



# Cambridge IGCSE™

---

INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11

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 **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		yes	no	2
	Full name	✓		
	Capital of England		✓	
	Gender	✓		
	Number of flowers in a garden		✓	
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	Microphone Touch screen	2

Question	Answer	Marks
3	<b>Four from:</b> Screens tend to be anti-glare Uses touch screen Front and back facing cameras are included Has a built in battery Lightweight Uses Bluetooth/WiFi/3G/4G/5G Uses solid state memory Uses an onscreen keyboard Portable Small footprint	4

Question	Answer	Marks
4(a)	<p><b>Six</b> from:</p> <p>Customer is asked to enter their debit card in the ATM            Customer's bank computer is contacted            The card details are searched in the bank database</p> <p>Card is checked to see if valid/in date/stolen            Customer is asked to enter their PIN            PIN is compared to the PIN stored on the chip</p> <p>Customer is asked to deposit cheque            The system checks whether the cheque is valid            The cheque is scanned/read by the ATM            Amount is scanned            Bank account is checked for sufficient funds            The image of the scan is saved</p> <p>The customer is asked to select the account to deposit money            Money is deducted from the bank of the cheque            Money is added to the account of the payee</p> <p>A receipt is sent to the printer at the ATM</p>	6
4(b)	<p><b>Six</b> from:</p> <p><b>Advantages</b></p> <p>Retention of banks therefore all customers could use them            Easier for customers to speak to a member of the banking staff            Customers do not have to purchase expensive computer equipment            Safer than carrying out transactions over the internet            Can withdraw cash            Do not need the internet</p> <p><b>Disadvantages</b></p> <p>Have to pay to travel to the bank to use the service            Customers could waste time standing in queues/travelling to the bank            More difficult for people who have a condition which affects their mobility            Smaller customer base as it is local            Potential for physical robberies            Cannot keep track of the accounts as easily            Not 24/7</p> <p><b>To gain full marks there needs to be advantages and disadvantages</b></p>	6

Question	Answer	Marks
5(a)	6 rows	1
5(b)	8 columns	1

Question	Answer	Marks
5(c)	<p><b>Five</b> from:</p> <p>If Tax is payable then//If F4 is equal to "Y" then            If true the tax is paid            Multiply the rate of tax/I1 ...            ... by the selling price/D4            ... by the amount sold/G4            If Tax is not payable//If F4 &lt;&gt;"Y"//Else//Otherwise ...            ... then display a blank            ... the tax is not paid</p>	<b>5</b>
5(d)	<p><b>Two</b> from:</p> <p>Highlight/select cell H4            Select format cells            Select currency/accounting            Select dollar/USD icon</p>	<b>2</b>

Question	Answer	Marks
6(a)	<p><b>Two</b> from:</p> <p>File transfer protocol  <u>Network</u> protocol            Used for transferring files from one computer to another</p>	<b>2</b>
6(b)	<p><b>Four</b> from:</p> <p>Download the FTP client program            Connect to the FTP server ...            ... using the FTP client program            Login to the server ...            ... using FTP username and password            Locate the files on your computer            Click upload button on FTP client program            Upload the files to the folder/web hosting space</p>	<b>4</b>
6(c)	<p>Matched pairs – 1 mark for the feature and 1 mark for the method</p> <p>Hyperlinks            Click each hyperlink to see that it takes the user to the correct web page/part of the web page/website</p> <p>Form buttons/icons            Click to see that they carry out the correct task</p> <p>Text            Use spellchecker/grammar checker/proofread text to check it makes sense</p> <p>Images            Check the images are not pixelated/correct size/correct image</p> <p>Videos            Check the videos run correctly/correct video</p> <p>Sound            Check the sound file runs correctly/correct sound file linked</p>	<b>6</b>

Question	Answer	Marks
7(a)	<p><b>Three</b> from:</p> <ul style="list-style-type: none"> <li>Contains more than one table</li> <li>Tables are linked</li> <li>It uses relationships</li> <li>Removes redundancy of data</li> <li>Saves storage space</li> </ul>	<b>3</b>
7(b)	<p><b>Four</b> from:</p> <ul style="list-style-type: none"> <li>Primary key holds unique data</li> <li>Primary key identifies the record</li> <li>Primary key can be automatically indexed</li> <li>Each table has one primary key whereas a table can contain a number of foreign keys</li> <li>Foreign key is used to link with the primary key of another table</li> </ul>	<b>4</b>
7(c)	<p><b>Four</b> from:</p> <ul style="list-style-type: none"> <li>Searches/queries can be used to search details of patients</li> <li>Reports can be created about treatment carried out</li> <li>Formulas can be created to calculate the cost of treatment</li> <li>Charts can be created showing missed appointments by patients</li> <li>Images are stored of the x-rays to identify the patient/determine treatment</li> <li>Mail merge appointments that have been missed</li> </ul> <p>Any other appropriate use plus explanation</p>	<b>4</b>
7(d)	<p><b>Eight</b> from:</p> <p><b><i>Factors increasing effectiveness</i></b></p> <ul style="list-style-type: none"> <li>Strong passwords are difficult to crack</li> <li>Biometric passwords are harder to crack</li> <li>Regularly changing passwords increases security</li> <li>Use of two-factor authentication</li> <li>Using different passwords for parts of the computer system makes it more difficult to gain access to the full system</li> <li>Firewall required to stop attacks from computers</li> <li>Firewall stops fraudulent sites attacking the computer</li> <li>Anti-spyware stops passwords being seen when typed in</li> </ul> <p><b><i>Factors reducing effectiveness</i></b></p> <ul style="list-style-type: none"> <li>Too complex a password can be easily forgotten</li> <li>Passworded files may not be backed up</li> <li>Using a number of different passwords can become cumbersome</li> <li>Regularly changing passwords means that passwords may be forgotten</li> <li>May be difficult to choose unique password if it is changed every few weeks</li> <li>Passwords may become more easy to guess if regularly changed</li> <li>Hackers can breach most passwords</li> <li>The firewall can affect the operation of the computer and stop some uploads</li> <li>The firewall may need to be shut down at times to upload files therefore making computer unsafe</li> <li>Some legitimate software can be blocked by the firewall</li> </ul> <p><b>To gain full marks both sides of the discussion are needed</b></p>	<b>8</b>

Question	Answer	Marks
8	<p><b>Six from:</b></p> <p><b>Comparison</b>            Both are network devices            Both are hardware devices            Both have computers and devices connected to them            Both send data to devices//Both are communication devices</p> <p><b>Contrast</b>            In a hub data packets/data are broadcast to every device connected to it            A hub is less secure than a switch in distributing data            Switch checks the data packet            Switch sends to an appropriate device</p> <p><b>To gain full marks both contrast and comparison is needed</b></p>	6

Question	Answer	Marks
9(a)	Part time	1
9(b)	Compressed hours	1
9(c)	Job sharing	1
9(d)	Flexible hours	1

Question	Answer			Marks	
10		Direct	Parallel	Pilot	4
	All of the benefits are immediate.	✓			
	If the new system fails the whole of the old system is still operational.		✓		
	This is the cheapest implementation method.	✓			
	The system is implemented in one branch of the company.			✓	

Question	Answer	Marks
11(a)	Gaining <u>unauthorised</u> access to a computer system – 1 mark  <b>Two</b> from: <i>Examples</i> Can lead to the identity theft of data Can lead to the misuse of/access to personal data Data can be deleted Data can be changed Data can be corrupted Place malicious files/software	<b>3</b>
11(b)	<b>Three</b> from: Use of firewalls to block unauthorised computer systems Use of passwords Use of intrusion detection software/anti-spyware Use two-factor authentication Switch off WiFi/computer when not in use	<b>3</b>

Question	Answer	Marks
12	A - Resize the image maintaining aspect ratio B - Rotate the image 90 degrees anti clockwise/counter clockwise//270 degrees clockwise C - Reflect the image in the Y axis D - Brightness adjusted	<b>4</b>

Question	Answer	Marks
13(a)	<b>Two</b> from: Uses up less memory in the computer Quicker to enter the data Quicker to search for data	<b>2</b>
13(b)	<b>Two</b> from: If the data is typed in incorrectly then the booking may be rejected If an incorrect airport code is used they may fly to the wrong airport//May miss the flight If the customer reference number is typed in incorrectly then the booking may be assigned to the wrong person If the number of passengers is incorrectly entered then number of seats will be wrong/overbooked So that the wrong booking is not made	<b>2</b>



Question	Answer	Marks
13(c)	<p><b>Six</b> from:</p> Display flights available Booking database is searched for the customer reference number Matching record is retrieved Details of the customer are displayed on the screen Booking database is searched for matching departure airport Booking database is searched for matching destination airport If flight correct, date/time found Search if seats/tickets/flight available If unavailable error message output Outputs the price If seats available, flags seat as booked If not booked then flag removed Reduces number of seats/tickets available by number booked E-ticket/ticket details are output E-ticket/ticket details sent to customer Receipt is printed//Verification email sent	<b>6</b>

Question	Answer	Marks
14(a)	<p>Measurement is the monitoring/recording of physical variables without the microprocessor taking action</p> <p>Control is when the microprocessor takes action depending on sensor readings</p>	<b>2</b>
14(b)	<p><b>Four</b> from:</p> Microprocessor reads the data Data/Speed limit is stored in the computer Divides the distance travelled by time taken between the readings The speed of the vehicle is then compared to the speed limit of the road The speed is recorded It sends the data for later processing Graphs are <u>automatically</u> produced of the number of cars speeding	<b>4</b>