Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY	**0417/12**
Paper 1 Theory	**May/June 2025**
MARK SCHEME	
Maximum Mark: 80	

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

This document consists of **10** printed pages.

[Turn over

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
λ	Omission or to indicate where a company brand name has been used
✖	Incorrect
FT	Follow through
Highlighter	Information copied from the text
ISW	Ignore subsequent work
LNK	Two statements are linked
MAX	Maximum number of marks that can be awarded
NAQ	Not answered question
Off-page comment	Allows comments to be entered at the bottom of the RM marking window and then displayed when the associated question item is navigated to.
On-page comment	Allows comments to be entered in speech bubbles on the candidate response.
PE	Principal examiner has approved the mark
REP	Repeat
SEEN	Indicates that work/page has been seen including blank answer spaces and blank pages.
✔	Correct

Mark scheme abbreviations
/ separates alternative words / phrases within a marking point
// separates alternative answers within a marking point
underline actual word given must be used by candidate (grammatical variants accepted)
max indicates the maximum number of marks that can be awarded
( ) the word / phrase in brackets is not required, but sets the context
Note: No marks are awarded for using brand names of software packages or hardware.

The following <u>must</u> be applied
Examiners **must** ensure that annotations are placed so they can be easily seen in white space where or close to where the mark is awarded
Before submitting a script please check all ticks match the marks
At the end of prose answers/long answer place an annotation at the end of the answer to show that the whole answer has been read, unless a marking annotation has been placed nrea or at the end of the answer.
On any blank pages place **one** SEEN annotation
Read the whole sentence before marking it
If an answer is blank then use SEEN and award NR, but if anything has been written for example 'Don't know','?' etc then use NAQ and award 0.
If an answer has been attempted and crossed out and no other answer written then attempt to mark it.

Question	Answer	Marks
1	QR scanner RFID reader	**2**

Question	Answer	Marks
2(a)(i)	**Two** from: Helps users to create 2D drawings / 3D models Helps create digital representations of objects before they are manufactured Enables the development / modification of the design process	**2**
2(a)(ii)	**Two** from: Allows a computer to interact with sensors Visualises the physical quantities in the real world Help analyse data from sensors	**2**
2(a)(iii)	**Two** from: Allows the user to add different features to the video Allows the video to be output in different file formats Allows video to be exported	**2**
2(b)	**One** from: Provides the services that the <u>user</u> requires to solve a task Allows the <u>user</u> to perform specific tasks	**1**

Question	Answer	Marks
3	**Benefits** Max **five** from: Handprints are unique Improves security The pupil has to be present to register A handprint is impossible to lose Hard to clone / forge a handprint Fast form of data entry Prevents shoulder surfing **Drawbacks** Max **five** from: Setting up the system takes a long time Adding new handprints can take time If the scanner becomes dirty the reader may misread the data Expensive to set up If the palm of the hand is damaged / wet / dirty the reader can easily misread the data Position of the hand is critical Issues with invasion of privacy	**6**

Question	Answer	Marks
4(a)(i)	**One** from: To ensure data integrity / application compatibility / efficient data processing To prevent data corruption / crashes	1
4(a)(ii)	To ensure they trap unreasonable data	1
4(a)(iii)	To ensure data can be clearly seen on the screen / printer	1
4(b)	**One** from: Data the system will not accept Not in the correct form Outside the limits of acceptability	1
4(c)	**One** from: To help programmers / analysts / developers **One** from: To make improvements / updates to the system To make repairs to the system	2
4(d)	**Three** from: Algorithms Hardware requirements Input format Limitations of the system List of variables Program flowcharts Program language Program listing Purpose of the system / program Sample runs / test runs System flowcharts Software requirements	3

Question	Answer	Marks
5(a)	**Three** from: Use Residual Circuit Breakers Regularly check insulation on wires Do not allow drinks near computer equipment Regularly check equipment Do not touch live wires with wet hands	3
5(b)	**Three** from: Use cable ducts Place cables under carpet / in false ceiling Use cable management Use wireless technology	3

Question	Answer	Marks

6(a)	**Similarities**
	Max **five** from:
	Both are threats to data
	Both use the internet
	Both gain access to personal data
	Both direct users to a fake website
	The URLs used on both are similar to trusted URLs
	In both the sending of personal information can lead to fraud / identity theft
	
	Differences
	Max **five** from:
	In phishing:
	    a legitimate looking email is sent to target users
	    the user clicks a link
	    the email appears to come from a trusted source
	    the email contains a link for the user to click on
	    when the link is clicked the user is sent to a fake website
	    the user is aware that they have clicked a link / replied to an email
	
	In pharming:
	    A malicious code is installed onto the computer / webserver
	    the software directs the user to a fake website
	    the website looks legitimate
	    is without the user's knowledge
		6

6(b)(i)	**Two** from: Use email filters Check email addresses before opening emails Do not reply to unsecured email addresses Do not click on links within unsecured emails / untrusted websites Do not give personal information in emails / untrusted websites	2
6(b)(ii)	**Two** from: Use up to date anti-malware to remove the malicious code Check URL addresses Do not give personal information to untrusted websites	2

Question	Answer	Marks
7	**Benefits** Max **five** from: The walkers do not need to carry a number of paper maps More robust as paper maps can tear easily Can give a real time update of position The system can estimate the distance / time of arrival More up to date system than paper maps Easier to find quickest / safest / best route **Drawbacks** Max **five** from: In remote areas the signal is more likely to be lost (1st) this would mean the walker could become lost (1) System needs to be kept up to date as routes change Over dependency on the technology	**6**

Question	Answer	Marks
8(a)(i)	Date_of_publication	**1**
8(a)(ii)	Price	**1**
8(a)(iii)	Type_of_book	**1**
8(b)	**Four** from: Together they help reduce the number of errors in data entry Validation will check for data being reasonable Verification will check that the data has been copied correctly the source document If used on their own there may still be errors in the data The data may be transcribed correctly but is not sensible due to errors on the source document The data may be sensible but not transcribed correctly	**4**
8(c)	**One** from: Double data entry Visual verification	**1**

Question	Answer	Marks
9(a)	**Three** from: Connects devices together to form a LAN Expands the range of a LAN Sends data packets to a specific device based on the MAC address Secures the sending of data Reduces network traffic	3
9(b)	**Four** from: The user opens the settings menu on the TV Chooses connect to network A list of networks appear User selects a network User enters password Click on connect If not connected error message appears	4
9(c)	**One** from: Wireless Local Area Network / WLAN Local Area Network / LAN	1

Question	Answer	Marks
10(a)	**Three** from: Communication / security protocol It allows data to be sent securely over the internet Standard security technology Sets up an encrypted link between a webserver and a browser	3
10(b)	**One** from: The website address starts with HTTPS There is an icon of a green locked padlock	1

10(c)	**Benefits**
	Max **four** from:
	Fast search for the website (1st)
	     as keywords can be searched (1)
	The URL need not be known
	Easy to find the website
	
	Drawbacks
	Max **four** from:
	Can lead to Information overload
	Can be hard to find the relevant information
	Can be time consuming to find the exact website (1st)
	     if clear search information not given (1)
	Advertising / sponsored sites are placed at the top of the list
		5

Question	Answer	Marks
11(a)	**Three** from: As an attachment on an email Using a pen drive Using a <u>portable</u> / <u>external</u> hard disk drive Using a <u>portable</u> / <u>external</u> SSD Using a CD-RW / DVD-RW	3
11(b)	**Three** from: Student logs onto the cloud account at college Uploads the project onto the cloud Saves the project onto the cloud At home the student logs into the cloud account Downloads the project onto her PC	3

Question	Answer	Marks
12	**Three** from: Contacts the bank's computer Checks the PIN is correct Checks the card is not stolen / in date / valid Access customer's account Checks daily limit not exceeded Checks enough money in the account Customers account updated	3