INFORMATION AND COMMUNICATION TECHNOLOGY	**0417/13**
Paper 1 Written	**October/November 2016**
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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **10** printed pages.

1   Tick whether the following statements are true or false.

	true (✓)	false (✓)
Tablet computers have touch screens.	✓	
Smartphones will only connect to the internet through Wi-Fi.		✓
A tablet computer has a separate keyboard.		✓
Smartphones use a touchpad.		✓

[2]

4 correct answers – 2 marks
2 or 3 correct answers – 1 mark
0 or 1 correct answer – 0 marks

2   (a) Command line interface/CLI

[1]

(b) **One** from:

more difficult to edit entered commands
need to know the commands
Incorrect commands can affect the operation of the computer.
Syntax needs to be exact for the program to work.   [1]

(c) Tick whether the following statements are true or false.

	true (✓)	false (✓)
A GUI involves the use of windows and menus.	✓	
User interaction with a GUI is intuitive.	✓	
A GUI takes up a lot of memory and resources.	✓	
Users have to learn a list of system commands in order to use a GUI.		✓

[2]

4 correct answers – 2 marks
2 or 3 correct answers – 1 mark
0 or 1 correct answer – 0 marks

3   Tick whether the following statements are true or false.

	true (✓)	false (✓)
ROM is Real Optical Memory.		✓
RAM stores the instructions you are currently working on.	✓	
ROM stores the BIOS.	✓	
RAM allows the user to read and write data.	✓	

[2]

4 correct answers – 2 marks
2 or 3 correct answers – 1 mark
0 or 1 correct answer – 0 marks

4   (a) Dot matrix   [1]

(b) TFT/LED/LCD (allow full names such as Thin-Film-Transistor)   [1]

(c) 3D printer/3D inkjet printer   [1]

(d) Touchscreen   [1]

5   Parallel running

Any **one** from:

If the new system fails then the old system is still running.
There is always a backup of the whole system.   [1]

Direct Changeover

Any **one** from:

Saves on the costs as less personnel
Saves the time of implementing the new system
Advantages are immediate   [1]

Phased Implementation

Any **one** from:

If the new system fails then most of the old system still in place.
Possible to see if part of the new system works before proceeding   [1]

6 (a) Unauthorised access to computer systems with the intention of causing harm [1]

Two examples from:

Editing files/data
Deleting files/data
Installing viruses
Exposing weaknesses of the system [2]

(b) **Three** from:

Usernames and <u>strong</u> passwords to stop remote and local logins
Use different passwords for different accounts
Biometric systems to ensure the official user is present
Electronic dongles which only allow login when the dongle is plugged in
Dedicated computers which are the only ones allowed to log in [3]

7 **Three** from:

Spelling errors
Information requested that the bank would not ask for e.g. password and username/personal information
Not personalised – name or part of account number
Hyperlink not usually given
Inconsistency i.e. manager and Chief Customer Officer

Allow examples of the data from the email [3]

8 (a) http:// – this is a protocol/transfer protocol/hypertext transfer protocol [1]
www.bbc.com – this is the website address contains domain name, domain type and
country code/server [1]
weather – this is the folder name [1]
2193733 – this is the resource or the filename [1]

(b) **Two** from:

If using a web browser, only the URL is needed.
If a URL is typed in a web browser the website is found straight away.
Resource may not be on search engine index yet, therefore cannot be found.
In the search engine the user needs to know what is on the website for the keywords.
Not sharing information with a search engine if you type in a URL [2]

9 **Three** from:

The language/dialect used in checking the spelling/grammar could be different e.g. English(US).
Names/proper nouns might be highlighted as an error but are acceptable.
If no suggestions are given
Similar sounding words need to be checked, i.e. where, were, wear.
The grammar might be too complex for the grammar checker to cope with. [3]

10 (a) **Four** from:

Agree the date and time of the conference

Either
Contact an audio conferencing provider …
…for organiser's PIN
…for participant's PIN
Give the PIN to each participant
at the start of the conference organiser types in his PIN
Each participant dials the number and enters the PIN

or
the organiser phones/contact the first participant
the organiser phones/contact subsequent participants
puts them on hold…
…until all participants have been contacted
joins the participants together/joins the conference   [4]

(b) **Four** from:

It is needed for network security
It controls the incoming and outgoing network traffic.
A firewall establishes a barrier between a trusted, secure internal network and the Internet
It logs incoming and outgoing traffic
It stops malicious traffic
It prevents computers connecting to unwanted sites
It prevents untrusted/unrecognised computers accessing data on the system

11 (a) Cloud is large groups of remote networked servers
They allow centralised data storage   [2]

(b) Six from:

Disadvantages
Loss of control of the data…
…as the data is controlled by a data storage provider.
…the user needs to be able to trust the service provider and its staff.
…security issues with the storing of the data with the provider
…fire/flood/electricity spikes can affect data without the user knowing.
The data remains on the server for a length of time…
…easier to be hacked as more copies of it available…
…available for longer…
…users must use strong passwords/authentication methods as hackers have longer time to be able to crack the password…
…as several copies of the data are available
If data is not encrypted…
…can lead to security issues due to loss of control/hacking.
If connection is lost then the cloud cannot be accessed…
…data could be lost due to this.
If there is a mass/lot of data the data could be split over several servers…
…may have problems retrieving the data.
…may lead to security issues.
…data may be lost during the saving process.
Cost of using cloud is more expensive than buying a hard disk/SSD…
…most computers come with a hard disk/SSD
Difficult to delete <u>all</u> copies of a file…
…as the data is stored/backed up several times.

Advantages
The data is accessible anywhere…
…helps to migrate data from one device to another.
…helps to synchronise data.
Don't have to buy storage devices…
…some devices do not have hard disks/storage
…the cloud can be used for all storage requirements.
More storage space than using physical devices…
…the cloud has lots of storage
Don't have to manage the storage…
…the service provider manages the storage
…user does not have to worry about security measures as service provider secures data.
Allows many users to access the data…
...as the data is stored centrally.
Only pay for the storage you use…
…much of the space on the hard disk may be wasted.   [6]

A mark can be awarded for a reasoned conclusion.
If one side of the argument i.e. all advantages/disadvantages then 3 marks max.
If both sides have been addressed but without expansions/comparisons then 4 marks max.

12 **Five** from:

Computer checks the input from the user is authentic.
Computer is programmed with pre-set values.
Computer reads data from the sensors.
If the light sensor is activated…
If the contact switch is activated…
If pressure greater than pre-set value…
If sound greater than pre-set value…
If temperature greater than pre-set value…
If the movement sensor is activated…
Computer sends signal to sound the alarm.
Computer sends signal automatically to the police station/alarm company/security company.
Computer sends signal the flashing lights/house lights.
Computer sends message/text/calls automatically to the owner.   [5]

13 **Three** from:

Knowledge base
Rules base
Inference engine
Interactive user interface   [3]

14 **(a)** **For example**
   Video camera to inspect the finished product   [1]
   Light sensors used to detect position of the car   [1]
   Pressure sensor to make sure the car part is gripped correctly   [1]

   (b) **Three** from:

   Running costs are cheaper than paying humans a wage.
   Robots can operate continuously.
   Cars are built to a more consistent standard.
   Robots are more accurate.
   Can be used in hazardous conditions.
   Greater productivity   [3]

   (c) **Three** from:

   If a change is made in the manufacturing process the robot needs to be re-programmed.
   If a robot makes a mistake it will continue to make the same mistake.
   Expensive to set up/maintain
   Robots are not capable of performing tasks autonomously without guidance from
   humans/they cannot think for themselves.
   If they break down then they are difficult/impossible to repair.
   If the robot breaks down the whole process stops.
   The abilities of robots are suitable only for simple activities in which no major difficulties are
   met.   [3]

(d) Three from:

3D digital copy is made and put in the software.
Software slices the model into hundreds of layers.
Printer creates the model layer by layer.
Binds them together [3]

15 (a) Two from:

Routers inspect/read the IP address of the data packets sent to it
Sends the data packet to a switch with that IP address
It may use the MAC address of the switch to do that by converting the IP to a MAC using ARP…
…until it finds the corresponding switch [2]

(b) WiFi

Any **two** from:

Can connect to the internet from any room in a house
No cables
Can be used on multiple devices [2]

Satellite

Any **two** from:

This is broadband
Useful for general use of the internet
(Connects via satellites so) better coverage
Can be used almost anywhere in the world [2]

3G/4G

Any **two** from:

Used in mobile devices laptops/tablets/smartphones
Connects wireless through the 3G or 4G network
Allows access on the move
Allows access even if no WiFi available
Not affected by rain or snow as satellite communication [2]

16 (a) Four from:

To test the balance is negative change the values in the outgoings so the total is larger than the total income
Test each individual outgoing so it is larger than 100/abnormal testing
Test each individual outgoing so it is equal to 100/extreme testing
Test so the total outgoing is equal to total income
Type in a negative income
Type in a negative outgoing
Test each individual outgoing so it is less than 100/normal testing
Test using live data [4]

(b) Three from:

Use conditional formatting…
…to check cell content greater than 100
…in the range B4 to B8
Use shading/highlighting cells…
Set up a validation check…
…range check 0–100
If outside the range displays an error message [3]

17 Four from**:**

the system has cameras/CCTV
The images and the text from the number plate are captured by the camera
Infrared lighting is used so it can be used in all weathers/at night
The system uses optical character recognition
The licence/number plate is checked against its database to find the car owner's details [4]

18 **One** from each section:

Electrocution – for example:
No liquids or drinks allowed near computers
Check insulation regularly
Use RCB (residual circuit breakers)
Insulate wires [1]

Fire – for example:
Have a CO_2 fire extinguisher
Don't cover equipment
Good ventilation
Don't overload sockets [1]

Tripping over trailing leads – for example:
Use cable ducts/place cables under carpets/fasten cables to walls
Use wireless devices
Organise cables [1]

Heavy equipment falling – for example:
Place devices in the middle of a table/not near the edge
Use large desks
Use sturdy desks
Make sure wires are tucked out of the way to stop device being dragged off [1]

19 To be marked as a level of response:

Level 3 (7–8 marks):
Candidates will address both aspects of the question and discuss/consider different advantages/disadvantages. 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 advantages/disadvantages 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 advantages and disadvantages. Answers may be simplistic with little or no relevance.

Level 0 (0 marks)
Response with no valid content. [8]