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 May/June 2016 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.
1 (a) Touchpad [1]

(b) Joystick/trackerball [1]

(c) Keyboard [1]

(d) scanner [1]

2

<table>
<thead>
<tr>
<th>TRUE (✓)</th>
<th>FALSE (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A mouse is an output device</td>
<td>✓</td>
</tr>
<tr>
<td>The Control Unit is part of the Central Processing Unit</td>
<td>✓</td>
</tr>
<tr>
<td>The Arithmetic and Logic Unit is part of the Central Processing Unit</td>
<td>✓</td>
</tr>
<tr>
<td>A temperature sensor is an input device</td>
<td>✓</td>
</tr>
</tbody>
</table>

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

3

<table>
<thead>
<tr>
<th>Internet (✓)</th>
<th>Intranet (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A public computer network</td>
<td>✓</td>
</tr>
<tr>
<td>It is easier to protect sensitive data from hackers</td>
<td>✓</td>
</tr>
<tr>
<td>The content is more easily controlled</td>
<td>✓</td>
</tr>
<tr>
<td>Exists within a single organisation only</td>
<td>✓</td>
</tr>
</tbody>
</table>

4 correct answers – 2 marks
2 or 3 correct answers – 1 mark
1 correct – 0 marks
4  (a)  a (computer) virus  [1]

(b)  encryption  [1]

(c)  https/SSL/TLS  [1]

(d)  a digital certificate  [1]

5  Four from:

Use a spam filter/anti-spam software  
Do not reply to spam/suspicious messages  
Do not click on any links/attachments in a spam/suspicious message  
Use a disposable email address  
Use a complex email user name  
Do not give out your email address online/do not register using email on untrusted websites/opt out of marketing  
Read messages as text  
Do not use your email address as an online username  
Changing to an email provider who filter spam  [4]

6  (a)  A WLAN  [1]

(b)  (i)  A (Wireless) Access Point/wireless node  [1]

(ii)  It is connected to a switch/hub  [1]

(c)  Can get interference from another radio signal/speed of data transmission can be slower  
Other valid answers like physical obstacles/walls  [1]

7  (a)  Two from:

Voice over Internet Protocol  
A set of rules that enable people to use the Internet to make telephone calls/talk each other  
Sends voice data in packets using IP  [2]

(b)  Two from:

Microphone  
Speakers/headphones  
Headset  [2]
8 **Two** from:

Can lead to unhealthy eating due to dependency on ready meals
Can lead to laziness
Lack of fitness/exercise
Manual household skills are lost **[2]**

9 **(a) Four** from:

The bank account details are read from the chip
The (ATM) checks to see if the card is valid
The customer is asked which language/currency they require
The customer is asked to type in their PIN
The typed PIN number is compared with that stored in the chip…
…if they are the same the transaction proceeds
…if they are not the same the customer is asked to re-enter PIN
If three failed attempts transaction rejected and card withheld
The customer is asked which service is required
Customer is asked if they want a printed balance/onscreen balance
If yes, signal sent to print balance/message sent to screen giving balance
The customer is asked if further services are required **[4]**

**(b) Three** from:

Checks whether card is stolen/account number exists
Customer account number is searched
Balance field is read/is calculated
Message sent to ATM giving balance **[3]**

10 **(a) (i)** Account number **[1]**
Bank/branch sort code **[1]**
Cheque number **[1]**

**(ii) Three** from:

Requires a special Magnetic Ink Character reader/scanner/Details are scanned
The magnetic ink on the cheque passes over a magnet in the reader/scanner which charges/magnetises the ink
The MICR reader/scanner then reads the magnetic signal given out by the magnetic ink characters on the cheque.
Each character produces a unique signal which is read and translated by the MIC reader

**(b) Two** from:

More difficult to forge
Even if overwritten/damaged can still be read by computer
Information is human readable **[2]**
11 Three matched triples from:

Direct changeover
New system replaces existing system immediately/overnight
A small organisation which can afford to lose data/where system needs to be up and running very quickly/where the new system has been thoroughly tested

Parallel running
New system runs alongside/together with existing system
An organisation with large amounts of data which would take too long to re-enter / cannot afford to lose data/where time taken/cost to implement is not an issue/where the new system needs to be thoroughly tested

Phased implementation
New system is implemented part by part
An organisation where there are clearly defined separate processes/where the new system needs to be thoroughly tested

Pilot running
(Whole) system is implemented in one branch/one office (at a time)
An organisation where there are several branches all doing the same work)/where the new system needs to be thoroughly tested

[9 max]

12 (a)

<table>
<thead>
<tr>
<th>Field name</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Text/alphanumeric</td>
</tr>
<tr>
<td>Studentid</td>
<td>Text/alphanumeric</td>
</tr>
<tr>
<td>Gender</td>
<td>Boolean</td>
</tr>
<tr>
<td>Height</td>
<td>Integer</td>
</tr>
<tr>
<td>Staying on/Leaving</td>
<td>Boolean/Logical</td>
</tr>
</tbody>
</table>

(b) Two matched pairs:

Gender
M for male, F for female

Staying on to 6th form /Leaving
S/6 for Staying on to 6th form, L for Leaving

[4]

(c) Studentid... – 1 mark
...Ascending – 1 mark

[2]
13 **FTP**
File Transfer Protocol/is used to transfer files from one computer to another (1 mark)

*Differences*

**Three from:**
HTTP is used to access the world wide web/web sites
FTP is used to download from file servers whereas http is used to download from web servers
FTP – files are transferred from one device to another and copied into memory
HTTP transfers the contents of a web page into a browser for viewing.
FTP upload is used in cases when the file size is very large
HTTP upload is used for smaller files. [4]

14 (a) **Three from:**

Looks through the (contents of cells) H4 to H24
See if they are equal to (the contents of cell) B4/’AF’
It totals the contents of the corresponding cells from I4 to I24
Produces the result 65 [3]

(b) =SUMIF($H$4:$H$24,B8,$I$4:$I$24)

= SUMIF($H$4:$H$24, – 1 mark
B8, – 1 mark
$I$4:$I$24) – 1 mark [3]

(c) =COUNT(I4:I24)

COUNT – 1 mark
(I4:I24) – 1 mark

OR

=COUNTA(I4:I24)
COUNTA – 1 mark
(I4:I24) – 1 mark [2]
15 Six from:

- avoid using information from sites that have excessive advertising
- avoid using sites where the information from sites where advertising is related only to its own products
- avoid sites where the date of the last update was a long time ago
- avoid using wikis/sites which the user can edit
- avoid using blogs/sites which are clearly the owner’s point of view/social networking sites
- Avoid using sites which have grammatical/spelling mistakes
- Don’t just rely on using first website you come to in the results of using a search engine
- use information from sites where responsible bodies have endorsed the site/sites which have links to other reliable sites/sites which have testimonials
- use sites where the author’s credentials are good
- use sites which have .ac, .gov, .edu as the final part of the URL/only use government/academic sites
- Compare information from different sites/reliable/authenticated text books to see if the results are similar
- Ask teachers for advice on a site

In order to obtain full marks candidates must have at least one mention of things they should do and things they should avoid doing

16 (a) .txt

Two from:
- Text file with very little/no formatting/used by a variety of text editors
- Can be opened by any software package that reads text/generic text format
- Any formatting is lost when saved

(b) .gif

Two from:
- Graphic interchange format
- Bitmap graphic format/GIF files use data compression to reduce the file size
- Image format that will allow still or moving images to be stored

(c) .pdf

Two from:
- Portable document format
- Makes it possible to display text and graphics in the same fixed layout on any computer screen
- Reduces file size of read only document for transmission
17 **Five** from:

- In h1 colour should be color
- In h1 sans serif should be sans-serif
- In h1 18 px should be 18px (no space)
- In h2 color: 000000 should be color: #000000/color: #000
- In h2 Times New Roman should be “Times New Roman”/’Times New Roman’
- In h2 centre should be center

18 To be marked as a level of response:

**Level 3 (7–8 marks)**
Candidates will describe in detail at least two types of user interface
Detailed reasons why a keyboard is used with CLI systems will be given
Detailed reasons why pointing devices are used with GUI systems
Detailed reasons why different input devices relating to other different types of user interface are used may be given
Descriptions of different types of pointing device
The information will be relevant, clear, organised and presented in a structured and coherent format
Specialist terms will be used correctly and appropriately

**Level 2 (4–6 marks)**
Candidates will describe at least two types of user interface
Reasons why a keyboard is used with CLI systems will be given
Reasons why pointing devices are used with GUI systems
Reasons why different input devices relating to different types of user interface are used may be given
Different types of pointing device will be listed
For the most part, the information will be relevant and presented in a structured and coherent format
Examples will be given and will be mostly appropriate
Specialist terms will be used appropriately and for the most part correctly

**Level 1 (1–3 marks)**
Candidates will identify at least one user interface
Input devices may be in the form of a list
There will be little or no use of specialist terms
Errors of grammar, punctuation and spelling may be intrusive

**Level 0 (0 marks)**
Response with no valid content

Examples

*Command Line Interface*
With a CLI Instructions must be typed to get a computer to carry out an action
keyboard is used to type
Typing is key component of CLI
With CLI syntax has to be precise
Devices other than a keyboard would be less accurate when entering text

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Graphical User Interface
With a GUI you just click on an icon
With a GUI icons represent applications
Separate windows are used for different pieces of work/software
With a GUI menus are offered to help choose an action
Moving a mouse enables users to manoeuvre a pointer around a screen
A mouse can be used to drag windows/icons around a screen
People with physical disabilities can use a trackerball to manoeuvre the pointer around a screen
Pointing devices are easier to control a pointer/menu selection/icon clicking
Joysticks can be used to mimic the behaviour of a mouse
Buttons on the mouse enable users to select icons
Buttons on a mouse enable users to see menus on a screen
Touchscreen can be used to directly select options from a screen [8]