



CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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## 0417/11

May/June 2023

**1 hour 30 minutes**

You must answer on the question paper.

No additional materials are needed.

- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use an HB pencil for any diagrams, graphs or rough working.

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].
- No marks will be awarded for using brand names of software packages or hardware.

This document has **12** pages. Any blank pages are indicated.

- 1 A book has an ISBN which is 330247204X

Tick (✓) the most appropriate data type for the ISBN.

- A Numeric: integer ☐
- B Text ☐
- C Boolean ☐
- D Date ☐

[1]

- 2 Identify the hardware from the descriptions given.

(a) A volatile internal memory that stores the current instruction.

..... [1]

(b) A printed circuit board containing the CPU and other components of a computer.

..... [1]

(c) A printed circuit board that controls the output to a monitor.

..... [1]

(d) A printed circuit board that is installed in a computer so that the computer can be connected to a network.

..... [1]

- 3 A headteacher is setting up a newsletter to send to parents of pupils at a school. She has some photographs saved on storage devices that she needs to place in the newsletter.

State **two** communication methods which the headteacher could use to upload the photographs onto the school network.

1 .....

2 .....

[2]

- 4 (a) Describe the purpose of a web browser.

.....

.....

.....

..... [2]

- (b) A company may use an intranet or an extranet.

Describe the differences between an intranet and an extranet.

.....

.....

.....

..... [2]

- 5 State the safety issue that is most likely to occur for each of these causes.

- (a) Spilling drinks on computer equipment

..... [1]

- (b) Overloading sockets by plugging in too many devices

..... [1]

- (c) Trailing cables across the floor

..... [1]

- (d) Placing a laser printer at the edge of a table

.....

..... [1]

- 6 A student has set up a password for his laptop computer. The password he has chosen is Px2zY!Cg3?bd

**(a)** Discuss the benefits and drawbacks of using this password.

[illegible]

[6]

- (b)** The student could have protected his laptop computer by using two-factor authentication. This could have combined his password with a biometric method.

State **two** examples of biometric methods he could use.

1 .....

2 .....

[2]

- 7 A systems analyst has been asked to carry out an analysis of a company's current computer system.

**(a)** State **three** methods of analysing the current system.

1 .....

2 .....

3 .....

[3]

- (b) The systems analyst is working with a team to create some new software. The software documentation will be stored on the cloud.

Describe how the team can use the cloud to share the documentation.

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[4]

- (c) Members of the team can use video-conferencing to join business meetings from different locations around the world.

Describe, giving reasons, **three** disadvantages of using video-conferencing for business meetings rather than meeting in person.

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[6]

- 8 (a)** Compare Optical Mark Readers (OMRs) with Optical Character Readers (OCRs). Your answer must include similarities and differences.

[illegible]

- (b)** Identify **two** uses of Optical Mark Recognition (OMR).

1 .....

2 .....

[2]

- 9 (a)** Absolute and relative file paths are used in the content layer when creating a web page.

- (i) Explain the differences between an absolute file path and a relative file path.

.....

.....

.....

.....

- (ii) Explain why absolute file paths should **not** be used for hyperlinks to locally-saved web pages.

.....

.....

- (b) Anchors and hyperlinks are both used in HTML.

Compare an anchor with a hyperlink. Your answer must include similarities and differences.

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[4]

- 10 Some people use dialogue-based user interfaces to operate their car audio system.

- (a) Describe what is meant by a dialogue-based user interface.

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[2]

- (b) Describe the benefits and drawbacks of using a dialogue-based user interface in this way.

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[4]

- 11** Portable hard drives can be Solid State Drives (SSDs) or Hard Disk Drives (HDDs).

Explain why the SSD may be better to use than the HDD.

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.....

.....

[4]

- 12** Many media companies now provide media streaming for users to watch their television programmes.

**(a)** Explain what is meant by the term media streaming.

.....

.....

.....

.....

[2]

**(b)** Describe the benefits and drawbacks of media streaming.

.....

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.....

.....

[4]



13 gif and jpg file formats are used to store images.

(a) Give **one** reason for using each of the file formats. Each of your reasons must be different.

gif .....

.....

jpg .....

.....

[2]

(b) Explain the differences between the two file formats.

.....

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[6]

- (c) The file size of an image can be reduced by changing the file format of the image.

State **two** other ways of reducing the file size of an image.

1 .....

.....

2 .....

.....

[2]

- 14** Identify the most appropriate method for reducing data entry errors from the descriptions given.

- (a) Manually checking the data without reference to the original copy.

..... [1]

- (b) Checking that the data being entered is reasonable.

..... [1]

- (c) Preventing errors when data is copied from one medium to another.

..... [1]

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# 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: Connecting a storage device to the computer by (USB) cable Connecting a storage device by Bluetooth Connecting a storage device/cloud by wi-fi	2

Question	Answer	Marks
4(a)	<b>Two</b> from: Retrieves code from the server//Downloads information resources Interprets the code as a web page//Uses page resources to build a web page//Runs the code The web page is displayed//Renders web page to view Allows the user to navigate to other information Runs 'client-side' scripts on the web page	2
4(b)	<b>Two</b> from: Intranet shares data within an organisation whereas Extranet shares content with customers/suppliers Intranet allows communication within the organisation whereas Extranet allows communication with customers/suppliers Intranet is owned by a single organisation whereas Extranet can be used by several organisations Extranet is part of a company's intranet 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>            It is a strong password            Hard to crack            More secure            Password is long therefore shoulder surfing is reduced            Does not contain personal information so harder to crack</p> <p><b>Drawbacks</b>            Easy to forget as it has many different characters            Even though it is still strong it is easy for a computer to crack            The user would have to look at the keyboard when entering the password            The user may have to write it down to remember it            Letters and numbers could be confused...            ...such as 1 and l, 2 and Z, 5 and S            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:</p> <p>Retina scan            Fingerprint/thumbprint            Iris scan            Facial recognition            Voice recognition</p>	<b>2</b>

Question	Answer	Marks
7(a)	<p><b>Three</b> from:</p> <p>Observation            Interviews            Questionnaires            Examination of existing documents</p>	<b>3</b>
7(b)	<p><b>Four</b> from:</p> <p>Documentation is uploaded to the cloud            Access is given to members of the team            Members of the team log into the cloud            Members of the team open the documentation            Members of the team update the documentation            Documentation is synced            Can be tracked by the owner of the document            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 ...  ... as individuals are working on their own</p> <p>Difficult to form relationships with staff ...  ... as individuals are working on their own</p> <p>Requires a good/fast/reliable internet connection ...  ... as documents/images may require more bandwidth</p> <p>Requires specialist hardware/software ...  ... can be expensive to purchase</p> <p>Time zone differences ...  ... as staff work in other parts of the world/time of meeting may be difficult</p> <p>May require training ...  ... this may take time/expensive</p> <p>Communication issues ...  ... causing lip syncing/lagging</p> <p>Disconnection issues/speed of the internet ...  ... members of the meeting miss sections/meeting</p> <p>Background noise/echo ...  ... could be distracting</p> <p>Users could be distracted ...  ... 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  Both use direct data entry  Both are input devices  Both read data from printed documents  Both input large amounts of data  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  The OMR marks have to be in the correct location</p> <p>OCR is more accurate at reading detailed data  Data read from an OCR can be manipulated by word processing software  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  Bar codes//QR codes  Multiple Choice forms//Questionnaires  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 Contents of the URL include protocol, the website's domain name, specific file, subfolder, page name – 1 mark awarded for at least two named Relative file paths only include a specific file or page 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 Hyperlinks will not work</p>	<b>1</b>
9(b)	<p><b>Four</b> from:</p> <p><b>Similarities</b> Both are links (in a web page) Both can be attached to icons/text/graphics Both are html tags used on web pages Both are used for navigation Both are coded as html tags starting with &lt;A...&gt;</p> <p><b>Differences</b> An anchor allows the user to move from one part of a web page to another part. An anchor is a label that identifies a specific position in a document//An anchor is within a hyperlink An anchor needs a point set in the document and a link//A hyperlink only needs the link and a web address The code within an anchor will either be "name.." or "id.." An anchor determines a fixed point on a web page that is used as a bookmark An anchor can be placed at any point on a web page A hyperlink allows the user to move from one web page to another web page/website The code within a hyperlink can be "href..", "rel..", "target.."  A hyperlink can be attached to a block of text or image A hyperlink can be clicked on to cause another web page or part of the same web page to be displayed A hyperlink can redirect a user to an anchor by including its name 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 Uses the spoken word/voice ... ... 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>  Allows for hands free control  Safer than using a standard interface  More useful for physically disabled users</p> <p><b>Drawbacks</b>  Limited access due to the number of commands stored  More expensive to develop  May not operate reliably due to background noise/speech impediment/accents  Need to be 'trained' by the user  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  The seek time in the SSD is smaller  The data transfer rate in the SSD is better/smaller  There is less chance of the data becoming corrupted as it can save whilst the drive is being moved  The SSD is smaller/thinner  The SSD uses less energy  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  Delivered to computers/mobile devices via the internet  Played back in real time/on demand.  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>  Instant access to the media  Saves time rather than downloading/going to the shops  No need for storage space as there is no copy</p> <p><b>Drawbacks</b>  Requires an internet connection  Requires a good internet/bandwidth connection otherwise buffering  Don't get to keep the product  Online security issue related to the subscription  Technology could fail in the middle of the stream  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>  <b>One from:</b>  Used to store animated/moving images  Used to store icons/simple logos</p> <p><b>jpg</b>  <b>One from:</b>  Used to store photographic images  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>  Graphics Interchange Format  Supported by all web browsers  Can be animated images  Supports 8-bit colours/256 colours/limited  Features background transparency  Image quality never degrades with resaves</p> <p><b>jpg</b>  Joint Photographic (Experts) Group  Supports 24-bit colours/16.7 million colours/More colours  Image quality degrades slightly when a JPG is resaved.  Uses lossy compression  No background transparency  Enlarging the image can cause pixelation  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: Change the resolution/quality of the image Reduce the colour/bit depth Change the compression method//Compress the file 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>