Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/13**

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.

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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.

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Question	Answer	Mark
1(a)	Wide format printer	**1**
1(b)	Driving wheel	**1**
1(c)	Touch pad	**1**
1(d)	Speaker	**1**

Question	Answer	Mark
2		**4**

	optical (✓)	**magnetic (✓)**	**Solid state (✓)**
Hard disk		✓	
SD card			✓
CD ROM	✓		
Memory stick			✓

Question	Answer	Mark
3	**Four** from, for example: GPS/location services/sat nav Telephone banking Social networking Emails sending/receiving Streaming videos/music Making/receiving text messaging Taking photos Play music	**4**

Question	Answer	Mark
4	**Two** from: Connects a LAN to a WAN Allows devices to connect to the internet Forwards data packets Sends/receives data packets	**2**

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<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th></tr>
<tr><td>5</td><td>
<table>
<tr><th></th><th>Health problem</th><th>Possible solution</th></tr>
<tr><td>Reading from the monitor in poor lighting</td><td>Headache/eye strain</td><td>Use anti-glare screen
Turn the screen 90 degrees to the window
Improve the lighting</td></tr>
<tr><td>Using a mouse for prolonged periods of time</td><td>RSI/pains in fingers/wrist/Carpel Tunnel Syndrome</td><td>Use a wrist rest
Regular breaks
Use a trackerball/ergonomic mouse
Hand exercises</td></tr>
<tr><td>Sitting too long in one position</td><td>Back ache/neck ache</td><td>Use a footrest
Taking breaks
Use an ergonomic/adjustable chair
Sit with correct posture/straight back</td></tr>
</table>
Maximum of one mark per box
</td><td>6</td></tr>
</table>

Question	Answer	Mark
6	**Six** from: This can lead to an unhealthy lifestyle as people rely on ready-made foods People depend on the devices for all their chores making them lazy Devices carry out the manual tasks leading to lack of exercise/sedentary People lose their household skills in carrying out tasks There is a danger that devices that use the internet can have security issues If the internet crashes/electricity outage, then the device may not operate but the user would not know Smart fridges automatically re-order food as it is used but seasonal changes may lead to wrong food being ordered Possible health issues from the devices, e.g. microwave leakage	**6**

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Question	Answer	Mark
7	**Five** from: Matched pairs background-color:#7g7d76 the colour is not correct i.e. g {text-weight:bold; Text-weight should be font-weight font-size:42px ; missing from the end of the command text-decoration: underlined; underlined should be underline; text-align: centre} should be text-align: center} background-color:#7g7d76 missing bracket/add } after the 6	**5**

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Question	Answer	Mark
8(a)	IF(E2>400,E2*K$3,E2*K$4) **One** mark for IF() **One** mark for E2>400, **One** mark for E2*K$3, **One** mark for E2*K$4 **One** mark for correct use of absolute referencing/$ K3 and K4 only **One** mark for correct order operator, then TRUE then FALSE **One** mark for use of K3 and K4 rather than numeric values K3 not 0.25, K4 not 0.45	**7**
8(b)	(C2-B2)*F2 **One** mark for (C2-B2) **One** mark for *F2	**2**
8(c)	**Two** from: Highlight Column E Select filter Select number filter greater than or equal to/untick all the cells that are less than 400 Type in 400	**2**
8(d)	**Four** from: Fewer errors in final version of real item as errors would have been resolved in model Saves money as it saves on resources Safer to run a computer model rather than risking human life Different scenarios/what ifs can be carried out which may happen in real life/to experiment Impossible to try out the real thing due to cost/time Time scales are reduced, the real thing could take a long time to operate	**4**

Question	Answer	Mark
9	**Four** from: Data from the temperature sensor is sent to the microprocessor The microprocessor has a stored/preset value Data from the temperature sensor is compared with the preset value If the reading is higher than the preset value… …microprocessor sends signal… …to the actuator to turn the oven off If the reading is lower than the preset value signal is sent to the oven to turn/keep it on Continual process	**4**

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Question	Answer	Mark
10(a)	Maximum **five** from **each** of: *Inputs:* Insert card/input account number Enter PIN Select deposit Select the language Select cheque Select Account Enter cheque Select 'confirm' amount *Processing:* Checks the cheque is the right way up Scans the cheque Uses OCR to read the font/handwriting Attempts to read the handwriting Reads the details on the cheque using MICR If the cheque cannot be read then stores the cheque for later checking If it can be read then accept cheque Checks if information on the cheque is correct	**6**

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Question	Answer	Mark
10(b)	Maximum **five** from **each** of: *Benefits:* Human validation is needed to check the amount/signature which improves security May be closer than the nearest bank branch therefore saves time than going to the bank Can deposit cheques 24/7 Saves money in travelling to the bank Extra security due to using a card and PIN Less queues in the bank A picture receipt is given of cheques May be more ATMs than banks *Drawbacks:* If the cheque is torn then it may not be read by the ATM The handwriting on the cheque may be difficult to read therefore delaying the processing Human validation is needed to check the amount/signature this leads to delays in processing People may not be happy in using this method for example for security reasons/prefer human touch Not all ATMs use this method May need a card/PIN to operate Stolen cheques from the customer could be processed more easily ATM may not be working ATM may reject certain types of cheque Confusion for the customer using the ATM as some ATMs may have a different process Cannot get human help if it goes wrong **One** mark can be awarded for a reasoned conclusion	**6**

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Question	Answer	Mark
11(a)	**Interview** *Benefit* **one** from: The user is more open and honest with the answers Questions can be added to/extended Questions can be modified Can see body language/facial expressions *Drawback* **one** from: Time consuming to complete all the interviews Expensive due to analyst's time Not anonymous so interviewee less likely to answer honestly Can give answers that they think the interviewer wants May not be available at the time the analyst is available **Questionnaire** *Benefit* **one** from: Faster to complete all questionnaires Cheaper to produce questionnaires than pay/employ an interviewer Individuals can remain anonymous therefore they are more truthful More people can answer the questionnaire than can be interviewed They can fill it in in their own time *Drawback* **one** from: Tend not to be popular with users Too inflexible cannot ask follow up questions Users tend to exaggerate their responses as they are anonymous As its anonymous people may not take it seriously Cannot expand on their answers/limited in their responses **Observation** *Benefit* **one** from: Reliable data Better overall view of the whole system/all the inputs and outputs of the system Inexpensive method as the analyst is only watching the workers *Drawback*: *Description of the Hawthorne effect*	**6**
11(b)	*Normal* Data is within the range of acceptability *Abnormal* **One** from: Data outside the range of acceptability Data that is of an incorrect type *Extreme* Data that is on the boundary/limit of acceptability	**3**

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Question	Answer	Mark
11(c)		3

	Tick (✓)
Program name	
Glossary of terms	
Frequently asked questions	
Algorithm	✓
How to print data	
File structures	✓
Error messages	
List of variables	✓

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Question	Answer	Mark
12(a)	**Four** from: Don't give out personal information such as his address or phone number Don't send pictures of himself to anyone, especially indecent pictures Don't open/click on suspicious links/adverts on social media Don't become online 'friends' with people he does not know/don't contact/chat to people you do not know Never arrange to meet someone in person who he has only met online If anything he sees or reads online worries him, he should tell someone about it/block them Use appropriate language Set security so only friends can contact	**4**
12(b)	**Three** from with an expansion, for example: Material found on the internet can be found elsewhere People can make their own decisions on what they read on the internet… …reduces their freedom 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 The laws regarding the use of the internet are not consistent… …different law in states/countries It goes against freedom of speech/human rights… …comments could be blocked Individual police forces/multi-country police… …internet is policed 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	**6**

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Question	Answer	Mark
13(a)	**Two** from: Hypertext Transfer Protocol Secure Set of communication rules Used when transferring data across the internet Uses encryption/SSL/TLS	**2**
13(b)	**Two** from: Uniform Resource Locator Resource/website address Used by web browsers To access/link web pages/retrieve files	**2**

Question	Answer	Mark
14	**Four** from: Bluetooth sends and receives radio waves Enable Bluetooth Bluetooth searches for the other devices Pairs the two devices Devices automatically detect and connect to each other Used for short distances Randomly picks channels to use one of 79 channels can be used Uses spread spectrum frequency hopping Constantly change the channels to stop interference with other communication systems Used for low-bandwidth applications, e.g. streaming music Used when the speed of transmission is not critical Bluetooth can be used to create a secure Wireless Personal Area Network	**4**

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Question	Answer	Mark
15	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.:* The user has to be present to enter the computer system Non-biometric systems allow others to enter system by stealing passwords/security cards Biometrics not affected by strong electromagnetic fields but a swipe card could be Relative higher level of accuracy Passwords need to be strong to reach same level of accuracy Passwords can be forgotten whereas biometrics cannot Encryption does not stop hackers Firewalls do not stop hackers only unauthorised systems Firewalls can be turned off The more complex the password the more chance of it being forgotten Shoulder surfing passwords can lead to illegal entry but not with biometrics If fingerprint damaged/use of dark glasses/swipe card damaged/password forgotten then data entry can be stopped Intrusive as personal details have to be stored in biometrics Can be a slower entry using biometrics as more checking is carried out Security can be lowered with biometrics due to problems in reading data Harder to set up the biometric system Takes longer to add new people to the system Biometrics can use a lot of memory to store the data Signature/voice entry – person needs to write the signature the same each time/speak the same each time Voice can be recorded by mobile device and then used to enter system Security issues if data from signatures are used in other ways *Examples:* Retina/iris scan/face recognition/fingerprint/hand print	**8**

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