Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/12**

Paper 1 Written **October/November 2019**

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 October/November 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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	<table><tr><th></th><th>normal (✓)</th><th>abnormal (✓)</th><th>extreme (✓)</th></tr><tr><td>one</td><td></td><td>✓</td><td></td></tr><tr><td>4</td><td>✓</td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td>✓</td></tr><tr><td>3.2</td><td></td><td>✓</td><td></td></tr></table>	**4**

Question	Answer	Marks
2	<table><tr><th></th><th>CLI (✓)</th><th>GUI (✓)</th></tr><tr><td>This interface does not need a pointing device</td><td>✓</td><td></td></tr><tr><td>This is an example of a WIMP interface</td><td></td><td>✓</td></tr><tr><td>The user has to type in instructions</td><td>✓</td><td></td></tr><tr><td>This interface takes up more memory in the computer</td><td></td><td>✓</td></tr></table> **Two** marks for 4 correct ticks **One** mark for 2 or 3 correct ticks Zero marks for 0 or 1 tick	**2**

Question	Answer	Marks
3(a)	A linker	**1**
3(b)	A touch screen	**1**
3(c)	Vision enhancement	**1**
3(d)	Quantum cryptography	**1**

Question	Answer	Marks
4(a)	**Three** from: Buttons Touch screen Microphone Camera	**3**
4(b)	Flash memory card reader	**1**
4(c)	**Two** from: Speaker/headphone Touch screen LED bulb Buzzer	**2**

Question	Answer	Marks
5	**Four** from: A laptop is more portable A laptop is made in one unit whereas a desktop has several items of hardware therefore fewer items to lose The footprint of the laptop tends to be smaller Lower power consumption Uses battery power so can be used in more places	**4**

Question	Answer	Marks
6(a)	**Four** from: Purchase the hardware Purchase/download the software Set up the hardware Configure all the hardware Load the software onto the computers Purchase network licences Set up staff privileges Purchase a hub/switch Allocate/set IP addresses Install network cards Set up file/printer sharing Set up the users	**4**
6(b)	**Three** from: A router receives/sends data packets Routers inspect the data packets received Checks the destination IP address Checks the IP address using the stored routing table It uses a routing table which lists all the different routes to other networks Data packet is sent to the appropriate/next switch/router Uses the MAC address to send to correct computer/device Uses the IP address to work out the best/quickest route	**3**

Question	Answer	Marks
6(c)	**Four** from: Laptops transmit data by radio waves … … to a wireless transmitter/Wireless Access Point The Wireless Access Point converts these radio waves into data … … and passes it to the switch… … data transmitted to the destination computer Explanation of handshaking Explanation of authentication using Wireless security key Explanation of obtaining an IP address from the network	**4**

Question	Answer	Marks
7(a)	**Two** from: Rotate the shape 90 degrees anti-clockwise/left Resize the shape/reduced the size of the shape Keeping the aspect ratio	**2**
7(b)	**Two** from: Crop the image Invert/fill the image black	**2**

Question	Answer	Marks
8(a)	**Two** from Allows files to be opened in other software Allows files to be opened on other systems/platforms/manufacturers To create a standard so that other software can understand	**2**
8(b)(i)	.css	**1**
8(b)(ii)	.rar	**1**
8(b)(iii)	.gif	**1**
8(b)(iv)	.csv	**1**

Question	Answer	Marks

9(a)	IF(C11>0,"L","OT")
	
	IF() – **One** mark
	C11>0, – **One** mark
	"L","OT" – **One** mark
		3

9(b)	VLOOKUP(D11,A$2:B$8,2,FALSE) VLOOKUP() – **One** mark (D11, – **One** mark ,A2:B8, – **One** mark $ – **One** mark for correct use ,2, – **One** mark ,FALSE) – **One** mark	**6**
9(c)	COUNTIF(F11:F17,"L") COUNTIF() – **One** mark (F11:F17, – **One** mark ,"L") – **One** mark	**3**
9(d)	Pie chart	**1**

Question	Answer	Marks
10	*Disadvantages:* Maximum **five** from: A dot matrix printer is noisier when it prints therefore would not be used in an office Printing is slower using a dot matrix Dot matrix prints line by line, whereas a laser is a page printer Dot matrix printers cannot easily handle large print jobs, whereas laser printers can Printer ribbon is more expensive that toner A dot matrix has more limited colour facilities as it uses a ribbon Print quality is lower than a laser printer *Advantages:* A dot matrix printer can be used is harsh conditions A dot matrix uses a ribbon and ink which is far safer than toner which gives off ozone A dot matrix uses multipart stationery therefore carbon copies can be made as it prints Can use continuous stationery therefore less chance of the paper running out during a print job	**6**

Question	Answer	Marks
11(a)	**Six** from: People no longer have to do manual tasks at home No need to stay at home whilst washing is carried out/people can go out shopping/to work and come home to washed clothes People have more time to spend on leisure activities/shopping/socialising Increased sense of security Smart fridges can be used to improve healthy lifestyle/order fresh food/cuts waste Heating/air conditioning can be set remotely/the user can arrive home to a warm/cool house Saves fuel as the heating/air conditioning is not on all day Reduces injuries by using microprocessor-controlled lights outside	**6**
11(b)	**Six** from: Security problem of others gaining access to devices like burglar alarms/security cameras/people can view your house/switch off the alarm More expensive than manual systems to repair/purchase Problem of disconnection stopping the device/if the internet/electricity goes down then the device may not operate If the controller is out of range, then the device cannot be operated Interference with the signal can stop the device/walls/weather can interfere with the signal The lack of privacy of the data being sent to and from the device/hackers can find your details by hacking devices If you lose the controller/then this can cause problems in the home and cannot operate the system In a smart fridge online shopping lists are created automatically these may have to be overwritten/as it will order anything removed from the fridge whether it is needed or not Devices can be taken over and malware installed/hacked If the controller is not powered up, then system may not operate	**6**

Question	Answer	Marks
12(a)	**Two** from: Software is specially designed for the sports club so that if meets their needs The software only has the features needed by the sports club therefore uses less memory Less functions in the software making it easier to use/less help needed Customised support from the systems analyst Can be changed when the sports club needs it changing	**2**
12(b)	**Six** from: Faster to search for a record Faster to retrieve records Data can easily be used in other applications Example mail merge to send out reminders Faster/easier to add/edit/delete records Saves physical space in the office as there are no paper records stored Cheaper to store data as there is less paper used There would be fewer errors as there is no manual checking of paper records Safeguards to reduce errors can be built into the software Several people can use the data at the same time	**6**

Question	Answer	Marks
12(c)	*Direct changeover:* The old system is stopped overnight and the new system is started immediately *Benefit* **one** from: The benefits are immediate Costs are reduced as there is only one set of staff Less likely to fail as it has been thoroughly tested *Drawback*: If the new system fails there is no system to fall back onto/no backup *Parallel running:* The old and new systems run side by side until the new system takes over *Benefit* **one** from: The old system can be used as a back up Staff can be trained gradually/get used to the new system *Drawback* **one** from: More time consuming as the data needs to be entered into two systems More chance of error on data entry More costly as there are two sets of staff	**6**

Question	Answer	Marks
13(a)	**Three** from: Robots can work in environments where humans would have difficulty Robots can work 24/7 Robots are not paid/cheaper in the long run Productivity is higher Fewer mistakes are made/greater accuracy More consistent Allow humans to do more skilled work/other tasks	**3**
13(b)	**Three** from: Expensive to maintain/repair Expensive to purchase Replace labour, leads to unemployment Description of de-skilling	**3**

Question	Answer	Marks
14	To be marked as a level of response: The candidate must complete L1 to get into L2 and L2 to get into L3 **Level 3 (7–8 marks):** Candidates will address both aspects of the question and discuss/consider different benefits/drawbacks. The issues raised will be justified. There will be a reasoned conclusion. The information will be relevant, clear, organised and presented in a structured and coherent format. **Level 2 (4–6 marks):** Candidates will address both aspects of the question and discuss/consider different benefits/drawbacks although development of some of the points will be limited to one side of the argument. There will be a conclusion. For the most part the information will be relevant and presented in a structured and coherent format. **Level 1 (1–3 marks):** Candidates may only address one side of the argument, and give basic benefits and drawbacks. Answers may be simplistic with little or no relevance. **Level 0 (0 marks):** Response with no valid content *Answers may make reference to, e.g.:* *Benefits:* Prevents illegal material being posted/shown Examples racist/prejudice, pornographic Dark net would be banned Information that states how to make bombs. how to hack would be banned Help to prevent children from gaining access to undesirable/pornography websites Help to stop incorrect information being found on the net/fake news Help to stop people that send messages in riots Helps to prevent discussion groups that incite hatred, racism, etc. Ensure copyright laws are enforced Safeguards the vulnerable	**8**

Question	Answer	Marks
14	*Drawbacks:* Information on illegal material/how to make bombs, etc. can be found in other resources It would be very expensive to police/set up a police group It would be very difficult to police data being sent from one country to another It would be very difficult to set standard rules as many countries/states have different rules Laws already exist in different parts of the world to police internet data in that country, would these laws need to still exist. Freedom of speech/human rights is restricted Material found on the internet can be found elsewhere The internet is international therefore there could be problems liaising with other police forces A new police force would need to be set up costing a lot of money Individual police forces/multi-country police internet locally What is classed as illegal; may be different in other countries therefore difficult to police Some medical websites could be classed as illegal but could be legal elsewhere/could be classed as pornography The mass of information increases daily therefore difficult to check People tend to be anonymous therefore difficult to find the culprits	