



INFORMATION AND COMMUNICATION TECHNOLOGY

0417/12

Paper 1 Written

May/June 2019

MARK SCHEME

Maximum Mark: 100

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 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **10** 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 descriptors 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(a) | Physical components of a computer system | 1 |
| 1(b) | One from: Programs for controlling the operation of a computer Programs for processing of data | 1 |
| 1(c) | One from: System Applications | 1 |
| 1(d) | Touchscreen | 1 |

| Question | Answer | Marks | | | | | | | | | | | | | | | | | | | | |
|---|---|-------|-----|-----|-----|--|--|---|--|-----------------------------------|--|--|---|--|---|--|--|---|--|---|--|---|
| 2 | <table border="1"> <thead> <tr> <th></th> <th>ROM</th> <th>RAM</th> <th>HDD</th> </tr> </thead> <tbody> <tr> <td>It loses its data when the computer is switched off.</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>It is classed as backing storage.</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>It stores the start-up instructions of the computer.</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>It temporarily stores the current work of the current user.</td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table> | | ROM | RAM | HDD | It loses its data when the computer is switched off. | | ✓ | | It is classed as backing storage. | | | ✓ | It stores the start-up instructions of the computer. | ✓ | | | It temporarily stores the current work of the current user. | | ✓ | | 4 |
| | ROM | RAM | HDD | | | | | | | | | | | | | | | | | | | |
| It loses its data when the computer is switched off. | | ✓ | | | | | | | | | | | | | | | | | | | | |
| It is classed as backing storage. | | | ✓ | | | | | | | | | | | | | | | | | | | |
| It stores the start-up instructions of the computer. | ✓ | | | | | | | | | | | | | | | | | | | | | |
| It temporarily stores the current work of the current user. | | ✓ | | | | | | | | | | | | | | | | | | | | |

| Question | Answer | Marks |
|----------|--------------|-------|
| 3 | RFID MICR | 2 |

| Question | Answer | Marks |
|----------|--|-------|
| 4(a) | Temperature | 1 |
| 4(b) | Light | 1 |
| 4(c) | Pressure | 1 |
| 4(d) | IF(D36<D32,"Y","N") 1 mark for IF() 1 mark for (D36<D32, 1 mark for "Y","N") | 3 |
| 4(e) | Three from: Select column F / any cell in column F Click Insert...new column / Right click...select Insert...new column Select cell F2 / F1 Type in Combined Time Select text wrap | 3 |
| 4(f) | D3+E3 | 1 |
| 4(g) | Four from: Highlight B3 to F32 Click on sort Click sort by Col F Click on ascending order | 4 |
| 4(h) | G\$3–(F4–F\$3) or G\$3+F\$3–F4 Give 1 mark for G3 Give 1 mark for correct use of \$//both values correct Give 1 mark for –(F4–F3) / +F3–F4 / F3–F4+ | 3 |

| Question | Answer | Marks |
|----------|--|-------|
| 5(a) | Four from: The software in the smartwatch needs to be kept up to date Loss of satellite signal can be an issue Problems with battery failure / empty battery Allow example for problems with battery failure e.g. loses the route Problems with electrical storms / weather Problems with mugging Sunlight making the device unreadable Using / programming the smartwatch can slow the runner down | 4 |

| Question | Answer | Marks |
|----------|--|----------|
| 5(b) | <p>Two from:</p> <p>Use in cars / lorries to calculate routes Used in ships / aircraft to locate current position Used in agriculture for tractor navigation Example of Tracking systems</p> | 2 |
| 5(c) | <p>Three from:</p> <p>She may be tired / breathless therefore text messaging is better than trying to talk A text message is sent quicker than the sending of an audio message The text message is sent even though the receiver's phone is turned off / out of range / on the phone A text message is more likely to connect as the data footprint is smaller than a phone call</p> | 3 |

| Question | Answer | Marks |
|----------|--|----------|
| 6(a) | <p>Four from:</p> <p>Internet is not policed Material on the internet can be biased Material on the internet may not be reliable Anyone can create a website on the internet so inaccurate information can be posted Can visit inappropriate sites on the internet There are more security issues when using the internet There are more distractions when using the internet</p> | 4 |
| 6(b)(i) | <p>Four from:</p> <p>Do not reply to spam emails Use a spam email filter Block images in HTML messages as these are used as web beacons Unclick check boxes when buying items online Do not sign up to commercial mailing lists</p> | 4 |
| 6b(ii) | <p>Four from:</p> <p>Scan emails / attachments before opening Use <u>up to date</u> anti-virus software Do not download attachments from unknown sources Avoid opening spam emails</p> | 4 |

| Question | Answer | Marks |
|----------|--|----------|
| 7(a)(i) | <p>Two from:</p> <p>Workers that work less than full time / limited number of hours This could be for <u>fewer</u> hours than a full working day/week This could be for <u>fewer</u> days than a full working week</p> | 2 |
| 7(a)(ii) | <p>Two from:</p> <p>A <u>full time</u> job is shared between part time / two or more workers One continues the work when the other has left One could work in the morning and the other in the afternoon One could work for 3 days and the other 2 other days</p> | 2 |
| 7(b) | <p>Four from:</p> <p>Staff are kept more up to date with their work Increase in job opportunities More accurate calculation of wages / less errors made in the calculations Manual tasks are reduced</p> <p>1 mark can be awarded for an example of new jobs created</p> | 4 |

| Question | Answer | Marks |
|----------|---|----------|
| 8 | <p>Six from:</p> <p>Advantages Reduces the cost of travelling to the bank Reduces the time wasted travelling to the bank / waiting in queues The interest rates are usually better using internet banking Easier to shop around for the better bank accounts Disabled people do not have to travel to the bank in order to carry out transactions 24/7 banking People can spend more time doing other activities rather than travelling to the bank Less physical robberies</p> <p>Disadvantages Less physical banks which means that people have to travel further to go to the bank Health risks with using the computer Security is an issue as transactions are carried out over the internet The user needs a <u>reliable</u> internet connection <u>More</u> risk of pharming / phishing/fraud Easier to make errors whilst using internet banking e.g. incorrect input If the internet connection drops during a transaction, then there may be issues</p> <p>1 mark can be awarded for a reasoned conclusion To gain full marks both advantages and disadvantages are required</p> | 6 |

| Question | Answer | Marks | | | | | | | | | | | | | | | | | | |
|----------------------------|---|----------|------|----------------------------|---|-------------|--|-------|--|---------|--|----------------|---|---------------|--|----------|--|------------|---|----------|
| 9(a) | <p>Two from:</p> <ul style="list-style-type: none"> Mineral prospecting Diagnostic systems Chess games Careers Tax | 2 | | | | | | | | | | | | | | | | | | |
| 9(b) | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 20%; text-align: center;">Tick</th> </tr> </thead> <tbody> <tr> <td>Interactive user interface</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Spreadsheet</td> <td></td> </tr> <tr> <td>Motor</td> <td></td> </tr> <tr> <td>Printer</td> <td></td> </tr> <tr> <td>Knowledge base</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Search engine</td> <td></td> </tr> <tr> <td>Actuator</td> <td></td> </tr> <tr> <td>Rules base</td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> | | Tick | Interactive user interface | ✓ | Spreadsheet | | Motor | | Printer | | Knowledge base | ✓ | Search engine | | Actuator | | Rules base | ✓ | 3 |
| | Tick | | | | | | | | | | | | | | | | | | | |
| Interactive user interface | ✓ | | | | | | | | | | | | | | | | | | | |
| Spreadsheet | | | | | | | | | | | | | | | | | | | | |
| Motor | | | | | | | | | | | | | | | | | | | | |
| Printer | | | | | | | | | | | | | | | | | | | | |
| Knowledge base | ✓ | | | | | | | | | | | | | | | | | | | |
| Search engine | | | | | | | | | | | | | | | | | | | | |
| Actuator | | | | | | | | | | | | | | | | | | | | |
| Rules base | ✓ | | | | | | | | | | | | | | | | | | | |

| Question | Answer | Marks | | | | | | | | | | | | | | | | | | | | |
|--|---|--------|------------|--------|------------|--|---|--|--|--------------------------------|--|---|--|---|---|--|--|--|--|--|---|----------|
| 10 | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%; text-align: center;">Analysis</th> <th style="width: 15%; text-align: center;">Design</th> <th style="width: 30%; text-align: center;">Evaluation</th> </tr> </thead> <tbody> <tr> <td>Identifying the problems with the current system</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Deciding on testing strategies</td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Observation of workers using the current system</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Comparing the solution with the original task requirements</td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> | | Analysis | Design | Evaluation | Identifying the problems with the current system | ✓ | | | Deciding on testing strategies | | ✓ | | Observation of workers using the current system | ✓ | | | Comparing the solution with the original task requirements | | | ✓ | 4 |
| | Analysis | Design | Evaluation | | | | | | | | | | | | | | | | | | | |
| Identifying the problems with the current system | ✓ | | | | | | | | | | | | | | | | | | | | | |
| Deciding on testing strategies | | ✓ | | | | | | | | | | | | | | | | | | | | |
| Observation of workers using the current system | ✓ | | | | | | | | | | | | | | | | | | | | | |
| Comparing the solution with the original task requirements | | | ✓ | | | | | | | | | | | | | | | | | | | |

| Question | Answer | Marks |
|----------|--|----------|
| 11 | <p>Six from:</p> <p>Use animation to keep their attention Use sound to keep them interested Use larger font size so the text is easier to read Use a font that is easier to read Use a font that is suitable to the age group Make the presentation colourful to keep their attention More vibrant colours used The language used needs to be simple Short sentences should be used The words used need to be short and simple <u>More</u> images than text is needed Slide transitions need to be used/exciting</p> | 6 |

| Question | Answer | Marks | | | | | | | | | | | | | | | | | | |
|----------|---|----------|------|------|--|------|---|------|--|------|---|------|--|------|--|------|---|--------|--|----------|
| 12(a) | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th data-bbox="632 857 879 922"></th> <th data-bbox="879 857 1011 922">Tick</th> </tr> </thead> <tbody> <tr> <td data-bbox="632 922 879 987">.xls</td> <td data-bbox="879 922 1011 987"></td> </tr> <tr> <td data-bbox="632 987 879 1052">.pdf</td> <td data-bbox="879 987 1011 1052">✓</td> </tr> <tr> <td data-bbox="632 1052 879 1117">.doc</td> <td data-bbox="879 1052 1011 1117"></td> </tr> <tr> <td data-bbox="632 1117 879 1182">.rtf</td> <td data-bbox="879 1117 1011 1182">✓</td> </tr> <tr> <td data-bbox="632 1182 879 1247">.sdc</td> <td data-bbox="879 1182 1011 1247"></td> </tr> <tr> <td data-bbox="632 1247 879 1312">.bcc</td> <td data-bbox="879 1247 1011 1312"></td> </tr> <tr> <td data-bbox="632 1312 879 1377">.csv</td> <td data-bbox="879 1312 1011 1377">✓</td> </tr> <tr> <td data-bbox="632 1377 879 1442">.accdb</td> <td data-bbox="879 1377 1011 1442"></td> </tr> </tbody> </table> | | Tick | .xls | | .pdf | ✓ | .doc | | .rtf | ✓ | .sdc | | .bcc | | .csv | ✓ | .accdb | | 3 |
| | Tick | | | | | | | | | | | | | | | | | | | |
| .xls | | | | | | | | | | | | | | | | | | | | |
| .pdf | ✓ | | | | | | | | | | | | | | | | | | | |
| .doc | | | | | | | | | | | | | | | | | | | | |
| .rtf | ✓ | | | | | | | | | | | | | | | | | | | |
| .sdc | | | | | | | | | | | | | | | | | | | | |
| .bcc | | | | | | | | | | | | | | | | | | | | |
| .csv | ✓ | | | | | | | | | | | | | | | | | | | |
| .accdb | | | | | | | | | | | | | | | | | | | | |
| 12(b) | <p>Two from:</p> <p>Generic file formats allow the user to save files so they can be opened in other software To create a standard so that other software can understand the contents Example of a file saved on one type of device / software being used on another type e.g. mobile phone to a PC</p> | 2 | | | | | | | | | | | | | | | | | | |

| Question | Answer | Marks |
|-----------|---|----------|
| 13(a)(i) | <p>Two from:</p> <p>Method of accessing other resources / webpages from the current webpage Navigation by hovering / clicking on the link Clicking on word / phrase / image / area of page Links one webpage to part of the same webpage</p> | 2 |
| 13(a)(ii) | <p>Two from:</p> <p>An attribute Within a hyperlink / anchor Can be used to specify the URL of the page / resource to be used</p> | 2 |
| 13(b) | <p>Four from:</p> <p>Relative file paths only show the name or file path destination of the file//Absolute file paths gives the full web address / full path Absolute always has the domain name//Relative does not need the domain name Relative finds files in the current site If you need to find files on a different website then absolute needs to be used//absolute starts from the root Relative does not require a path only sub-folders</p> | 4 |

| Question | Answer | Marks |
|----------|--|----------|
| 14 | <p>Analogue data is variable/continuous // Digital data is discrete / 1 or 0 Analogue data can only be read by a sensor / Analogue data is the output from a sensor // Analogue data cannot be understood by a computer // Analogue data needs to be converted before it is read by the computer</p> | 2 |

| Question | Answer | Marks |
|----------|--|-------|
| 15 | <p>To be marked as a level of response:</p> <p>The candidate must complete L1 to get into L2 and L2 to get into L3</p> <p>Level 3 [7 – 8 marks] Candidates will address both aspects of the question and discuss/consider different points. The issues raised will be justified. There will be a reasoned conclusion. The information will be relevant, clear, organised and presented in a structured and coherent format.</p> <p>Level 2 [4 – 6 marks] Candidates will address both aspects of the question and discuss/consider different points although development of some of the points will be limited to one side of the argument. There will be a conclusion. For the most part the information will be relevant and presented in a structured and coherent format.</p> <p>Level 1 [1 – 3 marks] Candidates may only address one side of the argument, and give basic points. Answers may be simplistic with little or no relevance.</p> <p>Level 0 [0 marks] Response with no valid content</p> <p>Answers may make reference to e.g.:</p> <p>E-safety protects personal data from people who should not have access to it Personal data needs to be kept safe so that others cannot use it against us Protects sensitive data Use of it e-safety protects vulnerable people Protects other people's views Example of issues of access to personal data: blackmail / spreading rumours / identity theft / stalking E-safety reduces the risks when using ICT using social media sites, online gaming users believe they are safe E-safety trains users to be responsible on the internet Giving out personal information can help predators to find out further details about a person, such as where they live / where they go to school / used to track the person People on the internet may not be what they seem Need to be able to block people on the internet Need to know how to report problems on the internet If we do not use e-safety then users are being put at risk as they will not know the dangers Freedom of speech can be affected Introduction of the 'nanny' state If we do not apply e-safety approaches we open ourselves up to attack Use of netiquette Covers a number of electronic devices like, computers, tablets, mobile phones, games consoles An example of personal data Example of sensitive data ethnic origin / religion / political / criminal records / sexual orientation</p> | 8 |