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 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
1 A Numeric keypad  B Chip reader  
    C Remote control  D Trackerball  

2 Bridge  DVD R  Light pen  
    Magnetic tape  Printer  Switch  

3

<table>
<thead>
<tr>
<th>TRUE</th>
<th>FALSE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawing money from an ATM is an example of batch processing</td>
<td>✓</td>
<td>[1]</td>
</tr>
<tr>
<td>The processing of bank cheques is an example of batch processing</td>
<td>✓</td>
<td>[1]</td>
</tr>
<tr>
<td>Booking a theatre ticket is an example of online processing</td>
<td>✓</td>
<td>[1]</td>
</tr>
<tr>
<td>Producing utility bills is an example of online processing</td>
<td>✓</td>
<td>[1]</td>
</tr>
</tbody>
</table>

4 (a) The most suitable storage medium for storing data on a bank card is a chip [1]

(b) The tool which searches for matches in a knowledge base an inference engine [1]

(c) An optical disc which can have data updated is a DVD RW [1]

(d) Multi part stationery is used with a dot matrix printer [1]

5 Bar code reader → To enter hard copy images into a computer [1]

Microphone → creating a piece of text [1]

Scanner → selecting items from a menu [1]

Keyboard → inputting data from a food item at a POS [1]

Mouse → creating a voice over for a presentation [1]
6 (a) Two from:

Less likely to lose it
May have stronger signal
Display is larger/keyboard is larger
Content is not as limited
Can be faster to access internet
No problem with batteries running out
Has a mouse so is easier to navigate/use [2]

(b) Two from:

Don’t always have access to PC/there may be a power cut
Difficult to carry/not very portable/mobile phone is portable/Cannot access internet except in the house
You have to buy extra hardware/router [2]

7

<table>
<thead>
<tr>
<th></th>
<th>Internet</th>
<th>Intranet</th>
</tr>
</thead>
<tbody>
<tr>
<td>is a network of computer networks</td>
<td>✓</td>
<td>[1]</td>
</tr>
<tr>
<td>exists usually within one organisation</td>
<td></td>
<td>✓ [1]</td>
</tr>
<tr>
<td>anybody can access it</td>
<td>✓</td>
<td>[1]</td>
</tr>
<tr>
<td>can be expanded to become an extranet</td>
<td></td>
<td>✓ [1]</td>
</tr>
</tbody>
</table>

8

<table>
<thead>
<tr>
<th></th>
<th>Spam</th>
<th>Pharming</th>
</tr>
</thead>
<tbody>
<tr>
<td>is the sending of several emails at once</td>
<td>✓</td>
<td>[1]</td>
</tr>
<tr>
<td>requires malicious code to be downloaded</td>
<td></td>
<td>✓ [1]</td>
</tr>
<tr>
<td>re-directs the user to a fake website</td>
<td></td>
<td>✓ [1]</td>
</tr>
<tr>
<td>is the sending of unsolicited messages</td>
<td>✓</td>
<td>[1]</td>
</tr>
</tbody>
</table>
9 Four instructions and four paired meanings from:

<table>
<thead>
<tr>
<th>INSTRUCTION</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORWARD $n$</td>
<td>Move $n$ mm forward</td>
</tr>
<tr>
<td>BACKWARD $n$</td>
<td>Move $n$ mm backward</td>
</tr>
<tr>
<td>LEFT $t$</td>
<td>Turn left $t$ degrees</td>
</tr>
<tr>
<td>RIGHT $t$</td>
<td>Turn right $t$ degrees</td>
</tr>
<tr>
<td>PENUP</td>
<td>Lift the pen</td>
</tr>
<tr>
<td>PENDOWN</td>
<td>Lower the pen</td>
</tr>
<tr>
<td>REPEAT $n$</td>
<td>Repeat the following instructions $n$ times</td>
</tr>
<tr>
<td>END REPEAT</td>
<td>Finish the REPEAT loop</td>
</tr>
</tbody>
</table>

1 for instruction and 1 for meaning  [8]

10

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>A file is a collection of related records</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A field is one item of data such as name or address</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The same value can occur several times within a key field</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>A record is the complete data about one student</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

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11 (a) Four from:

Sensors are used to monitor patient’s vital signs
...such as temperature, blood pressure, pulse, sugar levels (2 required for mark)
Sensors send data/signals back to computer
ADC converts analogue signals from sensors...
...to digital so that computer can understand/read the data
Graphs are output
Inputs are compared to acceptable range of values
If higher/lower warning signal is triggered [4]

11 (b) Four from:

Readings can be taken more frequently
Nurses can get tired and forget to take readings/nurses are so busy they might not be able to take readings regularly
Computer readings are more accurate/human errors are reduced
More than one variable can be measured at any one time
Results can be analysed automatically/Charts are produced automatically
Automatic warnings can be generated/faster to react
Nurses are free to do other tasks
Reduces chances of nurses being exposed to contagious diseases
Reduced cost of wage bill/fewer nurses will be needed [4]

12 (a) E5 [1]

(b) Any of A1:B6, C1:G1, B8, E8 [1]

(c) 7 [1]

(d) = C2*F2 or = C2* (E2–D2) [1]

(e) 1 mark per point

Highlight F2 and click copy
Highlight F3:F6 and click paste

OR

Highlight F2 and manoeuvre to bottom right hand corner of F2
Using fill handle/little black square/cross drag down to F6/double click on fill handle/little black square/cross

OR

Highlight F2:F6
Click on fill then down [2]
12 (f) Three from:

- Real thing may be too expensive to build/cost of rebuilding/repairing is expensive
- Real thing requires too large a time scale/it may take a long time to obtain results from the real thing
- Real thing would be too wasteful of materials
- Real thing is too vast a scale
- Easier to modify/change date/variables
- Costs less to change data/variables
- The real thing may be impossible to access/create
- Real thing may be too dangerous
- You can test predictions more easily/model can make predictions more accurately
- You can ask many what if questions which would be impractical in real life  [4]

13 Four from:

- With a CLI Instructions must be typed to get a computer to carry out an action
- With a GUI you just click on an icon
- With a GUI icons represent applications
- With a CLI you have to remember the exact path and name of application
- With a GUI it is more important that users understand how a computer works
- With a CLI menus are offered to help choose an action
- With CLI have to learn/understand comments  [4]

14 (a)

<table>
<thead>
<tr>
<th>Field name</th>
<th>Validation Check</th>
<th>[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference_number</td>
<td>Character check/range check/length check/check digit</td>
<td>[1]</td>
</tr>
<tr>
<td>Year</td>
<td>Range check/Character check</td>
<td>[1]</td>
</tr>
<tr>
<td>First_name</td>
<td>None</td>
<td>[1]</td>
</tr>
<tr>
<td>Family_name</td>
<td>None</td>
<td>[1]</td>
</tr>
<tr>
<td>Sibling</td>
<td>Yes or No</td>
<td>[1]</td>
</tr>
</tbody>
</table>
(b) **Five** from:

Verification is checking that data has been entered/copied correctly
Usually achieved by double data entry…
…or visual check
Validation is checking that data entered is reasonable/sensible
One mark is available for a correct **explanation** of an example of one validation check

*Must have both because:*
Data might be sensible but has not been transcribed/transferred accurately
Data might have been transcribed/transferred accurately but may not be sensible

15 (a) **Two** from:

Browser to access bank’s website
ISP to have access to internet

(b) **Six** from:

*Advantages*
Don’t have to waste time travelling (long distances) to banks
Don’t have to spend money on travelling expenses travelling (long distances) to banks
No embarrassment of having to ask for loans face to face
Can bank when banks are closed
Can use it anywhere if there’s an internet connection

*Disadvantages*
May not like the lack of personal touch
There may be less opportunity for socialising with friends/neighbours
Possibly more expensive phone bills
Hackers can access personal details and transfer money to their account
You have to have Internet access
Unable to withdraw cash

One mark is available for a reasoned conclusion
**Maximum** four advantages or disadvantages

16 **Four** from:

Can be a website/software
Users can create/add content/pages
Users can modify content/pages
Users can delete content/pages
Using a web browser
Using a simplified mark-up language/a rich-text editor
Are often created collaboratively by multiple users
Examples include community websites, corporate intranets, knowledge management systems
17 **Three** from:

- Electrocution – RCB installed/don’t allow liquids near computers/make sure cables are insulated
- Fire – CO₂ extinguisher/don’t overload sockets
- Tripping – create ducts/cover cables with carpets etc.

18 **Five** 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
- Can lead to unhealthy eating due to dependency on ready meals
- Can lead to laziness/lack of fitness
- Can encourage a healthy lifestyle because of smart fridges analysing food constituents
- Microprocessor controlled burglar alarm provides a sense of security
- Do not have to leave home to get fit
- Manual household skills are lost/deskilling regarding household tasks

19 **Five** from:

- Causes data to be scrambled/encoded
- Requires an encryption key/software to encrypt
- Requires a decryption key/encryption software to decrypt
- Results in data which is not understandable/readable

**Benefits:**
- Protects sensitive data...
- …from being understood if it falls in to the wrong hands
- Only user/computer with key can understand data

**Drawbacks**
- Data can still be deleted from system
- Criminals can use encryption to keep incriminating material secure