Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY	**0417/12**
Paper 1 Written Paper	**March 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 March 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **11** 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		**internal**	**external**	2
	Mouse		✓	
	Video card	✓		
	Printer		✓	
	Actuator		✓	
	2 marks for 4 correct ticks 1 mark for 2 or 3 correct ticks 0 marks for 0 or 1 tick			

Question	Answer	Marks
2	**Three** from: Ergonomic keyboard Ergonomic mouse Microphone Wrist rest	3

Question	Answer	Marks
3(a)	**Four** from: Bold on date Superscript on the date Left aligned on date Fully justified Text/word wrap Highlighted text Italics	4

Question	Answer	Marks
3(b)	**Six** from: Plug in/Bluetooth the digital camera to the computer//Plug in the SD card/memory card Select the image to be uploaded Upload the image to the computer Save the image on the computer Load/open the word processing software Load the diary entry file Place the cursor where you want the image to be Click insert…image Choose/find/browse the image from the folder Insert the image in the text Reformat/resize/crop the image Reposition/place the image Click word wrap/text wrap Save the document	6
3(c)	**Two** from: Internet Scanned images Images stored on: Smartphone/Mobile phone/PC/Tablet/SD card/Smartwatch Clipart libraries Screenshot	2
3(d)	(see table below)	4

	jpg	png	gif
This file type stores still or moving images			✓
This file type uses lossy compression	✓		
This file type is used for storing photographs on a digital camera	✓		
This file type is limited to 256 colours			✓

Question	Answer	Marks
3(e)	Max **two** from: It is an area of a document on <u>every</u> page At the top of a page The area is between the top of the page and the top of the margin Max **two** from: To show consistency on each page To ensure that each page has the same data in the header Saves time for the author typing out the data on each page	4

Question	Answer	Marks
4(a)	**Six** from: Different size/style of font for the title/features in the table Clear font colour for the title/text in the table Clear fonts for the title/text in the table Use of bold to highlight keywords Use of italics to highlight keywords Poster fills the page Data is shown in the comparison table/chart More text than images Contrasting colours for font and background colour Use of white space Use of borders to make the text stand out	6
4(b)	**Four** from: The data is sent to/read by the microprocessor The data is stored by the tracker Convert the raw data into blood pressure data Compare the data with pre-set values If out of range <u>send data</u> to an alert system The data is <u>sent to</u> the screen	4

Question	Answer	Marks
5(a)	**Two** from: Internet etiquette Set of social conventions They show common courtesy when communicating online	2
5(b)	**Four** from: Do not use capital letters as it relates to shouting Do not use abusive/vulgar language/threatening behaviour Be clear in the text sent Always check spelling and grammar Remember that sarcasm does not communicate well Respect other's privacy Respect other people's views Do not use too many emoticons Do not use text language/slang Do not spam Do not send inappropriate links	4

Question	Answer	Marks
6(a)	RFID reader	1
6(b)	OCR	1
6(c)	a bar code reader	1

Question	Answer	Marks
7(a)	**Six** from: *Benefits* Fast throughput of pupils at the tills Fast transaction as only the card is presented If the card is stolen it can be blocked One card is less bulky than money Using the card is more secure because the money can only be used in the canteen *Drawbacks* Tendency to spend more as it is a card Difficult to keep track of your spending as no physical money If the card is damaged/lost the pupil cannot buy food/lose all their money Card needs topping up regularly Cards will need to be purchased by the pupils and can be expensive Parents can see what the pupils buy If there is an issue with the machine not easy to see mistakes Easier to misplace than cash/coins Parents can limit how much is spent on food Pupils can only spend the money in the canteen and on food **To gain full marks there must be at least one benefit and at least one drawback**	**6**
7(b)	**Six** from: The cost of the meal is totalled The reader <u>reads the details</u> from the card The amount of money on the card is checked The total is compared to the amount of money on the card If it is greater the transaction is rejected If it is less than or equal to then the transaction is accepted Checked whether card it is correct type/stolen/blocked The cost is deducted from the amount on the card The amount/total balance on the card is updated following the transaction The amount is credited to the school system The details of the receipt are prepared//The receipt is produced//Rejection slip is produced//Message is prepared	**6**

Question	Answer	Marks
8(a)	**One** from: Highlight cells A4 to B10 Click anywhere in the range Highlight A4 to A10 and click expand the selection Highlight B4 to B10 and click expand the selection **Two** from: Click on the down arrow//Click on Custom Sort Select column B Select smallest to largest/A ↓ Z	**3**

Question	Answer	Marks
8(b)	**Three** from: Totals cells B5 to B9 Multiplies by cell D1/difficulty/3.4 Rounds the value to 1 decimal place	**3**
8(c)	Matched pairs Abnormal – data that is outside the range//Unacceptable data//Data of the wrong type Example: greater than 10, negative numbers, letters, symbols Extreme – data that is on the boundary of acceptability Example: 10	**4**

Question	Answer	Marks
9(a)	**Six** from: OMR sheets are scanned in using an optical mark reader//Reader reads the lozenge Data is sent to the computer A template of the register is loaded into the computer A value is assigned to each lozenge A light passes through the scanner and shows position of each filled in lozenge//Comparing dark spots with lighter areas//Use X Y coordinates The position is compared to the template/pre-determined data If the lozenge shaded is [P] then the pupil is recorded as present If the lozenge shaded is [A] then the pupil is recorded as absent If both lozenges [A] and [P] are shaded then the pupil is recorded as late. If no lozenge on a line is shaded the result is discarded	**6**

Question	Answer	Marks
9(b)	**Eight** from: *Advantages* Faces are unique therefore greater security Data entry is faster as it does not need to be sent to the office for entry Data entry is more accurate the teacher could enter the wrong data on OMR sheet Greater security as the pupil needs to be present to register More difficult to fake biometrics OMR data sheets can be forgotten or lost *Disadvantages* Facial injuries/facial hair/glasses/masks can affect the data entry The cost of setting up a new system is higher as extra hardware and software needs to be purchased//Setting up the system is more expensive Time consuming to set up all the pupils The data will need to be updated regularly due to facial changes as pupils get older Higher error rate System is more complex therefore may cost more to maintain//Maintaining the system is more expensive The environment and usage may affect the reader Biometric systems are not 100% accurate Less flexibility as the OMR sheets can be used anywhere in the school Biometric data harder be reset if incorrect/if change needed Greater invasion of privacy as biometric data has to be stored on the computer **To gain full marks there must be at least one advantage and one disadvantage**	8
9(c)	**Two** from: Name Address Gender Date of birth <u>Personal</u> contact details, such as Email address and phone number ID card/roll number Race//Ethnic origin	2

Question	Answer	Marks
10(a)	**Two** from: Data is stored on offsite servers Many servers in many locations Data is stored on more than one server Uses data redundancy Cloud is an <u>online</u> service/data storage **Two** from: The cloud has greater storage capacity than other methods The data could be sent directly to the cloud from any device Access the data from any device/anywhere Easier to add storage capacity Lower capital outlay The owner would only pay for the storage they used Backup up tends to be automatic Cloud is more robust Cloud is more secure as it is password protected	4
10(b)	<table><tr><td></td><td>**optical**</td><td>**magnetic**</td><td>**solid state**</td></tr><tr><td>Flash drive</td><td></td><td></td><td>✓</td></tr><tr><td>Hard disk drive</td><td></td><td>✓</td><td></td></tr><tr><td>Blu-ray disc drive</td><td>✓</td><td></td><td></td></tr><tr><td>SSD</td><td></td><td></td><td>✓</td></tr></table>	4

Question	Answer	Marks
11	Max **two** examples, for each example: 1 mark for a <u>correct</u> field names and data examples 1 mark for the reason Matched pairs Type of book Can use length/lookup check as only one letter is input for example E or H Cannot use a type check as only one letter used ISBN Can use check digit as a way of checking that digits are not transposed Cannot use a length check as they are different lengths Date of purchase Can use a format check as all dates are the same format. Number of copies Can use a range/limit check as the lowest number is 1 Can use a type check as only numbers are accepted Name of book/Name of Book Cannot use a length check as names can be any length Cannot use a type check as any character can be used Name of author Cannot use a length check as names can be any length	4

Question	Answer	Marks
12	**Six** from: *Benefits* Monitors traffic into and out of the network to make sure that all data passing is safe. Checks whether the data passing through it meets a given set of rules… …if they do not then the data is blocked Can block the unwanted traffic in and out of the network It can log all incoming and outgoing traffic to check later Can block certain undesirable websites/IP addresses Keeps a list of desirable IP addresses/websites It can block IP addresses to stop hackers *Drawbacks* It cannot stop individuals on internal networks by-passing the firewall It cannot stop employees hacking the computer from within the system Users own devices can by-pass the firewall therefore meaning the computer/network is in danger It cannot stop hackers only devices that hackers are using **To gain full marks on the question at least one benefit and drawback are needed**	6