🏛️ **Cambridge Assessment** International Education

Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/11**

Paper 1 Written **May/June 2020**

MARK SCHEME

Maximum Mark: 100

Published

Students did not sit exam papers in the June 2020 series due to the Covid-19 global pandemic.

This mark scheme is published to support teachers and students and should be read together with the question paper. It shows the requirements of the exam. The answer column of the mark scheme shows the proposed basis on which Examiners would award marks for this exam. Where appropriate, this column also provides the most likely acceptable alternative responses expected from students. Examiners usually review the mark scheme after they have seen student responses and update the mark scheme if appropriate. In the June series, Examiners were unable to consider the acceptability of alternative responses, as there were no student responses to consider.

Mark schemes should usually be read together with the Principal Examiner Report for Teachers. However, because students did not sit exam papers, there is no Principal Examiner Report for Teachers for the June 2020 series.

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

Cambridge International is publishing the mark schemes for the June 2020 series for most Cambridge IGCSE™ and Cambridge International A & 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(a)	**Two** from: Software is programs and data Programs for controlling the operation of a computer Programs for processing of electronic data	**2**
1(b)	System software Applications software	**2**

Question	Answer			Marks
2		**CLI**	**GUI**	**2**
	The user has to type in every instruction	✓		
	The user does not need to learn any of the instructions		✓	
	Each instruction has to be typed in correctly	✓		
	The user is in direct communication with the computer	✓		
	Two marks for four correct ticks One mark for two or three correct ticks Zero marks for one correct tick			

Question	Answer	Marks
3(a)	**Four** from: An item of hardware It carries out the instructions of a computer program It performs basic arithmetic calculations It performs logical operations It performs input/output operations of the computer It contains the internal storage/control unit	**4**
3(b)	(i) RFID reader (ii) Magnetic Ink Character Reader/MICR (iii) Bar code reader (iv) Chip reader	**4**

Question	Answer	Marks
4(a)	Question 1 Numeric: integer // text Question 2 Date/time Question 3 Boolean/logical Question 4 Text/alphanumeric	**4**

Question	Answer	Marks
4(b)	<table><tr><td></td><td>abnormal</td><td>normal</td></tr><tr><td>AB</td><td></td><td>✔</td></tr><tr><td>C</td><td>✔</td><td></td></tr><tr><td>B</td><td></td><td>✔</td></tr><tr><td>AO</td><td>✔</td><td></td></tr></table> Two marks for four correct ticks One mark for two or three correct ticks Zero marks for one correct tick	2
4(c)	Gender = F AND Blood_group = A* Gender – 1 mark = F – 1 mark AND –1 mark = A* – 1 mark use of wildcard – 1 mark Blood_group – 1 mark	6
4(d)	**Two** matched pairs from: The age changes every year therefore it will need to be changed regularly ... ... Administration of the database becomes more time consuming. The age of the donor can be easily and automatically calculated from their date of birth ... ... improving accuracy. Data only needs to be entered once ... ... reducing errors.	4
4(e)	Length check // Range check	1

Question	Answer	Marks
5(a)	Max **four** from: *Comparisons* Both use the internet Both redirect the user to a fake website Both can lead to fraud and identity theft Both use websites that look legitimate Personal data is compromised Max **four** from: *Differences* With phishing emails are sent to the computer In pharming malicious code is uploaded to the computer In phishing clicking a link sends user to a fake website In pharming the code redirects the user to a fake website without their knowledge The email in phishing appears to have come from a trusted source Website in pharming appears to be genuine In pharming spyware can be used to record key presses	**6**
5(b)	**Six** from: Avoid clicking on any unknown texts with links/Avoid clicking links in texts from people you do not know. Do not reply to text messages that have asked you about any of your personal finances/details. Report any suspicious activity. Be on the lookout for messages that contain the number 5000 or any number that is not a phone number as this is used by smishers. If the text messages urge you for a quick reply then that is a clear sign of smishing. Do extensive research before replying to any message. There are plenty websites that allow anyone to run searches based on a phone number and see any relatable information about whether or not a number is legitimate. Never call back a phone number that was associated with the text from an unknown source. If the message states 'Dear user, congratulations, you have won.' It is a clear sign for smishing. Check the time when the unknown message was sent. If the text message was sent at an unusual time, then that is another sign of smishing.	**6**

Question	Answer	Marks
6	<table><tr><td></td><td>**LAN**</td><td>**WAN**</td><td>**WLAN**</td></tr><tr><td>The internet is an example of this type of network</td><td></td><td>✔</td><td></td></tr><tr><td>This type of network is found in a building but is connected without cables</td><td></td><td></td><td>✔</td></tr><tr><td>This type of network is used to transmit data between Europe and North America</td><td></td><td>✔</td><td></td></tr><tr><td>This type of network is found in a building but is connected with cables</td><td>✔</td><td></td><td></td></tr></table> One mark per correct row	4

Question	Answer	Marks
7	Max **three** from: *Advantages* All elements are together in one unit therefore takes up less space They are portable Can be used in more places than a desktop Max **three** from: *Disadvantages* Easier to steal/lose Limited battery life so more likely to run out of power Pointing devices can be more difficult to use In built webcams can be more difficult to use rather than a desktop If one piece of hardware breaks it can be more difficult to replace Desktops have a better heat dispersion rate More likely to be damaged as they are portable. Screen size may be smaller Less powerful	4

Question	Answer	Marks
8(a)	Max **five** from: *Benefits* If personal data is kept confidential then identity theft is reduced It helps prevent fraud Reduces the chance of users suffering harm from criminals, as less data for criminals to attempt to access Protects sensitive data … examples: racial/ethnic/political/religious/membership of trade unions/health/criminal activity Protects the data being used for purposes other than what it was collected for Max **five** from: *Drawbacks* Difficult to enforce as users give information freely Most users do not read the terms and conditions before agreeing to them, therefore allowing data to be used Data protection is local but networks are global so laws are difficult to enforce Younger people do not mind that data is passed on therefore the law could not be enforced for all	6
8(b)	**Two** from: Electronic Junk email/unsolicited emails/sent to a person without requesting it Deliberate filling up of a user's inbox/many emails sent at once Emails sent to everyone on the mailing list	2
8(c)	**Four** from: Takes time to deal with it Can slow down networks Can fill up the receiver's mail box and therefore fill up hard disk/leads to denial of service Can increase the time needed to run your email software Could contain a virus	4

Question	Answer	Marks
9(a)		6

Device	Input	Output	Both
Bar code reader	✔		
Buzzer		✔	
Touch screen on till			✔
Receipt printer		✔	
Light sensor on the conveyor belt	✔		
Electronic scales	✔		

One mark per correct row

Question	Answer	Marks
9(b)	Max **five** from: Bar code is scanned at the POS/bar code number entered manually Bar code is searched for in the stock file … … until the record is found Details of the product are read Stock level of the item reduced by 1 New stock level written back to the file Item is flagged to state order in place If less than the re-order level then the item is automatically re-ordered – 1 mark	6

Question	Answer	Marks
10(a)	**Six** from: Current system is observed Staff/potential users interviewed Staff/potential users given questionnaires Gather information about current system Existing documents examined Inputs, outputs and processing of the current system determined Problems with current system identified User and information requirements identified System specification decided Hardware identified/justified Software identified/justified	6

Question	Answer	Marks
10(b)	Max **three** from: *Advantages* Fingerprints are unique More accurate data entry Improved security Your fingerprints are with you all the time/cannot be lost/ID cards can be lost Student needs to be present at the reader Magnetic cards can be affected by magnetic fields/smart phones Very difficult to clone unlike cards Max **three** from: *Disadvantages* Takes a longer time to collect all the fingerprints and store them rather than producing ID cards Equipment would be more expensive Damage to the finger/reader will give false readings/no reading Invasion of privacy	4
10(c)	**Three** from: Iris scan Hand print Facial recognition Voice recognition Retina scan	3

Question	Answer	Marks
11	**Four** from: Data should be fairly and lawfully processed Data should only be processed for the stated purpose Data should be adequate, relevant and not excessive/limited Data should not be kept longer than necessary Data should be processed in accordance with the data subject's rights Data should be kept secure Data should not be transferred to another country unless they have adequate protection. Data should be processed in a transparent manner Data should be collected for specified/explicit/legitimate purposes Data should only be further processed for archive purposes which is compatible with the initial purposes Data kept for archiving should safeguard the rights and freedoms of individuals Explicit consent required for processing sensitive data Parental consent required for processing personal data of children including online services Data subjects are allowed access to their personal data	4

Question	Answer	Marks
12	**Magnetic stripe** *Benefits* The user needs to have the card present to use it Data more difficult to copy as it uses a stripe Increased security as signature is also needed *Drawbacks* The card could be stolen and the signature copied Magnetic stripe can be affected by magnetic fields Card can be damaged due to overuse **Chip and PIN** *Benefits* Increased security as the card and a PIN is also needed The chip cannot be scanned remotely *Drawbacks* Shoulder surfing can take place Security risk as the chip contains personal information Card can be damaged due to overuse **Contactless** *Benefits* More secure as encryption is used to read the card Card details can be stored on a smartphone which might have an extra layer of security Stops shoulder surfing Only allows a small amount to be transacted *Drawbacks* Someone who steals the card can use it without a PIN Can be cloned using electronic devices No contact with the device so other devices may 'read' the card accidentally Security risk as the card contains personal information To achieve full marks all three methods must be discussed, the discussion must also cover both the benefits and drawbacks. One mark can be awarded for a reasoned conclusion	8