



**Cambridge Assessment International Education**  
Cambridge International General Certificate of Secondary Education

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**INFORMATION AND COMMUNICATION TECHNOLOGY**

**0417/13**

Paper 1 Written

**October/November 2018**

MARK SCHEME

Maximum Mark: 100

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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 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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

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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.

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| Question | Answer       | Marks |
|----------|--------------|-------|
| 1(a)     | CPU          | 1     |
| 1(b)     | hardware     | 1     |
| 1(c)     | RAM          | 1     |
| 1(d)     | touch screen | 1     |

| Question | Answer                                   |            |               |               | Marks |
|----------|------------------------------------------|------------|---------------|---------------|-------|
| 2        |                                          | Hub<br>(✓) | Switch<br>(✓) | Router<br>(✓) | 4     |
|          | Connects a LAN to a WAN                  |            |               | ✓             |       |
|          | Broadcasts data to all connected devices | ✓          |               |               |       |
|          | Connects two LANs                        |            |               | ✓             |       |
|          | Selects which device to send data to     |            | ✓             |               |       |

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| Question | Answer                                       |          | Marks |
|----------|----------------------------------------------|----------|-------|
| 3        |                                              | Tick (✓) | 3     |
|          | Re-reading the document                      |          |       |
|          | Performing a length check on the data        | ✓        |       |
|          | Re-entering the data                         |          |       |
|          | Performing a character check on the data     | ✓        |       |
|          | Performing a grammar check on the document   |          |       |
|          | Checking for spelling                        |          |       |
|          | Checking the data is reasonable and sensible | ✓        |       |
|          | Checking the data is 100% correct            |          |       |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                        | Marks |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 4(a)     | <b>Two</b> from:<br>Keyboard/keypad for entering data<br>Chip reader<br>PIN pad<br>Magnetic stripe reader<br>Bar code scanner<br>Scales/pressure sensor<br>Touch screen<br>Light sensor                                                                                                                                                                                                                                       | 2     |
| 4(b)     | <b>Two</b> from:<br>Customer display/touchscreen<br>Printer for receipts<br>Loud speaker                                                                                                                                                                                                                                                                                                                                      | 2     |
| 4(c)     | <b>Three</b> from:<br>The items could have been damaged and removed from the shelf<br>The items could have been stolen<br>The items could have been picked up, but they have not yet passed through the till<br>The staff/customers placing the items on the shelves may have put them in the wrong place.<br>The quantity of items on the database may not have been recorded properly<br>Database may not have been updated | 3     |

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| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Marks    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 5(a)     | <b>Three</b> from:<br>Questionnaires can be given to users/employees<br>Checking documents from the current system<br>Observation of staff/users                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>3</b> |
| 5(b)     | <b>Three</b> from:<br>The full/first and second/family name of the customer<br>The contact address of the customer<br>The gender of the customer<br>The date of birth                                                                                                                                                                                                                                                                                                                                                                                                            | <b>3</b> |
| 5(c)     | <b>Four</b> from:<br>Appropriate font styles to help the user to read the form by a clearer font<br>Appropriate/larger font sizes to help the user read the form<br>Appropriate spacing between fields to help with the readability of the form<br>Larger character spacing of individual fields to help fill the form in<br>More use of white space to help readability<br>Larger dropdown menus/radio buttons to give options to enter<br>Larger forward/backward/submit buttons to help navigate<br>Darker writing on a light background/lighter writing on a dark background | <b>4</b> |
| 5(d)     | Direct changeover<br>Parallel implementation<br>Phased implementation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>3</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                               | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 6(a)     | <b>Two</b> from:<br>Selected the image<br>Rotate 90 degrees<br>Turn anti-clockwise about the origin                                                                                                                                                                                                                                                  | <b>2</b> |
| 6(b)     | <b>Four</b> from:<br>Click on the insert button<br>Select the image on the internet and save<br>Select the image and copy<br>Select the position in the document<br>Paste into the document<br>Select the image from the saved folder<br>Select wrap text<br>Move to final position<br>Save the document<br>Resize the image<br>Remove the hyperlink | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                             | Marks    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 7(a)     | <b>Two</b> from:<br>It helps to prevent the unauthorised copying of the software<br>It helps to prevent the unauthorised lending/renting of the software<br>It gives the author legal protection                                                                                                                                                                                                   | <b>2</b> |
| 7(b)     | <b>Four</b> from:<br>A license agreement between the user and the software developer<br>A unique licence key is used when the software is installed<br>Software only runs if DVD/CD/Pen Drive is present<br>Use of a dongle/card plugged into the computer<br>Holographic sticker which cannot be photocopied shows the product is real<br>Software built into the program to stop it being copied | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Marks    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 8        | Max <b>four</b> from:<br>Digital cameras could be placed in drones<br>They can be hidden in ATMs<br>Digital cameras can be used in special glasses<br>Digital cameras are used in CCTV/Security cameras<br>Digital cameras are in people's mobile phones<br><br>Max <b>five</b> from:<br>They can be used to film people without them knowing/without permission<br>The photographs/images can be used for blackmail<br>They can be used to film people covertly<br>Digital cameras can be hacked and used to spy on the users<br>Filming vacation activities without permission/filming a car accident<br>They can be used to photograph houses without the owners knowing<br>They can be used to capture PINs | <b>6</b> |

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| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Marks    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 9(a)     | <b>Four</b> from:<br>Video-conferencing is the use of telecommunication technologies<br>It uses an internet connection<br>It allows people in two or more locations to communicate<br>Allows long distance communication<br>Using simultaneous two-way communication<br>Uses video and audio transmissions/streaming                                                                                                                                                                                                                                                     | <b>4</b> |
| 9(b)     | <b>Four</b> from:<br>Video conferencing equipment can be expensive to buy<br>The communication link could be expensive to set up and operate/satellite/internet link needed<br>Lip sync/lagging can be an issue<br>If the hardware breaks down the conference fails // poor connection conference fails<br>Time zones as the games are in Australia and company is based in London<br>Needs organising as to who's turn it is next // not talk at the same time<br>Any sound in the conference can be picked up by microphones<br>Open microphones can distort the sound | <b>4</b> |

| Question | Answer                                                                                                                                                                        | Marks    |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 10(a)    | Bar chart/graph                                                                                                                                                               | <b>1</b> |
| 10(b)    | <b>Five</b> from:<br>Select A2 to B12<br>Click CTRL<br>Select D2 to D12 // Select F2 to F12<br>Click insert...chart<br>Select bar graph/chart<br>Add title/axes<br>Add legend | <b>5</b> |

| Question | Answer                                                                                                                                                                                                                          | Marks    |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 11(a)    | <b>Three</b> from:<br>Biometrics e.g. iris scan, face scan, retina scan<br>Physical Tokens/TAN<br>Two-factor/two-step/multi-factor authentication<br>Magnetic stripes<br>ID cards<br>Memorable information // security question | <b>3</b> |

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| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Marks    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 11(b)    | <b>Four</b> from:<br>Data must be processed fairly and lawfully<br>Data must be used for the purpose it was collected for<br>Data must be adequate and relevant to the purpose it was collected for<br>Data must be kept up to date and accurate<br>Data must not be kept longer than necessary<br>Data must be processed within the rights of data subjects<br>Data must not be moved to any other country that is not protected by a data protection act<br>Must allow access to data | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                       | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 12       | <b>Three</b> from:<br>Commands have to be learnt<br>Commands have to be typed in which takes time<br>The operator has to have specialist knowledge of the system<br>Help facilities are basic<br>Commands have to be precise | <b>3</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                     | Marks    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 13(a)    | 1 mark for each explanation<br>1 mark for the subsequent data example<br><br>Normal data:<br>Data that is within the range/boundaries/Acceptable data<br>Examples: between R\$2 and R\$10<br><br>Abnormal data:<br>Data outside the range/boundaries/unacceptable data/invalid data<br>Values less than R\$2 or larger than R\$10 or text.<br><br>Extreme data:<br>Data on the boundaries of acceptable data<br>Examples R\$2, R\$4, R\$10 | <b>6</b> |
| 13(b)    | Data that has been used in an existing system<br>Data where the results are known                                                                                                                                                                                                                                                                                                                                                          | <b>2</b> |

| Question | Answer                                                                                                                                                                                                                       | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 14(a)    | A piece of software/malware<br>Has the ability to replicate itself<br><br>Max <b>two</b> from:<br>It corrupts data in the computer<br>Deletes data in the computer<br>Fills up memory<br>Slows the operation of the computer | <b>3</b> |

| Question | Answer                                                                                                                                                                                                             | Marks    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 14(b)    | <b>Two</b> from:<br>Records every keystroke on the keyboard<br>Saves it in a log file<br>Transmits the log file back to the hackers<br>Can read a password being typed in<br>The person is unaware it is happening | <b>2</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 15(a)    | <b>Six</b> from:<br>If site has excessive advertising it could be unreliable<br>If the advertising is related only to its own products it could be unreliable<br>The final part of a URL can help to identify reliability<br>Examples .ac..., .gov, .org, .edu government // academic sites are usually fairly reliable<br>Can compare information from other websites to see if it is reliable<br>If site is endorsed by reliable/reputable people/organisations it could be accepted as being reliable // If it has links to other reliable sites/ sites which have testimonials it is usually reliable // If it has testimonials that can be confirmed it is likely to be reliable<br>If the author's credentials are good, it is likely to be reliable<br>If information is comparable to information from reliable/authenticated text books it is likely to be reliable<br>If the date of the last update was a long time ago it is likely to be unreliable<br>Sites which have grammatical/spelling mistakes are likely to be unreliable<br>Compare information from text books/experts to see if the results are similar<br>If it has been recommended by teachers, it is likely to be reliable<br>If there is a contact page with a real postal address that can be confirmed then it is likely to be reliable<br>URL contains https/padlock | <b>6</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Marks |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 15(b)    | <p>To be marked as a level of response:</p> <p>Level 3 (7–8 marks):<br/>Complete level 2<br/>To gain 7 marks there needs to be a justification of points made<br/>To gain 8 marks there must be a reasoned conclusion</p> <p>Level 2 (4–6 marks):<br/>Complete level 1<br/>Award a mark for benefits and drawbacks or expansions.<br/>To achieve 4 marks there must be at least one benefit <u>and</u> drawback.</p> <p>Level 1 (1–3 marks):<br/>Award a mark for benefits <u>or</u> drawbacks to a maximum of 3 marks</p> <p>Level 0 (0 marks):<br/>No relevant response given</p> <p>For example:</p> <p><b>Benefits</b><br/>Using a search engine means that the data can be found quicker<br/>Internet has vast amounts/wide range of information<br/>Data tends to be up to date<br/>Students can research from home/on the move/anywhere<br/>Information is in digital form therefore easier to send/use in documents</p> <p><b>Drawbacks</b><br/>The internet is not regulated<br/>Danger of accessing inappropriate websites<br/>Can take a lot of time to find relevant information<br/>Need to have internet connectivity<br/>Searching techniques needed<br/>Copyright information could be plagiarised<br/>Data found on websites may be false<br/>Data found may be biased<br/>Viruses and malware could be uploaded<br/>Danger of students using the internet for other things not research</p> | 8     |