

# Cambridge IGCSE™

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**INFORMATION & COMMUNICATION TECHNOLOGY****0417/12**

Paper 1 Theory

**October/November 2024**

MARK SCHEME

Maximum Mark: 80

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**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 October/November 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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This document consists of **8** printed pages.

**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.

Question	Answer	Marks
1	<b>Two</b> from: Serial numbers Product keys Unique keys supplied with the original copy Holograms to identify legitimate copies Licensing agreements	2

Question	Answer	Marks
2(a)	List of contacts to send the same email to a number of people	1
2(b)	Copy of email sent to other recipients at same time as original is sent so all recipients can see who received the email	1
2(c)	Stored list of email addresses	1
2(d)	<b>One</b> from: Copy of email sent to other recipient(s) at same time as original is sent without recipients knowing	1

Question	Answer	Marks
3(a)	<b>Two</b> from: Portable document format The document has been converted into an image format Can be read by most computers/applications/apps Hard to edit therefore it can be used to protect the file from change	2
3(b)	<b>Two</b> from: Rich text format A file type that saves some of the formatting within the text Readable by most text editors	2
3(c)	<b>Two</b> from: Cascading style sheet Attached to one or more web pages Written in HTML Defines how the web pages look Part of the presentation layer	2

Question	Answer	Marks
4(a)	<p><i>Similarities</i></p> <p>Max <b>three</b> from:            Both are attached/connected to a computer            Both use digital signals            Both handle data            Both communicate with both the user and the computer</p> <p><i>Differences</i></p> <p>Max <b>three</b> from:            An input device sends data to a computer            Input devices are controlled by the user</p> <p>An output device receives data from the computer            An output device displays data/plays sound            Output devices are controlled by the computer</p>	4
4(b)	<p><b>Three</b> from:            Keyboard            Numeric keypad            Scanner            Camera            Microphone            Sensor            Light pen            Mouse</p>	3
4(c)	<p><b>Three</b> from:            Monitors            Multimedia projector            Printer            Plotter            Speaker            Actuator</p>	3

Question	Answer	Marks
5(a)	<p>Max <b>three</b> from:            ROM is non-volatile memory            ROM is permanent memory            ROM is read only</p> <p>Max <b>three</b> from:            RAM is volatile memory            RAM stores data temporarily            RAM can be static or dynamic            RAM needs power to keep the data refreshed            RAM has a larger memory capacity than ROM            RAM can be written to and read from</p>	4

Question	Answer	Marks
5(b)	<p><b>Four</b> from:</p> <ul style="list-style-type: none"> <li>Non-volatile</li> <li>Permanent storage</li> <li>Storage devices have slow access rates</li> <li>Large storage</li> <li>Can be removable storage</li> <li>Secondary storage</li> <li>Can be written to and read from</li> </ul>	<b>4</b>

Question	Answer	Marks
6	<p><i>Benefits</i></p> <p>Max <b>five</b> from:</p> <ul style="list-style-type: none"> <li>Allows hands free control</li> <li>Speeds up the entry of data</li> <li>Distraction free interface</li> <li>Simpler system for the driver</li> <li>Less errors made on data entry</li> </ul> <p><i>Drawbacks</i></p> <p>Max <b>five</b> from:</p> <ul style="list-style-type: none"> <li>Background noise can affect the data entry</li> <li>Less features than other interfaces</li> <li>Issues with accents/understanding commands</li> <li>The user needs to be trained with the system</li> <li>Commands need to be spoken clearly</li> <li>Commands may have to be learnt</li> <li>May have a limited number of commands</li> </ul>	<b>6</b>

Question	Answer	Marks
7(a)	<p><i>Processing</i></p> <p>Max <b>two</b> from:</p> <ul style="list-style-type: none"> <li>The inference engine searches/matches the user's answers</li> <li>The knowledge base is searched using the rules base</li> </ul> <p><i>Outputs</i></p> <p>Max <b>two</b> from:</p> <ul style="list-style-type: none"> <li>Diagnoses/probabilities of the solution/results are produced</li> <li>Explanation of how the solution was found is displayed</li> <li>The question is displayed on the screen</li> </ul>	<b>3</b>
7(b)	<p><b>Three</b> from:</p> <ul style="list-style-type: none"> <li>Strategy games</li> <li>Financial advice</li> <li>Tax systems</li> <li>Careers</li> <li>Route scheduling for delivery vehicles</li> <li>Diagnostic systems</li> <li>Identification system</li> <li>Prospecting systems</li> </ul>	<b>3</b>

Question	Answer	Marks
8	<p><i>Advantages</i> Max <b>five</b> from: Larger screen therefore data is easier to see the written content Larger screen so less strain on the eyes Larger screen allows many users to view the screen at the same time Larger onscreen keyboard making data entry easier Larger onscreen keyboard means less typing errors Larger onscreen keyboard means faster data entry Higher memory storage allows for faster processing More ports to attach devices therefore is expandable</p> <p><i>Disadvantages</i> Max <b>five</b> from: A smartphone can be used with one hand A phablet computer has a larger footprint A smartphone is more portable Larger in size than a smartphone making it more cumbersome (1)</p>	6

Question	Answer	Marks
9(a)	<p><b>Two</b> from: Storing computer addresses Routing data packets</p>	2
9(b)	<p><b>Four</b> from: A router connects to a modem using an Ethernet cable Receives data packets from the internet/other devices Transmits data packets to the internet/other devices The data packet contains an IP address The router reads the data packet The router reads the destination IP address The router stores IP addresses in its routing table Checks/searches for the IP address in its routing table Finds the best path for each packet to reach its destination uses routing table The router will use the IP address to work out the best route If it cannot find the best route it uses the default one Uses an IP address with each of the devices on the network The router sends/forwards the packet to the next router The data packet continues being sent to subsequent routers until it reaches the destination router Manages data flow</p>	4

Question	Answer	Marks
10(a)	<p><b>Four</b> from: A piece of software/data Authorises access to a network The token is sent to the user after they log in It sends a single-use code this token is active for a short period of time Provides an extra security layer</p>	4

Question	Answer	Marks
10(b)(i)	<b>Three</b> from: Protects the computer against computer viruses The AV has a database of known viruses Identifies a virus with those stored in its database Prevents malicious script from running Alerts the user that a virus is found It is a security method Removes/quarantines viruses	3
10(b)(ii)	<b>Three</b> from: Protects against malware/malicious software Detects more advanced forms of malware Uses heuristic-based detection Finds source codes that indicate a threat It is a security method Warns of the threat if it identifies malware Contains a database of code Removes the malware	3

Question	Answer	Marks
11(a)	<b>Four</b> from: Can use embedded multimedia Can auto change of pages Can be used in other documents Sections of the newsletter can be hyperlinked More up-to-date as edited versions can be uploaded quickly Readers can interact with the ePublication The system can read the ePublication to the user	4
11(b)	<b>Two</b> from, for example: Journals Company reports Digital catalogues/brochures eBooks Scrapbooks/articles Electronic magazines	2

Question	Answer	Marks
12(a)	<b>Four</b> from: Collecting data about the current system Establishing the problem that the customer needs solving Identifying the inputs, processing, outputs of the current system Producing a cost-benefit analysis Finding the problems with the current system Identifying the user requirements of the new system	4

Question	Answer	Marks
12(b)	<b>Three</b> from: This describes the configuration for the system Used in the production of the system specification document It is a mutual agreement of what the client wants and what the developer can offer States the performance requirements of the system Specifies the security requirements of system Specifies overall functions of the system i.e. what it is to be used for	<b>3</b>
12(c)	<b>Three</b> from: Field length Field name Data type Primary key Foreign key	<b>3</b>