2.1)

(b) Identify **two other** network services.

1 .....

2 .....

[2] (AO1.1)

18 Emails have been received asking school staff to click an embedded link.

(a) Explain the cyber security threat that could be included in an embedded link.

Name of threat

.....

Explanation

.....

.....

.....

[2] (AO2.1)

(b) Identify **two other** cyber security threats.

1 .....

2 .....

[2] (AO1.1)

Sample

19 A school has been advised they should increase their cyber security.

Evaluate if the school should use access controls to increase the security of the information and data stored on the network.

In your answer you **must** include:

- **Advantages** and **disadvantages** for the **school**
- A **judgement** about access controls being used
- Support for your judgement from across the course of study

.**[9] (AO3.1)**

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End of sample question paper

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Sample

Cambridge OCR Level 3 V Level in Digital Systems and Data

H101

F015: Digital systems and security

Sample mark scheme

Sample

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Version 0.1

Marking instructions

Crossed-out answers

If a student has crossed out an answer and written a clear alternative, do **not** mark the crossed-out answer.

If a student has crossed out an answer and **not** written a clear alternative, give the student the benefit of the doubt and mark the crossed-out answer if it's readable.

Multiple choice question answers

When a multiple choice question has only one correct answer and a student has written two or more answers (even if one of these answers is correct), you should **not** award a mark.

When a student writes more than one answer

1. Questions that ask for a set number (including 1) of short answers or points

If a question asks for a set number of short answers or points (e.g. **two** reasons for something), mark only the **first set number** of answers/points.

First mark the answers/points against any printed numbers on the answer lines, marking the **first** answer/point written against each printed number. **Then**, if students have not followed the printed numbers, mark the answers/points from left to right on each line and **then** line by line until the set number of answers/points have been marked. Do **not** mark the remaining answers/points.

2. Questions that ask for a single developed answer

If a student has written two or more answers to a question that only requires a single (developed) answer, and has **not** crossed out unintended answers, mark only the first answer.

3. Contradictory answers in points-based questions

When a student has written contradictory answers, do **not** award any marks, even if one of the answers is correct.

Levels of response marking

1. To determine the level start at the highest level and work down until you reach the level that best describes the answer

2. To determine the mark within the level, consider the following:

Quality of the answer	**Award mark**
Consistently meets the criteria for this level	At the top of the level (6 and 9 mark questions)
Meets the criteria but with some inconsistency	At the middle of the level (9 mark questions)
On the borderline of this level and the one below	At the bottom of the level (6 and 9 mark questions)

Sample

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Annotations

Annotation	Meaning
	Correct response
	Incorrect response
	Positive
	Negative
	Level 1
	Level 2
	Level 3
	Omission mark
	Benefit of doubt given (this annotation counts as a mark so do not tick as well)
	Contradiction
	Repeat
	Too vague
	Noted but no credit given

Sample

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Mark scheme

1	
Max mark	1 **(AO1.1)**
Answer	Text (1)
Guidance	Correct answer only

2	
Max mark	3 **(AO1.3)**
Answer	<table><tr><th>Example</th><th>Confidentiality</th><th>Integrity</th><th>Availability</th></tr><tr><td>Ensure the file can be accessed during network disruption.</td><td></td><td></td><td>✓ (1)</td></tr><tr><td>Check if the document has been maliciously changed.</td><td></td><td>✓ (1)</td><td></td></tr><tr><td>Only authorised people can see a document.</td><td>✓ (1)</td><td></td><td></td></tr></table>
Guidance	Correct answer(s) only

3	
Max mark	3 **(AO1.3)**
Answer	System software controls a computer's **internal (1)** functions and manages **hardware (1**). It acts as a bridge between hardware and **user-level (1)** programmes
Guidance	Correct answer(s) only

Sample

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<table>
<tr><td colspan="2">4</td></tr>
<tr><td>Max mark</td><td>3
(AO1.1)</td></tr>
<tr><td>Answer</td><td>
<table>
<tr><td>Example</td><td>CPU scheduling</td><td>Device control</td><td>Memory allocation</td></tr>
<tr><td>Allocating RAM to a web browser when you open it.</td><td></td><td></td><td>✓ (1)</td></tr>
<tr><td>Sending a document to a printer.</td><td></td><td>✓ (1)</td><td></td></tr>
<tr><td>Switching between applications.</td><td>✓ (1)</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Guidance</td><td>Correct answer(s) only</td></tr>
</table>

5	
Max mark	1 (**AO1.1)**
Answer	Speakers (1)
Guidance	Correct answer only

6	
Max mark	2 **(AO1.3)**
Answer	The traceroute diagnostic tool shows the **route (1)** data takes across a network. This can help find **connection (1)** problems.
Guidance	Correct answer(s) only

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7	
Max mark	1 **(AO1.1)**
Answer	Control Unit/CU (1)
Guidance	Correct answer only

8	
Max mark	1 **(AO1.2)**
Answer	Server (1)
Guidance	Correct answer only

9	
Max mark	3 **(AO1.2)**
Answer	A company uses authentication and authorisation together to increase network **security (1).** Authentication **verifies (1)** the identity of a user, while authorisation determines which **resources (1)** the user can access.
Guidance	Correct answer(s) only

10	
Max mark	2 **(AO1.1)**
Answer	1 mark for each correct answer Any **two** from: • Cloud (1) • Direct access to network/hardware devices (1) • Email/social media (1) • Removable media (1) • Third party access/suppliers/vendors/workers (1) • Wireless networks (1)
Guidance	Correct answer(s) only

Sample

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<table>
<tr><td colspan="2">11</td></tr>
<tr><td>Max mark</td><td>3
(AO1.3)</td></tr>
<tr><td>Answer</td><td>
<table>
<tr><td>Example</td><td>Performance</td><td>Usability</td><td>Acceptance</td></tr>
<tr><td>Can users access the services they need?</td><td></td><td></td><td>✓ (1)</td></tr>
<tr><td>Can many users login at the same time?</td><td>✓ (1)</td><td></td><td></td></tr>
<tr><td>Can users find the buttons they need?</td><td></td><td>✓ (1)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Guidance</td><td>Correct answer(s) only</td></tr>
</table>

<table>
<tr><td colspan="2">12</td></tr>
<tr><td>Max mark</td><td>2
(AO1.1)</td></tr>
<tr><td>Answer</td><td>1 mark for each correct answer
Any two from:
• Hardware faults (1)
• Software faults (1)
• Network faults (1)
• User-related faults (1)</td></tr>
<tr><td>Guidance</td><td>Correct answer(s) only</td></tr>
</table>

<table>
<tr><td colspan="2">13 (a)</td></tr>
<tr><td>Max mark</td><td>2
(AO1.1)</td></tr>
<tr><td>Answer</td><td>1 mark for each correct answer
Any two from:
• Designed for stationary use/not portable (1)
• Components can be replaced/upgraded (1)
• Includes a range of different ports (1)
• Needs external peripherals (1)
Credit any other appropriate response</td></tr>
<tr><td>Guidance</td><td>Accept one example of an external peripheral.</td></tr>
</table>

Sample

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13 (b)	
Max mark	1 **(AO1.1)**
Answer	1 mark for one correct answer Any **one** from: • Mobile systems (1) • Server systems (1) • Distributed systems (1)
Guidance	Correct answer only Do not accept desktop digital systems.

14 (a)	
Max mark	2 **(AO2.1)**
Answer	2 marks for **one** correct answer Any one from: • Multiple staff can access/share data (1) from different classrooms (1) • Lesson planning collaboration can take place (1) so all teachers can share best practice (1) • Audit logs can be used to provide a security trail (1) of student access (1) • Remote access can be provided to students (1) so they can access work at home (1) **Credit any other appropriate response**
Guidance	

14 (b)	
Max mark	1 **(AO1.1)**
Answer	1 mark for one correct answer Any **one** from: • Local storage (1) • Cloud storage (1)
Guidance	Accept examples Do not accept network storage and examples of.

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15	
Max mark	6 **(AO3.2)**
Levels of Response	**Level 3 (high) 5-6** A **detailed** analysis, which includes: • a range of elements broken down to consider relationships, patterns or characteristics of the subject being analysed • detailed knowledge and understanding in the context of the question • detailed explanations, interpretations and/or assessments of impact leading to a conclusion • consistent use of appropriate subject terminology. **Level 2 (mid) 3-4** A **clear** analysis, which includes: • some elements broken down to consider relationships, patterns or characteristics of the subject being analysed • clear knowledge and understanding in the context of the question • clear explanations, interpretations and/or assessments of impact leading to a conclusion • some use of appropriate subject terminology. **Level 1 (low) 1-2** A **brief** analysis, which includes: • at least one characteristic or element of the subject being analysed • brief knowledge and understanding in the context of the question • brief attempts at explanation, interpretation and/or assessment of impact; a limited conclusion may be attempted • limited use of appropriate subject terminology. **0 marks** Answer is **not** worthy of credit.

Indicative content	Answers can include some of the following:
	Impacts:
	• Financial penalties and fines
	  ○ Large fines can increase financial pressure, and divert money away from essential services, staff training.
	• Damage to reputation
	  ○ Parents may not want their children to attend the school/staff may not want to work there. Trust may be lost from staff. Rebuilding trust can take considerable time and money.
	• Harm to individuals
	  ○ Victims may suffer financial losses, emotional distress or damage to their personal lives. It could also lead to embarrassment, discrimination or identity theft.
	• Disciplinary action against employees
	  ○ Non-compliance can affect an employee's job security and professional reputation.
	• Increased security risks
	  ○ These failures can lead to further data breaches, and harm to individuals. They may also expose weaknesses in an organisation's wider information security practices.
	Credit other relevant conclusions, points and examples.

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<table>
<tr><td colspan="2">16</td></tr>
<tr><td>Max mark</td><td>6
(AO2.5)</td></tr>
<tr><td>Answer</td><td>Up to 3 marks for each of two correctly completed tests.

<table>
<tr><td>Test data</td><td>Test description</td><td>Expected output</td></tr>
<tr><td>MontyBella</td><td>Has 10 characters but no special/ number</td><td>Fail Should get an error message</td></tr>
<tr><td>!9MontyDog</td><td>Meets all rules</td><td>Pass</td></tr>
<tr><td>*ABcdEFg9</td><td>Only has 9 characters but 1 special / number.</td><td>Fail Should get an error message</td></tr>
</table>

Credit any other appropriate response</td></tr>
<tr><td>Guidance</td><td>The rules provided must be met with any test data format acceptable. The test data provided are examples.

One mark for each correctly completed cell.</td></tr>
</table>

<table>
<tr><td colspan="2">17 (a)</td></tr>
<tr><td>Max mark</td><td>2
(AO1.2/2.1)</td></tr>
<tr><td>Answer</td><td>Up to two marks for a valid network service explained.
One mark for identifying the network service. One mark for saying how this will permit access e.g.:

Remote access/RAS (1)

Users input authentication credentials to verify authorised access (1)
A connection will be established to authenticated users' devices (1)
Access to resources / files will be based on authenticated users' permissions (1)

Credit any other appropriate response</td></tr>
<tr><td>Guidance</td><td>Accept protocols e.g. SSH as network service</td></tr>
</table>

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17 (b)	
Max mark	2 **(AO1.1)**
Answer	1 mark for each correct answer Any **two** from: • Web Service (1) • Email Service (1) • File Transfer Service (1) • File Sharing Service (1) • Print Service (1) • Directory Service (1) • Database Service (1) • Voice over IP/VoIP (1) **Credit any other appropriate response**
Guidance	Do not accept remote access (RAS)

18 (a)	
Max mark	2 **(AO2.1)**

Answer	Up to **two** marks for a valid threat explained
	One mark for identifying the threat. **One** mark for saying how this could be used e.g.:
	• Phishing/Social Engineering (1)
	  ○ The link leads to a fake website where school staff input their personal details which are captured by attackers (1)
	  ○ The email creates a sense of urgency to confirm school trip payment by clicking the embedded link (1)
	  ○ The link takes the user to a very good copy of the legitimate website e.g. Ofsted (1)
	Credit any other appropriate response

Guidance	Accept example of personal details e.g. passwords

18 (b)	
Max mark	2 **(AO1.1)**
Answer	1 mark for each correct answer Any **two** from: • Malware (1) • Unauthorised access attempts (1) • Suspicious network behaviour (1) • Botnets (1) • Denial of Service/DoS (1) • Lack of supplier support (1) **Credit any other appropriate response**
Guidance	Do not accept Phishing and social engineering

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19	
Max mark	9 **(AO3.1)**
Levels of Response	**Level 3 (7-9 marks)** A **detailed** evaluation, which includes: • a balanced range of points from both sides of the argument are broken down to consider relationships, patterns or characteristics of the subject being evaluated • detailed judgement(s) with relevant reasons/justifications about how and why aspects are important, effective and/or appropriate • consistent use of appropriate subject terminology. • consistent application of relevant knowledge and understanding from across the course of study (synoptic a) • response is well constructed and develops an extended line of reasoning which is relevant, coherent and effective (synoptic b) **Level 2 (4-6 marks)** A **clear** evaluation, which includes: • a balanced range of points from both sides of the argument are broken down to consider relationships, patterns or characteristics of the subject being evaluated • detailed judgement(s) with relevant reasons/justifications about how and why aspects are important, effective and/or appropriate • consistent use of appropriate subject terminology. • consistent application of relevant knowledge and understanding from across the course of study (synoptic a) • response is well constructed and develops an extended line of reasoning which is relevant, coherent and effective (synoptic b) **Level 1 (1-3 marks)** A **brief** evaluation, which includes: • unbalanced points from the argument are broken down to consider relationships, patterns or characteristics of the subject being evaluated • brief judgement(s) with limited reasons/justifications about aspects which are important, effective and/or appropriate • use of appropriate subject terminology is limited. **0 marks** Answer is not worthy of credit.
Indicative content	Answers can include some of the following: Access controls can include • User accounts • User roles • Access permissions • Group permissions • User access monitoring • Least privilege **Advantages**

Sample

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19	
	• Improved security: Prevents unauthorised users from accessing sensitive information. • Data protection: Helps protect confidential information from being viewed, changed or deleted by unauthorised people. • User accountability: Provides an audit trail on who accessed resources/ information/data/files and what actions they performed. • Reduced risk of data breaches: Limits access to authorised users, reducing opportunities for attackers to access sensitive data. • Controlled permissions: Allows administrators to assign different levels of access depending on a user's role, responsibilities and needs. **Disadvantages** • Cost: Implementing and maintaining access control systems can be expensive in terms of budget people/time. • Complexity: Setting up and managing user accounts and permissions can be complicated. • Human error: Administrators may accidentally grant users excessive permissions or fail to remove access when it is no longer needed. • Insider threats: Authorised users may deliberately misuse their access to steal, change or delete information. • Does not prevent all attacks: Access controls cannot stop every cyberattack, particularly if an attacker steals a legitimate user's login credentials. **Credit other relevant judgements, points and examples.** Synoptic link: • Content could be drawn from F018 Topics C1, C2 and B2.

Sample

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