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 2014 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.
1 (a) Two from:
Microphone
Keyboard
Mouse  [2]

(b) Speakers
Screen  [1]

(c) Two from:
DVD drive
Internal hard disc drive
Pen drive  [2]

2

<table>
<thead>
<tr>
<th>Activity</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading data from bank cheques</td>
<td>✓</td>
</tr>
<tr>
<td>Reading data from candidate exam answer papers</td>
<td>✓</td>
</tr>
<tr>
<td>Inputting data ready for processing by a word processor</td>
<td>✓</td>
</tr>
<tr>
<td>Inputting pencil mark data from a school register</td>
<td>✓</td>
</tr>
</tbody>
</table>

3

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dot matrix printer</td>
<td>printing on multipart stationery</td>
</tr>
<tr>
<td>Chip reader</td>
<td>reading information from the front of bank cards</td>
</tr>
<tr>
<td>Magnetic tape drive</td>
<td>making fileserver backup copies</td>
</tr>
<tr>
<td>Bar code reader</td>
<td>to read data from a product at a POS terminal</td>
</tr>
</tbody>
</table>

4

<table>
<thead>
<tr>
<th>Activity</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is easy to keep in immediate contact with friends</td>
<td>✓</td>
</tr>
<tr>
<td>You can share photographs with friends</td>
<td>✓</td>
</tr>
<tr>
<td>You can do internet banking using a social networking site</td>
<td>✓</td>
</tr>
<tr>
<td>You can access everybody’s personal details</td>
<td>✓</td>
</tr>
</tbody>
</table>

5 (a) On-line  [1]

(b) Serial  [1]

(c) Sensor  [1]
6

PEN DOWN
LEFT 90
FORWARD 20
RIGHT 90
FORWARD 70
REPEAT 2
PENDOWN
END REPEAT

1 mark for each correct instruction

7 (a) Temperature
    Time

(b) Five from:
    Microprocessor switches heater on
    Microprocessor receives data from temperature sensor
    Temperature of oven is compared with pre-set value by microprocessor
    If higher microprocessor switches heater off
    If lower microprocessor leaves heater on
    Time is constantly monitored by microprocessor
    Time elapsed/finish time is compared to pre-set time by microprocessor
    ...microprocessor causes buzzer to sound

8 (a) Range check

(b) (i) 0, 25 or 80
(ii) 0 or 80
(iii) 87

(c) =if(C2>=45,"Pass","Fail")

Correct syntax of if()
C2>=45
"Pass","Fail"
(d) **Three** from:
- Click on D2 and manoeuvre to bottom right hand corner of cell
- Drag black cross down to D32

**Or**

- Right click on D2 select copy from menu
- Select D3 to D32
- Right click and click on paste

**Or**

- Highlight cells D2 to D32
- Click on Fill
- Click on down

(e) **Two** from:
- Cost of building real thing may be expensive
- Real thing may waste raw materials/natural resources
- Easier to change data/variables
- Costs less to change data/variables
- The real thing may be impossible to access/create
- Real thing may be on too vast a scale
- Extremes which can’t be tested in real life can be tested using models

9 (a) A flowchart

(b) Analysis

(c) Hacking

(d) A password

10

<table>
<thead>
<tr>
<th>Higher charges can be made</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>They have fewer bad risks</td>
<td></td>
</tr>
<tr>
<td>Less paid out in wages as fewer staff need to be employed</td>
<td>✓</td>
</tr>
<tr>
<td>Lower costs as fewer buildings need to be rented</td>
<td>✓</td>
</tr>
<tr>
<td>A wider customer base is available</td>
<td>✓</td>
</tr>
<tr>
<td>Mistakes are never made.</td>
<td></td>
</tr>
<tr>
<td>Less actual cash handled so there are fewer robberies</td>
<td>✓</td>
</tr>
<tr>
<td>The initial cost of hardware is cheap</td>
<td></td>
</tr>
</tbody>
</table>
11 (a) **Four from:**
- Robots have to be reprogrammed when there is a small change/can’t think for themselves
- Robots need programming in order to be adaptable
- Expensive start-up costs – redundancy payments
- Expensive start-up costs – have to spend money on training workers to use robots
- Expensive start-up costs – buying of robots/programming of robots
- Computer crash would halt production
- Maintenance/repair costs can be expensive [4]

(b) **Two from:**
- It is quieter
- They have a safer environment
- It is a cleaner environment [2]

12

<table>
<thead>
<tr>
<th>Task</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing the payroll</td>
<td></td>
</tr>
<tr>
<td>Producing utility bills.</td>
<td></td>
</tr>
<tr>
<td>Printing credit card statements.</td>
<td></td>
</tr>
<tr>
<td>Paying for goods using EFTPOS.</td>
<td>✓</td>
</tr>
<tr>
<td>Processing bank cheques overnight</td>
<td></td>
</tr>
<tr>
<td>A microprocessor controlled greenhouse.</td>
<td>✓</td>
</tr>
</tbody>
</table>

13 (a) **Two from:**
- Primary key/key field(s)/foreign key would be identified…
- …would be used to link the tables together [1] [1]

(b) **Two from:**
- Data does not have to be typed in twice
- Quicker to enter/update/edit data
- Fewer errors are likely
- Reduces storage requirements [2]

(c) **Three from:**
- Can store vast amount of information
- Has a fast data access speed
- Has a fast data transfer speed
- Most computer systems come with hard discs [3]
(d) **Member number:** Length check/(invalid) character check/type check/range check

   *Sport code:* Length check/format check

   [2]

(e) Chip reader/magnetic stripe reader

   [1]

(f) **Two** from:

   - It is faster to enter data
   - More accurate/fewer errors

   [2]

(g) **Three from:**

   - How to load software/ run software/install software
   - How to save a file
   - How to search
   - How to sort
   - How to print
   - How to add records
   - How to delete/edit records
   - Purpose of the system
   - Input format or example
   - Output format or example
   - Hardware requirements
   - Software requirements
   - Sample runs/test runs
   - Limitations of the system
   - Troubleshooting guide/contact details/help line/FAQs
   - Error messages/handling
   - Tutorials

   [3]

(h) **Three** from:

   - Program coding/listing
   - Name of program language
   - System flowchart
   - Program flowchart/algorithm
   - List of variables
   - File structure
   - Known bugs
   - Validation routines
   - Purpose of the program

   [3]
14 Four from
Internet is network of networks/intranet doesn’t have to be a network of networks
Internet is global
Intranet is within one organisation
Intranet is private/internet is public
Intranets tend to be policed/managed
Intranet has an extra layer of security
Data found in an intranet is likely to be more reliable/relevant than that found on the Internet
Internet has more information than an intranet

15 (a) Three from:
Microprocessor controlled devices do much of housework
Do not need to do many things manually
Do not need to be in the house when food is cooking
Do not need to be in the house when clothes are being washed
Can leave their home to go shopping/work at any time of the day
Greater social interaction/more family time
More time to go out/more leisure time/more time to do other things/work
Are able to do other leisure activities when convenient to them
Microprocessor controlled burglar alarm provides a sense of security
Do not have to leave home to get fit
Can encourage a healthy lifestyle because of smart fridges analyzing food constituents

(b) Three from:
Can lead to unhealthy eating due to dependency on ready meals
Can lead to laziness/lack of fitness
Manual household skills are lost
These may malfunction and, because the individual has left the device unattended, this can lead to fires/damage to the house

16 Three matched pairs (with a different method for each one) from:
Data could be amended
Use a username and password so that only the person who knows these can access the data
Use biometrics so that only that person who has those characteristics can access the data
Use a firewall which prevents unknown computers accessing a network

Data could be deleted
Use a username and password so that only the person who knows these can access the data
Use biometrics so that only that person who has those characteristics can access the data
Use a firewall which prevents unknown computers accessing a network

Data could be read and passed on
Encryption so that data is unreadable to unauthorised users
17 Four from:
If computer is switched off work in RAM goes but backing storage stores data for future use
Backing storage is cheaper than IAM per unit of memory so more cost effective to have both
IAM is bulkier than backing storage per unit of memory so more sensible to have both
IAM provides faster access than backing storage so as there has to be backing storage computer
needs IAS to speed up operations
Software package may be so large that it is physically impossible for RAM to store it
Data may need to be transferred from one computer to another and can't do that with RAM [4]