



CANDIDATE
NAME

CENTRE
NUMBER

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CANDIDATE
NUMBER

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0417/13

May/June 2021

2 hours

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 100.
- 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 **20** pages. Any blank pages are indicated.

- 1 Tick (✓) whether the following statements refer to **Backing storage**, **RAM** or **ROM**.

	Backing storage (✓)	RAM (✓)	ROM (✓)
This is temporary storage used for the application being executed.			
This is volatile memory.			
An example of this storage is an SSD.			
This stores the start-up instructions for the computer.			

[4]

- 2 Circle **two** jobs where there has been an increase in employment as a direct result of the introduction of computers.

Car production workers	Cleaning staff	Delivery drivers for retail stores	Medical staff
Payroll workers	Secretaries	Teachers	Website designers

[2]

- 3 A mobile phone is used for communications, either for making phone calls or text messaging.

Chang is planning an expedition to the Southern Alps in New Zealand. There is often a limited mobile phone signal in these areas. He has set his phone up so that if there is an emergency he can communicate with the rescue teams using text messaging rather than making a phone call.

Give **two** advantages of using text messaging in this way.

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- 2
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[2]

- 4 Tick (✓) whether the following descriptions of analysing a system refer to **Interviews**, **Observation** or **Questionnaires**.

Description	Interviews (✓)	Observation (✓)	Questionnaires (✓)
This method gives a more reliable overview of the whole system.			
This is more time-consuming than the other methods.			
Questions on this method cannot be expanded upon when being asked.			
With this method the worker cannot remain anonymous.			

[4]

- 5 Complete the sentences using the most appropriate item from the list.

blog	cookie	email	fax
search engine	social media	web browser	wiki

- (a) A piece of software that allows a user to display a web page is called a

..... [1]

- (b) A personal internet journal is called a

..... [1]

- (c) A web application that allows a group of people to edit the content is called a

..... [1]

- 6** Susan is creating a database about cars and needs to save it in the shared area (S:) on the school network. It will be stored in the folder ICT which is contained in the IGCSE folder. She needs to save the file with a file name that is different from file names used by other students in the group.

- (a)** Write down a suitable file name for the file so that the teacher can easily find Susan's work and identify its contents. The file name should not contain spaces.

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..... [1]

- (b)** Write down the file path which Susan would use to store the file in the correct folder.

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..... [2]

- (c)** Susan plans to work on her database at home. However, the database is very large so her teacher has told her that it needs to be reduced in size. She will then be able to attach it to an email so she can send it home.

Explain why the file size would need to be reduced.

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..... [2]

- 7 A family has purchased a wireless router for use in their home to allow their devices to be connected via WiFi to form a wireless local area network (WLAN).
- (a) When the family purchased the wireless router they were advised to change the default password.

Explain why they should change the default password.

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[2]

- (b) Describe the process of using WiFi to connect to a WLAN.

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[4]

- (c) Their son produces large complex diagrams on his desktop computer at home. He needs to be able to access the diagrams when he is at university. Even if reduced in file size, the diagrams would be too large to send using email.

Describe in detail how he could transfer the diagrams from his home desktop computer to be able to access them at university, without using additional hardware.

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[4]

- (d) One of the parents in the family works for a government department and sends sensitive data from their home computer to the office. The data is encrypted before being sent to ensure it is harder to understand if it is intercepted.

Describe **four** other preventative measures that could be taken to avoid network security issues.

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[4]

- 8 Many teachers feel that monitoring student progress is an important part of the teaching and learning process.

Describe how the features of a spreadsheet can be used by a teacher to help monitor student progress.

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[6]

- 9 One way of communicating with other people is to use emails. It is very important that when you send and receive emails you are aware of esafety.

Evaluate your own use of email in terms of esafety and describe the strategies you will need to minimise the potential esafety risks.

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[8]

- 10** Aimi works for a shop that sells toys. She is setting up a relational database of the stock in the shop. She has started designing the database. Aimi has written down the questions that are asked about each toy and needs to produce appropriate field names from them. An example of the type of data that is to be stored is shown.

What is the toy? Tawara Doll

Who manufactured the toy? Tinky

What year was it manufactured? 2020

What price was it bought for? \$12.99

- (a)** Complete the design table below by filling in an appropriate field name for each question. Each field name must be different. Field names must not include spaces.

Question	Field name
What is the toy?	
Who manufactured the toy?	
What year was it manufactured?	
What price was it bought for?	

[4]

- (b) When Aimi created the whole database one of the fields was set as integer. However, as data is entered Aimi realises that the field should have been set to two decimal places.

Describe the steps that need to be taken, by Aimi, to change the field from an integer to a decimal. This field will be set to two decimal places.

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[4]

- (c) Aimi created a relational database but could have created a flat file database.

Discuss the advantages and disadvantages of using a relational database rather than a flat file database.

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[6]

- 11 Tawara College is setting up a new website for its older students. The website will publicise the events in the college, as well as revision and sporting activities. The headteacher wants the website to be attractive to the older students and it must meet their needs.

Before the website can be produced the needs of the audience have to be taken into account.

Analyse the needs of this audience.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

[8]

- 12** The director of a zoo is writing a document about wallabies. He has taken an image of some wallabies (Fig. 12.1) and is planning the layout of the pages which will include part of the image. The image he plans to use is shown in Fig. 12.2.



Fig. 12.1



Fig. 12.2

- (a)** Name the editing technique that was used to change Fig. 12.1 to Fig. 12.2.

..... [1]

- (b) The director will include images and information about the wallabies in the document. Each page will be set out in 2 columns with a line between them.
- (i) Describe the steps taken to create the columns. Assume the software has been loaded and the text has been entered.

The Habitat

The natural habitat of the wallabies¹ of New Guinea varies by species. The **forest wallaby** inhabits wooded and brush areas, whereas the **rock wallaby** inhabits the mountain areas. The **swamp wallaby** lives in the wetlands and swamps. Wallabies feel safer by inhabiting the rougher terrain such as heavily wooded areas, cliffs and wet areas.

Some types of rock wallaby live in the southern desert on almost vertical rock walls whilst others live in a more versatile habitat. To keep their young safe in these inhospitable areas the baby wallabies which are small, weak and vulnerable live in their mother's pouch for at least eight weeks.

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[3]

- (ii) Describe the steps taken to add the image as shown.

The Habitat



The natural habitat of the wallabies¹ of New Guinea varies by species. The **forest wallaby** inhabits wooded and brush areas,

whereas the **rock wallaby** inhabits the mountain areas. The **swamp wallaby** lives in the wetlands and swamps. Wallabies feel safer by inhabiting the rougher terrain such as heavily wooded areas, cliffs and wet areas.

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[4]

- (c) As the document is being written for the zoo it needs to conform to the corporate house style.

Explain what is meant by corporate house style.

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[4]

- 13** A student is looking for information on the internet for his school project. He has found a number of web pages that are useful.

(a) Explain the following terms when referring to web pages:

(i) Bookmark

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[2]

(ii) Anchor

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[2]

(iii) Hyperlink

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[2]

(b) The student has found a website that is very useful and is planning to bookmark it.

Describe the steps he will need to take to set up a bookmark for the website.

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[2]

- 14** Magnetic tapes are used in organisations for backing up data.

Describe the advantages and disadvantages of using magnetic tapes rather than flash memory for backing up data.

This image shows a full page of white paper with ten horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and extend across the entire width of the page. There is no text or other markings on the paper.

- 15** Streaming movies and music is replacing downloading or purchasing a physical copy of the files.

Describe the advantages and disadvantages of streaming files rather than using other methods.

[illegible]

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Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY

0417/13

Paper 1 Written

May/June 2021

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **10** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer				Marks
1		Backing storage	RAM	ROM	4
	This is temporary storage used for the application being executed.		✓		
	This is volatile memory.		✓		
	An example of this storage is an SSD.	✓			
	This stores the startup instructions for the computer.			✓	

Question	Answer	Marks
2	Delivery drivers for retail stores Website designers	2

Question	Answer	Marks
3	Two from: He may be tired/injured therefore text messaging is easier than trying to talk The text message is sent even though the sender's phone is in limited signal strength Limited signal strength can result in a break of voice A text message is quicker to send	2

Question	Answer				Marks
4		Interviews	Observation	Questionnaires	4
	This method gives a more reliable overview of the whole system.		✓		
	This is more time consuming than the other methods.	✓			
	Questions on this method cannot be expanded upon when being asked.			✓	
	With this method the worker cannot remain anonymous.	✓			

Question	Answer	Marks
5(a)	Web browser	1

Question	Answer	Marks
5(b)	Blog	1
5(c)	Wiki	1

Question	Answer	Marks
6(a)	Example: Susan car database	1
6(b)	S:\IGCSE\ICT\ \IGCSE – 1 mark \ICT – 1 mark The overall answer must be in this order	2
6(c)	Two from: The larger it is the longer to transmit the email Some email companies set a limit on attachment file size The time to upload/download would increase with a large file	2

Question	Answer	Marks
7(a)	Two from: So that other people cannot access the router using the known default password As it is wireless the password could be cracked from outside easily and then used for free by others So that people cannot make changes to/access personal data on the router It would increase security of the data	2
7(b)	Four from: The computer/device sends data to its wireless adapter The data is converted into radio waves The radio waves are transmitted A wireless adapter receives the radio waves Radio waves are converted into data The computer initiates a handshake with the wireless router The wireless router responds Establishes a session/pairing Wireless router checks the password/key is correct Data is transmitted User has to enter a password/passkey/automatic entry of key for known connections	4
7(c)	Four from: Create a cloud storage account Ensure sufficient storage in the cloud account Log into the cloud at home Upload/transfer the diagrams from his home computer to the cloud At university: access/login to his cloud storage account At university: download/access the stored diagrams	4

Question	Answer	Marks
7(d)	Four from: Install security devices/firewalls Use a VPN Install security software/anti-virus/anti-spyware Set up security settings in the router/operating system Data backup in case of data loss/corruption Restrict access to the network infrastructure Train the family in the safe and secure use of the equipment Not opening emails/attachments from unknowns/phishing emails Not downloading files from unknowns/phishing emails Use a dongle to restrict use of software	4

Question	Answer	Marks
8	Six from: Student progress can be shown over time using graphs Comparisons between students can be shown using graphs Comparisons with archive data can be shown using graphs Conditional formatting can be used to show how a student is performing compare to other students or past performance Data can be sorted to show the best performers in the class Calculate average marks to enable comparisons Automatic reporting results to parents Filtering students to show those above/below a threshold	6

Question	Answer	Marks
9	<p>Four matched pairs:</p> <p>I never send personal data to people I do not know because people can use it against me ... as other people can access my personal details</p> <p>I do not reply by using reply button unless I know the person because it may be a scam</p> <p>I use a list of known email addresses so I don't accidentally send it to the wrong email address</p> <p>I check before opening an email/email attachment because it might be a phishing attack</p> <p>I scan both the email and attachment in order to avoid viruses</p> <p>I never send images of myself to people I do not know so they cannot recognise me in the street</p> <p>I do not set auto reply to my email system as this could alert a spammer that the email is active</p> <p>I use email filtering this stops spam emails</p> <p>I always report any phishing emails so the authorities can take action</p> <p>I change my email password regularly so that others cannot access my email account</p> <p>I use a strong password so that others cannot access my email account</p> <p>I logout of email after I have finished using it to stop others gaining access to my emails</p> <p>I keep my password safe so that others cannot access my account</p> <p>To gain full marks at least three matched pairs are required</p>	8

Question	Answer		Marks
10(a)	Question	Field name (Examples)	4
	What is the toy?	Name_of_toy	
	Who manufactured the toy?	Manufacturer	
	What year was it manufactured?	Year	
	What price was it bought for?	Buying_price	
10(b)	Four from: Open the table Select Design View Select the field Select field type Select from the drop down list – double Click decimal places Type in 2		4
10(c)	Six from Advantages Data does not need to be entered a second time as tables are used Records cannot be duplicated but a flat file cannot stop this Saves time when entering data More efficient storage as data is only stored once Simpler to delete/modify details Complex queries can be carried out Complex reports can be created Better security as some tables can be made confidential Avoids inconsistent records More data independence Less inconsistency of data More ability to cater for future requirements Disadvantages More complex than a flat file database as more tables are required Takes more time to set up More of a reduction in performance if many tables are needed Slower extraction of data Less robust due to broken keys and records//Each table requires a key field and relationships to other tables Needs specialist personnel to setup the database More processing power needed for complex queries A relational database is more complex to understand than a flat file database To gain full marks there needs to be advantages and disadvantages		6

Question	Answer	Marks
11	Eight from: There needs to be emoticons/clipart to grab the attention The content needs to be relevant to improve their knowledge There must be a balance of information and pictures with more information than pictures The use of white space is less important More hyperlinks to related web pages Fonts must be clear and readable The interface must be simple, clear and intuitive Slideshows, videos and images providing more information High contrast background The students need to be constantly engaged Needs to be interactive The tone of the website needs to be casual The website needs to be able to work on all platforms especially mobile ones The content needs to be kept fresh and updated	8

Question	Answer	Marks
12(a)	Cropping/crop/cut	1
12(b)(i)	Three from: Highlight the body text Select layout/page set up Select columns Select more columns Select two columns Click line between Save the document	3
12(b)(ii)	Four from: Click insert select picture from file Locate the image Load the image Right click and list menu click format Format the image Position the image Click wrap text Save the document	4

Question	Answer	Marks
12(c)	<p>Two from:</p> <p>Used to make sure that all documents and other materials from an organisation have consistency</p> <p>Set of rules which state how all documents and written communication from an organisation should be formatted</p> <p>Use of branding</p> <p>Three from:</p> <p>Use of corporate/same colours</p> <p>Same font</p> <p>Same style of font</p> <p>Margins and white space look similar</p> <p>Graphics are similar</p> <p>Logos are the same</p> <p>Language used is the same on all documents within the organisation</p> <p>Position of the images are the same</p>	4

Question	Answer	Marks
13(a)(i)	<p>Two from:</p> <p>Saved shortcut</p> <p>Directs the browser to a specific web page</p> <p>It stores the title, URL, and favicon of the corresponding page</p> <p>Allows the user to easily access favourite locations on the Web</p>	2
13(a)(ii)	<p>Two from:</p> <p>The anchor is a link/placeholder/reference point</p> <p>The anchor links with another part of the web page</p>	2
13(a)(iii)	<p>Two from:</p> <p>Word/phrase/image</p> <p>When the hyperlink is clicked</p> <p>Links to another document/page/website/top/bottom of the page</p>	2
13(b)	<p>Two from:</p> <p>Open the website</p> <p>Click on the address bar/URL</p> <p>Select CTRL-D/click on the bookmark/favourite icon/star/add to favourites//Drag URL to bookmarks bar</p> <p>Type in/change the name</p> <p>Add the bookmark</p>	2

Question	Answer	Marks
14	<p>Six from:</p> <p>Advantages Less expensive per GB/gigabyte of memory Not as easily lost, as larger in size</p> <p>Disadvantages Data access time is slower Data transfer rate is slower Affected by magnetic fields They have moving parts therefore less robust Read and write is more noisy Less compact than flash memory Harder to transfer to other devices Requires a special reader</p> <p>To gain full marks there needs to be advantages and disadvantages</p>	6

Question	Answer	Marks
15	<p>Four from:</p> <p>Advantages Files can be larger therefore it can save physical storage space More likely to get the music you need More likely to get more up to date music Can be accessed in more places as only need the internet Don't need physical storage space Don't need optical drives to view/listen to movie/audio Can be viewed on mobile devices with internet connection Copyright owners have more control over who can watch the movie/listen to the audio as no physical copy exists to be copied/pirated Don't have to wait for the whole/large file to be downloaded before viewing Physical copies can be lost/stolen/damaged rendering them useless/have to buy again but streamed movies are always available</p> <p>Disadvantages Needs a connection to the internet Never own a physical copy of the file The playback is dependent on the internet connection therefore may not be as good a quality A subscription may be needed to be paid therefore may be more expensive</p> <p>To gain full marks there needs to be advantages and disadvantages</p>	4