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CAMBRIDGE
International Education

Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/12**

Paper 1 Theory **February/March 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 February/March 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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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.

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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
	Omission or to indicate where a company brand name has been used
	Incorrect point
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 point

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Question	Answer	Marks
1	Keyboard Mouse	**2**

Question	Answer	Marks
2(a)(i)	A computer program Data is arranged / stored / organised in rows and columns	**2**
2(a)(ii)	**Two** from: A computer program Collection of structured / organised data It manages / stores data in a fields / records / files / tables	**2**
2(a)(iii)	A small computer program Performs specific task within a larger application	**2**
2(b)	**Three** from: Compilers Linkers Device drivers Operating systems Utilities	**3**

Question	Answer	Marks
3(a)	**Four** from: An Interactive user interface appears Questions are asked about the illness Users answer the questions Y or N answers are given Answers lead to other questions The inference engine searches The knowledge base is searched using the rules base Outputs an explanation of the diagnoses	**4**
3(b)	**Two** from: The illness could be new The illness may not be stored in the knowledge base Data in the knowledge base could be incorrect The user enters incorrect data	**2**

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Question	Answer	Marks
4(a)	**One** from: Data that is currently in use Data used in the old system Data where the outputs are known	**1**
4(b)	**Two** from: The data could contain personal data Requires permission to use the data The data could breach data protection legislation	**2**
4(c)	**Two** from: It describes the testing approach of the database Maps / plans out how the testing is to be carried out Explains how each module / function / full system is to be tested	**2**

Question	Answer	Marks
5(a)	**Benefits** Max **five** from: Money is saved as expensive gaming machines need not be purchased Multi-user games can be easily used The games are more up to date Allows the user to play from many places Many more games are available Games may have a higher resolution Large storage capacity so the game runs more smoothly **Drawbacks** Max **five** from: Needs a stable internet connection Needs greater bandwidth User does not own the game There is / may be a monthly subscription to play Cloud storage could be expensive The games are not as high resolution due to video compression Liable to lag	**6**
5(b)	**Two** from: The process of scrambling data Uses a key to encrypt / decrypt the data Convert plain text into cipher text Makes the data hard to understand	**2**
5(c)	**Three** from: Install anti-virus software Keep the anti-virus software up to date Scan the attachment for viruses Remove all personal data from the document Encrypt / password protect the file if personal data is being sent Check that it is being sent to the correct email address Make sure the user is sending the correct attachment	**3**

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Question	Answer	Marks
6	**For** Max **five** from: Smartphones use land-based towers / cells / base station which are less likely to be found in remote areas Smartphones are designed for urban use Satellite phones are more likely to get a signal Satellite phones are more robust Satellite phones have a larger range Satellite phones can withstand extreme temperatures **Against** Max **five** from: Satellite signals are more easily blocked by obstacles Satellite phone needs expensive licences to use Satellite phone tends only to be used for phone calls More legal / security issues using satellite phones than smartphones Less bandwidth is available for satellite phones only low data rates can be achieved	**6**

Question	Answer	Marks
7(a)	**Benefits** Max **three** from: Cheaper staffing costs Only needs to be one set of staff Only one system in place therefore cheaper The software is fully tested before implementation therefore fewer errors Prevents the duplication of data Saves time on entering data as data is entered once **Drawbacks** Max **three** from: Staff have very little time to train on the new system as the system is implemented immediately The original system cannot be used If the new system fails, all data is lost Increase staff costs as staff will need to be trained to use the new system Staff cannot train easily on the live system	**4**
7(b)	**One** mark for: When the system has been implemented it can be used straight away **One** from: Implemented without further testing The whole system is implemented at once	**2**

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Question	Answer	Marks
8(a)	**One** from: CD reader DVD reader Blu-ray disc reader	**1**
8(b)	**One** from: Magnetic hard drives Magnetic tape reader Magnetic stripe reader	**1**
8(c)	**One** from: SSD Pen drive Flash drive Memory card reader	**1**

Question	Answer	Marks
9(a)	Provides a computer with a connection to a network It allows the computers to communicate with other computers on a network It prepares / transmits / controls / receives the flow of data on the network It provides the device with its own MAC address	**4**
9(b)	**Four** from: Turn on the Bluetooth headphones Bring them close to the computer Headphones / computer send signals Select Bluetooth settings on the computer Click search for devices Computer scans the area around it Computer identifies the device Click add device Select the headphones from the list Click pair Send the Bluetooth tethering / pairing signal	**4**

Question	Answer	Marks
10(a)	**Three** from: The inputs of the current system The processing of the current system The outputs of the current system Data flow in the current system Problems with the current system	**3**
10(b)	**Three** from: Identifies suitable hardware for the new system Identifies suitable software for the new system Justifies suitable hardware / software for the new system Explains what the software needs to do Identifies the capabilities of the new system	**3**

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Question	Answer	Marks
11(a)	**Two** from: The age of the target group The experience of the audience The knowledge of the audience	**2**
11(b)	**One** mark for the method and **one** mark for the description Legal protection Notices on the software packaging that states it is illegal to make unauthorised copies of the software Licence agreements An agreement between the user and the vendor about the software use Dongle Piece of hardware plugged into a computer software cannot be used without it Product / serial / pass / access key A unique code entered by the user Online verification **One** from: Software is stored on the cloud User must log into a cloud account to use the program If the software is single use, then the second log in will not be allowed Watermarks / holograms These are placed on the packaging to show that the software is legal	**6**

Question	Answer	Marks
12(a)	**Three** from: Monitor browsing / search history Only allow children to work under parent observation Install website monitoring software Record the activities the children are doing online / websites visited	**3**
12(b)	**Three** from: Plan the times when the children can use the internet Create content filters to block inappropriate content Switch on parental controls Turn on safe search on search engines Install website control software Set up an allow list / deny list in the router	**3**

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Question	Answer	Marks
13(a)	**Two** from: Allows the user to save files so that they can be opened on any platform Software programs rarely support all types of file format Allows users to transfer files from one package to another	**2**
13(b)	**Two** from, for example: Graphics Interchange Format / GIF Joint Photographic Experts Group / JPG / JPEG Portable Network Graphics / PNG Scalable Vector Graphics / SVG	**2**

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