



# Cambridge IGCSE™

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## INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11

Paper 1 Theory

May/June 2023

MARK SCHEME

Maximum Mark: 80

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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 May/June 2023 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        | Text   | 1     |

| Question | Answer                       | Marks |
|----------|------------------------------|-------|
| 2(a)     | Random Access Memory//RAM    | 1     |
| 2(b)     | Motherboard                  | 1     |
| 2(c)     | Graphics card                | 1     |
| 2(d)     | Network (interface) Card/NIC | 1     |

| Question | Answer                                                                                                                                                                   | Marks |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 3        | <b>Two</b> from:<br>Connecting a storage device to the computer by (USB) cable<br>Connecting a storage device by Bluetooth<br>Connecting a storage device/cloud by wi-fi | 2     |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                          | Marks |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 4(a)     | <b>Two</b> from:<br>Retrieves code from the server//Downloads information resources<br>Interprets the code as a web page//Uses page resources to build a web page//Runs the code<br>The web page is displayed//Renders web page to view<br>Allows the user to navigate to other information<br>Runs 'client-side' scripts on the web page                                                                                                       | 2     |
| 4(b)     | <b>Two</b> from:<br>Intranet shares data within an organisation whereas Extranet shares content with customers/suppliers<br>Intranet allows communication within the organisation whereas Extranet allows communication with customers/suppliers<br>Intranet is owned by a single organisation whereas Extranet can be used by several organisations<br>Extranet is part of a company's intranet<br>Extranet can lead to more security breaches | 2     |

| Question | Answer                                             | Marks |
|----------|----------------------------------------------------|-------|
| 5(a)     | Electrocution                                      | 1     |
| 5(b)     | Fire                                               | 1     |
| 5(c)     | Tripping                                           | 1     |
| 5(d)     | Heavy equipment falling and <u>injuring people</u> | 1     |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 6(a)     | <p><b>Six</b> from:</p> <p><b>Benefits</b><br/>           It is a strong password<br/>           Hard to crack<br/>           More secure<br/>           Password is long therefore shoulder surfing is reduced<br/>           Does not contain personal information so harder to crack</p> <p><b>Drawbacks</b><br/>           Easy to forget as it has many different characters<br/>           Even though it is still strong it is easy for a computer to crack<br/>           The user would have to look at the keyboard when entering the password<br/>           The user may have to write it down to remember it<br/>           Letters and numbers could be confused...<br/>           ...such as 1 and l, 2 and Z, 5 and S<br/>           As it is long/complex it could be mis-typed</p> <p><b>To gain full marks candidates must have correct answers for both benefits and drawbacks</b></p> | <b>6</b> |
| 6(b)     | <p><b>Two</b> from:<br/>           Retina scan<br/>           Fingerprint/thumbprint<br/>           Iris scan<br/>           Facial recognition<br/>           Voice recognition</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>2</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Marks    |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 7(a)     | <p><b>Three</b> from:<br/>           Observation<br/>           Interviews<br/>           Questionnaires<br/>           Examination of existing documents</p>                                                                                                                                                                                                                                                                                                             | <b>3</b> |
| 7(b)     | <p><b>Four</b> from:<br/>           Documentation is uploaded to the cloud<br/>           Access is given to members of the team<br/>           Members of the team log into the cloud<br/>           Members of the team open the documentation<br/>           Members of the team update the documentation<br/>           Documentation is synced<br/>           Can be tracked by the owner of the document<br/>           Several copies of the document are made</p> | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Marks    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 7(c)     | <p><b>Three</b> matched pairs:</p> <p>More difficult to carry out projects ...<br/> ... as individuals are working on their own</p> <p>Difficult to form relationships with staff ...<br/> ... as individuals are working on their own</p> <p>Requires a good/fast/reliable internet connection ...<br/> ... as documents/images may require more bandwidth</p> <p>Requires specialist hardware/software ...<br/> ... can be expensive to purchase</p> <p>Time zone differences ...<br/> ... as staff work in other parts of the world/time of meeting may be difficult</p> <p>May require training ...<br/> ... this may take time/expensive</p> <p>Communication issues ...<br/> ... causing lip syncing/lagging</p> <p>Disconnection issues/speed of the internet ...<br/> ... members of the meeting miss sections/meeting</p> <p>Background noise/echo ...<br/> ... could be distracting</p> <p>Users could be distracted ...<br/> ... not pay attention to the meeting</p> | <b>6</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Marks    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 8(a)     | <p><b>Six</b> from:</p> <p><b>Similarities</b></p> <p>Both read/scan data using optical methods<br/> Both use direct data entry<br/> Both are input devices<br/> Both read data from printed documents<br/> Both input large amounts of data<br/> Both read data very quickly</p> <p><b>Differences</b></p> <p>OMR does not need to read the characters written only the marks OMR is unable to recognise machine or hand-printed characters For OMR to read, marks need to be within a specified area<br/> The OMR marks have to be in the correct location</p> <p>OCR is more accurate at reading detailed data<br/> Data read from an OCR can be manipulated by word processing software<br/> OCR requires manual intervention to change the scanned words.</p> <p><b>To gain full marks candidates must have correct answers for both similarities and differences</b></p> | <b>6</b> |
| 8(b)     | <p><b>Two</b> from, for example:</p> <p>Lottery tickets<br/> Bar codes//QR codes<br/> Multiple Choice forms//Questionnaires<br/> Attendance registers</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>2</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Marks    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 9(a)(i)  | <p><b>Two</b> from:</p> <p>Absolute file paths contain a complete URL/full file path with file name<br/>Contents of the URL include protocol, the website's domain name, specific file, subfolder, page name – 1 mark awarded for at least two named<br/>Relative file paths only include a specific file or page<br/>This is relative to the current path//starts from the same folder as the web page.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>2</b> |
| 9(a)(ii) | <p><b>One</b> from:</p> <p>If the web pages have moved then the references refer to an old/previous file path<br/>Hyperlinks will not work</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>1</b> |
| 9(b)     | <p><b>Four</b> from:</p> <p><b>Similarities</b><br/>Both are links (in a web page)<br/>Both can be attached to icons/text/graphics<br/>Both are html tags used on web pages<br/>Both are used for navigation<br/>Both are coded as html tags starting with &lt;A...&gt;</p> <p><b>Differences</b><br/>An anchor allows the user to move from one part of a web page to another part.<br/>An anchor is a label that identifies a specific position in a document//An anchor is within a hyperlink<br/>An anchor needs a point set in the document and a link//A hyperlink only needs the link and a web address<br/>The code within an anchor will either be "name.." or "id.."<br/>An anchor determines a fixed point on a web page that is used as a bookmark<br/>An anchor can be placed at any point on a web page<br/>A hyperlink allows the user to move from one web page to another web page/website<br/>The code within a hyperlink can be "href..", "rel..", "target.." <br/>A hyperlink can be attached to a block of text or image<br/>A hyperlink can be clicked on to cause another web page or part of the same web page to be displayed<br/>A hyperlink can redirect a user to an anchor by including its name<br/>A hyperlink is clickable</p> <p><b>To gain full marks candidates must have correct answers for both similarities and differences</b></p> | <b>4</b> |
| 10(a)    | <p><b>Two</b> from:</p> <p>Software that interacts through speech recognition<br/>Uses the spoken word/voice ...<br/>... to carry out actions/control devices</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>2</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Marks    |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 10(b)    | <p><b>Four</b> from:</p> <p><b>Benefits</b><br/> Allows for hands free control<br/> Safer than using a standard interface<br/> More useful for physically disabled users</p> <p><b>Drawbacks</b><br/> Limited access due to the number of commands stored<br/> More expensive to develop<br/> May not operate reliably due to background noise/speech impediment/accents<br/> Need to be 'trained' by the user<br/> Can be distracting if the commands are not understood</p> <p><b>To gain full marks there must be correct benefits and drawbacks</b></p> | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                      | Marks    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 11       | <p><b>Four</b> from:</p> <p>The SSD is more portable<br/> The seek time in the SSD is smaller<br/> The data transfer rate in the SSD is better/smaller<br/> There is less chance of the data becoming corrupted as it can save whilst the drive is being moved<br/> The SSD is smaller/thinner<br/> The SSD uses less energy<br/> SSD is more robust as no moving parts</p> | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                     | Marks    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 12(a)    | <p><b>Two</b> from:</p> <p>Live or recorded content<br/> Delivered to computers/mobile devices via the internet<br/> Played back in real time/on demand.<br/> Allows the user to view the media without downloading it</p> | <b>2</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Marks    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 12(b)    | <p><b>Four from:</b></p> <p><b>Benefits</b><br/> Instant access to the media<br/> Saves time rather than downloading/going to the shops<br/> No need for storage space as there is no copy</p> <p><b>Drawbacks</b><br/> Requires an internet connection<br/> Requires a good internet/bandwidth connection otherwise buffering<br/> Don't get to keep the product<br/> Online security issue related to the subscription<br/> Technology could fail in the middle of the stream<br/> If media is downloaded it is time locked</p> <p><b>To gain full marks candidates must have correct answers for both benefits and drawbacks</b></p> | <b>4</b> |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 13(a)    | <p><b>gif</b><br/> <b>One from:</b><br/> Used to store animated/moving images<br/> Used to store icons/simple logos</p> <p><b>jpg</b><br/> <b>One from:</b><br/> Used to store photographic images<br/> Used to store graphics with complex colours and gradients</p>                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>2</b> |
| 13(b)    | <p><b>Six from</b></p> <p><b>gif</b><br/> Graphics Interchange Format<br/> Supported by all web browsers<br/> Can be animated images<br/> Supports 8-bit colours/256 colours/limited<br/> Features background transparency<br/> Image quality never degrades with resaves</p> <p><b>jpg</b><br/> Joint Photographic (Experts) Group<br/> Supports 24-bit colours/16.7 million colours/More colours<br/> Image quality degrades slightly when a JPG is resaved.<br/> Uses lossy compression<br/> No background transparency<br/> Enlarging the image can cause pixelation<br/> Image quality is better</p> <p><b>To gain full marks candidates must have correct answers for both gif and jpg</b></p> | <b>6</b> |

| Question | Answer                                                                                                                                                             | Marks    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 13(c)    | <b>Two</b> from:<br>Change the resolution/quality of the image<br>Reduce the colour/bit depth<br>Change the compression method//Compress the file<br>Reduce layers | <b>2</b> |

| Question | Answer       | Marks    |
|----------|--------------|----------|
| 14(a)    | Proofreading | <b>1</b> |
| 14(b)    | Validation   | <b>1</b> |
| 14(c)    | Verification | <b>1</b> |