



# Cambridge IGCSE™ (9–1)

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INFORMATION AND COMMUNICATION TECHNOLOGY

0983/11

Paper 1 Written

October/November 2020

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 2020 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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This document consists of **9** 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)     | LCD monitor<br>Laser printer        | 2     |
| 1(b)     | DVD RAM drive<br>Blu-ray disc drive | 2     |

| Question  | Answer   | Marks                  |                       |                        |                       |                                      |  |  |   |                                   |   |  |  |                                    |   |  |  |   |  |   |  |   |
|---|--|------------------------|-----------------------|------------------------|-----------------------|--------------------------------------|--|--|---|-----------------------------------|---|--|--|------------------------------------|---|--|--|---|--|---|--|---|
| 2   | <table border="1"> <thead> <tr> <th></th> <th>ALU<br/>(✓)</th> <th>Control<br/>Unit<br/>(✓)</th> <th>Main<br/>memory<br/>(✓)</th> </tr> </thead> <tbody> <tr> <td>This is the immediate access storage</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>This carries out the calculations</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>This carries out logical decisions</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>This directs the input and output flow in the CPU</td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table> |                        | ALU<br>(✓)            | Control<br>Unit<br>(✓) | Main<br>memory<br>(✓) | This is the immediate access storage |  |  | ✓ | This carries out the calculations | ✓ |  |  | This carries out logical decisions | ✓ |  |  | This directs the input and output flow in the CPU |  | ✓ |  | 4 |
|   | ALU<br>(✓)   | Control<br>Unit<br>(✓) | Main<br>memory<br>(✓) |                        |                       |                                      |  |  |   |                                   |   |  |  |                                    |   |  |  |   |  |   |  |   |
| This is the immediate access storage              |  |                        | ✓                     |                        |                       |                                      |  |  |   |                                   |   |  |  |                                    |   |  |  |   |  |   |  |   |
| This carries out the calculations                 | ✓  |                        |                       |                        |                       |                                      |  |  |   |                                   |   |  |  |                                    |   |  |  |   |  |   |  |   |
| This carries out logical decisions                | ✓  |                        |                       |                        |                       |                                      |  |  |   |                                   |   |  |  |                                    |   |  |  |   |  |   |  |   |
| This directs the input and output flow in the CPU |  | ✓                      |                       |                        |                       |                                      |  |  |   |                                   |   |  |  |                                    |   |  |  |   |  |   |  |   |

| Question | Answer   | Marks |
|----------|--|-------|
| 3(a)     | A bridge<br>A modem<br>A switch<br>A network interface card<br><br>They are in this order<br>All answers must be different   | 4     |
| 3(b)     | Routing table  | 1     |
| 3(c)     | <b>Five</b> from:<br>Data is sent in data packets//uses data packets<br>Each data packet contains an IP address of the next router<br>The router reads/checks/inspects the IP address<br>It checks the IP address against its routing table<br>Data packet is sent to the router with the IP address<br>The router uses the IP address to work out the best route/destination computer<br>The router stores the IP addresses | 5     |

| Question | Answer  | Marks |
|----------|---|-------|
| 4(a)     | <b>Two</b> from:<br>Document/page title<br>Meta data<br>Character set<br>Styles<br>Scripts<br>Default target window/frame   | 2     |
| 4(b)     | <b>Two</b> from:<br>Defines the document's body<br>Contains all the elements of an HTML page<br>Contains the content<br>Contains style instructions   | 2     |
| 4(c)     | <b>Two</b> from:<br>A class definition name starts with a full stop<br>A class is used for adding or changing a style within CSS<br>Classes are subtypes within an element<br>There are a limited number of styles<br>Styles are pre-defined classes are user-defined<br>Styles are defined in the head section<br>Styles are used once but classes are styles saved for future use | 2     |

| Question | Answer   | Marks |
|----------|--|-------|
| 5(a)     | <b>Six</b> from:<br><b>Positives</b><br>The fields are fully visible on the screen<br>The fields are clearly labelled<br>Ample/suitable space to enter the data<br>Screen looks clear to read<br>Text is clear to read<br>Suitable space between fields<br><br><b>Negatives</b><br>No indication of what to do for the seat position/how to select the correct option<br>There is too much space to enter the data<br>No drop down/combo box lists for number of adults/children<br>No navigation/submit/help buttons<br>No radio button for position of seat<br>No explanation on how to fill in details<br>The form does not fill the screen<br>Text is too small<br><br>To gain full marks there needs to be at least one positive <u>and</u> at least one negative | 6     |

| Question | Answer   | Marks    |
|----------|--|----------|
| 5(b)     | <p>Max <b>four</b> from:</p> <p>Adult or Child shown/type of ticket<br/> Name of the performance<br/> Time of the performance<br/> Date of the performance<br/> Seat position<br/> Title of the venue<br/> Seat number<br/> Ticket number shown<br/> Person's name</p> <p>Uses a bar code/QR code/Rfid – 1 mark<br/> Looks like a ticket with enough elements – 1 mark</p> | <b>6</b> |

| Question | Answer   | Marks    |
|----------|--|----------|
| 6(a)     | <p><b>Three</b> from:</p> <p>This is the scrambling of data<br/> Makes the data not understandable/meaningless<br/> This system uses an encryption key to encrypt the data<br/> This system uses an encryption/decryption key to decrypt the data<br/> Protects sensitive data</p> | <b>3</b> |
| 6(b)     | Question Removed   | <b>6</b> |

| Question       | Answer   | Marks                    |      |                  |      |               |                          |              |                      |                |                |         |             |                |      |                         |               |            |                      |          |
|----------------|--|--------------------------|------|------------------|------|---------------|--------------------------|--------------|----------------------|----------------|----------------|---------|-------------|----------------|------|-------------------------|---------------|------------|----------------------|----------|
| 7(a)           | <table border="1"> <thead> <tr> <th>Field name</th> <th>Data</th> <th>Validation check</th> </tr> </thead> <tbody> <tr> <td>ISBN</td> <td>9781471837951</td> <td>Check digit/length check</td> </tr> <tr> <td>Name_of_book</td> <td>A View of the Castle</td> <td>Presence check</td> </tr> <tr> <td>Purchase_price</td> <td>\$16.99</td> <td>Range check</td> </tr> <tr> <td>Year_published</td> <td>2018</td> <td>Type check/length check</td> </tr> <tr> <td>Date_acquired</td> <td>31/01/2019</td> <td>Format/picture check</td> </tr> </tbody> </table> | Field name               | Data | Validation check | ISBN | 9781471837951 | Check digit/length check | Name_of_book | A View of the Castle | Presence check | Purchase_price | \$16.99 | Range check | Year_published | 2018 | Type check/length check | Date_acquired | 31/01/2019 | Format/picture check | <b>3</b> |
| Field name     | Data   | Validation check         |      |                  |      |               |                          |              |                      |                |                |         |             |                |      |                         |               |            |                      |          |
| ISBN           | 9781471837951  | Check digit/length check |      |                  |      |               |                          |              |                      |                |                |         |             |                |      |                         |               |            |                      |          |
| Name_of_book   | A View of the Castle   | Presence check           |      |                  |      |               |                          |              |                      |                |                |         |             |                |      |                         |               |            |                      |          |
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| Date_acquired  | 31/01/2019   | Format/picture check     |      |                  |      |               |                          |              |                      |                |                |         |             |                |      |                         |               |            |                      |          |

| Question | Answer   | Marks |
|----------|--|-------|
| 7(b)     | <p>Matched pairs:</p> <p>Any number in the range 1–100<br/>This is normal data and should work//data that is within the acceptable range</p> <p>Any number outside the range or a word/character/symbol<br/>This would check the range check boundaries/trap incorrect data types/abnormal data//data that is outside the acceptable range</p> <p>1<br/>This would check the lower boundary of the range check/extreme data//on the edge of acceptable range</p> <p>100<br/>This would check the upper boundary of the range check/extreme data//on the edge of acceptable range</p> | 6     |

| Question | Answer   | Marks |
|----------|--|-------|
| 8        | <p><b>Six</b> from:</p> <p>Microprocessor reads the data<br/>The data from the proximity sensor is compared to the pre-set value<br/>The pre-set value is set to show the minimum distance from the vehicle in front<br/>If the values are the same nothing happens<br/>If the values are different ...<br/>... the microprocessor sends a signal ...<br/>... to the actuator<br/>Actuator speeds up the vehicle/slows down the vehicle/applies the brakes<br/>The process is continuous</p> | 6     |

| Question | Answer  | Marks |
|----------|---|-------|
| 9        | <p><b>Eight</b> from at least two methods:</p> <p><b>Portable devices and cloud</b><br/>Storing the data on a portable hard/SSD/Pen drive/cloud means that the device is with you at all times and not with the laptop computer<br/>No data is stored on the laptop computer if a portable SSD/HDD/pen drive/cloud is used so if the laptop computer is stolen nothing is lost<br/>If the pendrive is lost then all your data is lost<br/>The access to the cloud can be password protected<br/>If the laptop gets stolen the data will be safe on the cloud</p> <p><b>Passwords and encryption</b><br/>The data on the computer can be encrypted to increase security<br/>Data can use <u>strong</u> passwords making it more secure<br/>Passwords to the data can be forgotten and lost especially if the laptop password needs to be remembered<br/>Security methods prevent users who do not know password from gaining access<br/>Passwords could be difficult to remember which could lock the device</p> <p><b>Physical security</b><br/>Use of a dongle to log onto the laptop ensures that only the person with the device gains access<br/>Devices like pendrives/dongles tend to be small and can easily be lost/stolen<br/>If the dongle is stolen/lost then access to the laptop is difficult<br/>Security software may malfunction rendering the laptop impossible to access</p> <p><b>Biometrics</b><br/>Biometrics can be used to access the laptop/data this means that the user needs to be present<br/>Difficult to fake/replicate biometrics<br/>Biometric data cannot be reset once compromised<br/>Biometrics are unique therefore it is an added security method</p> | 8     |

| Question | Answer   | Marks |
|----------|--|-------|
| 10(a)    | <p>Magnitude <math>\geq 6.5</math> AND Depth(km) <math>&lt; 15</math></p> <p>Magnitude – 1 mark<br/> <math>\geq 6.5</math> – 1 mark<br/> AND – 1 mark<br/> Depth(km) – 1 mark<br/> <math>&lt; 15</math> – 1 mark</p> | 5     |
| 10(b)    | Japan  | 1     |

| Question  | Answer   | Marks |
|-----------|--|-------|
| 10(c)(i)  | <p>COUNTIF(A\$3:A\$19,F3)</p> <p><b>Three</b> from:<br/>The formula counts the number of times Vanuatu/contents/value of F3<br/>Appears in the country list/A3 to A19</p> <p>The \$ allows the range to remain static if replicated/search in the same range if replicated – 1 mark</p>  | 4     |
| 10(c)(ii) | <p>Max <b>four</b> from:<br/>Highlight F3 to G10<br/>Click Insert Chart<br/>Click Bar chart//column graph<br/>Select layout/type of bar chart<br/>Add title to the chart<br/>Add axes<br/>Add a legend<br/>Save the chart</p> <p><b>Three</b> from, for example:<br/>Title – Earthquakes in 2019<br/>X/horizontal axis label – Countries<br/>Y axis label/vertical – Number of earthquakes</p> | 6     |

| Question              | Answer   |                        |                             |                        | Marks    |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
|-----------------------|--|------------------------|-----------------------------|------------------------|----------|-----------------------|--|--|---|--------------------|--|---|--|------------------|---|--|--|-----------------------|--|--|---|-------------------|---|--|--|--------------|--|--|---|---|
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| Item                  | Technical documentation (✓)  | User documentation (✓) | Both (✓)                    |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
| Purpose of the system |  |                        | ✓                           |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
| How to save a file    |  | ✓                      |                             |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
| System flowchart      | ✓  |                        |                             |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
| Software requirements |  |                        | ✓                           |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
| List of variables     | ✓  |                        |                             |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |
| Input format          |  |                        | ✓                           |                        |          |                       |  |  |   |                    |  |   |  |                  |   |  |  |                       |  |  |   |                   |   |  |  |              |  |  |   |   |



| Question | Answer  | Marks |
|----------|---|-------|
| 12(a)    | <b>Three</b> from:<br>Controller wand/joystick/control buttons/microphone<br>Tracking/force balls//trackpads//trackers<br>Treadmill/motion platforms<br>Pressure mats<br>Data gloves/bodysuits<br>Head mounted display/head mounted device/projector<br>Headset/head mounted device/ear mounted device<br>Goggles/VR eyeglasses<br>Steering/gaming wheels/consoles<br>Pedals/Paddles<br>Cameras<br>Motion sensors | 3     |
| 12(b)    | <b>Three</b> from:<br>Eye problems/strain<br>Neck pain/back pain<br>Headaches<br>Balance problems/motion sickness<br>Tiredness<br>Injuries caused by being too involved in the VR system  | 3     |
| 12(c)    | <b>Four</b> from:<br>A small font size<br>A formal font type<br>Formal content<br>Pastel shade colours to make it easier to read<br>Use of both upper and lower case characters to make it easier to read<br>Use of technical/appropriate language<br>Fewer images and more text<br>Don't use too much colour<br>Use suitable/appropriate images<br>Use plain and simple backgrounds                              | 4     |