

Cambridge IGCSE™

INFORMATION & COMMUNICATION TECHNOLOGY**0417/12**

Paper 1 Theory

October/November 2024

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

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.

0417/12

Cambridge IGCSE – Mark Scheme
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2024

Question	Answer	Marks
1	Two 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)	One 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)	Two 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)	Two from: Rich text format A file type that saves some of the formatting within the text Readable by most text editors	2
3(c)	Two 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)	<i>Similarities</i> Max three from: Both are attached/connected to a computer Both use digital signals Both handle data Both communicate with both the user and the computer <i>Differences</i> Max three from: An input device sends data to a computer Input devices are controlled by the user An output device receives data from the computer An output device displays data/plays sound Output devices are controlled by the computer	4
4(b)	Three from: Keyboard Numeric keypad Scanner Camera Microphone Sensor Light pen Mouse	3
4(c)	Three from: Monitors Multimedia projector Printer Plotter Speaker Actuator	3

Question	Answer	Marks
5(a)	Max three from: ROM is non-volatile memory ROM is permanent memory ROM is read only Max three 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	4

0417/12

Cambridge IGCSE – Mark Scheme
PUBLISHEDOctober/November
2024

Question	Answer	Marks
5(b)	Four from: Non-volatile Permanent storage Storage devices have slow access rates Large storage Can be removable storage Secondary storage Can be written to and read from	4

Question	Answer	Marks
6	<i>Benefits</i> Max five from: Allows hands free control Speeds up the entry of data Distraction free interface Simpler system for the driver Less errors made on data entry <i>Drawbacks</i> Max five from: Background noise can affect the data entry Less features than other interfaces Issues with accents/understanding commands The user needs to be trained with the system Commands need to be spoken clearly Commands may have to be learnt May have a limited number of commands	6

Question	Answer	Marks
7(a)	<i>Processing</i> Max two from: The inference engine searches/matches the user's answers The knowledge base is searched using the rules base <i>Outputs</i> Max two from: Diagnoses/probabilities of the solution/results are produced Explanation of how the solution was found is displayed The question is displayed on the screen	3
7(b)	Three from: Strategy games Financial advice Tax systems Careers Route scheduling for delivery vehicles Diagnostic systems Identification system Prospecting systems	3

0417/12

Cambridge IGCSE – Mark Scheme
PUBLISHEDOctober/November
2024

Question	Answer	Marks
8	<i>Advantages</i> Max five 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 <i>Disadvantages</i> Max five 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)	6

Question	Answer	Marks
9(a)	Two from: Storing computer addresses Routing data packets	2
9(b)	Four 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	4

Question	Answer	Marks
10(a)	Four 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	4

0417/12

Cambridge IGCSE – Mark Scheme
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Question	Answer	Marks
10(b)(i)	Three 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)	Three 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)	Four 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)	Two from, for example: Journals Company reports Digital catalogues/brochures eBooks Scrapbooks/articles Electronic magazines	2

Question	Answer	Marks
12(a)	Four 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)	Three 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	3
12(c)	Three from: Field length Field name Data type Primary key Foreign key	3