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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
1 A Laser printer (1)  
   B Plotter (1)  
   C Multimedia projector (1)  
   D Monitor (1)  

2 Blu ray disc Graphics tablet (1) Inkjet printer  
   Motor Optical mark reader (1) Speaker  

3

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>A magnetic stripe reader is an example of hardware</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A memory stick is an example of software</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A word processor is a form of operating system</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A CD has a greater storage capacity than a DVD</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

4 Fixed hard disc Making backups of file servers  
   Flash memory card Transferring files from one computer to another  
   Magnetic tape Storing software sold by a company  
   Pen drive Storing data which needs to be accessed quickly  
   DVD ROM Storing photographs in a digital camera  

5 (a) Birthday Date  
   (b) Gender Boolean  
   (c) Home phone number Text  
   (d) Number of brother and sisters Integer  

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6

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM is volatile</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>RAM is used to store the startup instructions of a computer</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>The data in ROM is easier to change than that in RAM</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>ROM is used to store the data the user is currently working on</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

1 mark for each 2/3 statements [4]

7

```
FORWARD 50
PENUP
FORWARD 40
PENDOWN
FORWARD 60
PENUP/RIGHT 90
RIGHT 90/PENUP
FORWARD 60
RIGHT 90/PENDOWN
PENDOWN/RIGHT 90
FORWARD 80
```

1 mark for each 2/3 statements [5]

8

<table>
<thead>
<tr>
<th>Device</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub</td>
<td>(1)</td>
</tr>
<tr>
<td>Printer</td>
<td></td>
</tr>
<tr>
<td>Scanner</td>
<td></td>
</tr>
<tr>
<td>Switch</td>
<td>✔ (1)</td>
</tr>
<tr>
<td>Bridge</td>
<td>✔ (1)</td>
</tr>
<tr>
<td>Monitor</td>
<td></td>
</tr>
</tbody>
</table>
9

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying for goods at an EFTPOS terminal</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Booking a holiday using a computer</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing credit card bills</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Processing cheques</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

[4]

10 (a) **Three** from:
- Humidity
- Moisture
- Temperature
- Light

(b) **Five** from:
- Computer monitors sensors
- Temperature is compared with preset value
- If lower than preset value computer switches on heater
- If lower than preset value computer shuts windows
- If higher than preset value computer switches heater off
- If higher than preset value computer switches fan on
- If higher than preset value computer opens windows
- Humidity is compared with preset value
- Moisture level is compared with preset value
- If lower than preset value computer switches on sprinkler
- If higher than preset value computer switches off sprinkler
- Light is compared with preset value
- If lower than preset value computer switches on light bulb
- If higher than preset value computer switches off light bulb

(c) **Three** from:
- More reliable readings taken at regular intervals
- Computers are more accurate than human beings
- Computers can work continuously/without taking a break
- Computers do not forget to take readings
- Computers can take readings more frequently
- Computers can respond to changes immediately/quicker than human beings

[5]
11 (a) 3

(b) 5

(c) Three from:
The personal details file and test results files would be saved as separate tables
Primary key/key field(s)/foreign key would be identified
The 'Unique ID number' set to primary key would be used to link the tables together [3]

(d) 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]
12 (a)

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining field length is part of the design of the file structure</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Screen layouts are designed before the system is implemented</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The new system is evaluated before it is designed</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>The existing system is analysed before the new system is designed</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

(b) Normal data – data within a (given) range/appropriate for that data type (1)
Abnormal data – data outside the range/of the wrong data type (1)
Extreme data – data on the boundaries of the range (1)

(c)

<table>
<thead>
<tr>
<th>Actions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce user documentation</td>
<td></td>
</tr>
<tr>
<td>Design the new system</td>
<td></td>
</tr>
<tr>
<td>Compare the solution with the original task requirements</td>
<td>✓</td>
</tr>
<tr>
<td>Analyse the existing system</td>
<td></td>
</tr>
<tr>
<td>Identify any limitations of the system</td>
<td>✓</td>
</tr>
<tr>
<td>Identify any necessary improvements to the system</td>
<td>✓</td>
</tr>
<tr>
<td>Analyse the users’ responses to the results of testing the system</td>
<td>✓</td>
</tr>
<tr>
<td>Produce technical documentation</td>
<td></td>
</tr>
</tbody>
</table>

(d) Technical documentation

- Two from:
  - So improvements can be made to system
  - To know how to repair system
  - To know how to maintain system

- User documentation

- Two from:
  - Help users to learn/know how to use system
  - Help users to overcome problems
13  (a) Router/modem (1)

   (b) Email (1)

   (c) Web browser (1)

   (d) ISP (1)

14  (a) Encryption

   Two from:
   Despite hackers being able to intercept data
   Data is scrambled
   So that hackers cannot understand/read the data
   Need to have encryption/decryption key to make data readable/understandable [2]

   Passwords
   Two from:
   Linked to username
   Compared to stored data
   Hackers cannot access data without knowing the password
   Password can be regularly changed/robust passwords make it difficult for hackers to guess [2]

   Biometric data
   Two from:
   Use of fingerprints/retina scans
   Compared to stored data
   Almost impossible to replicate [2]

(b) Three from:
   Fewer cashiers/security staff needed – less spent on wages
   Fewer branch offices needed – less spent on rates/rent/utilities
   Less actual cash handled – fewer robberies
   Cheaper to advertise
   Lower postal charges
   Have access to a wider customer base [3]

(c) Three from:
   Less danger of mugging
   Don’t have to waste time travelling to bank
   Don’t have to spend money on travelling
   Can bank at any time of day or night/can bank when banks are closed
   Can use it anywhere if there’s an internet connection
   Can ask for a loan over the Internet without being embarrassed [3]
15 Six from:
   **Advantages**
   Can call meeting at short notice
   No need to pay travelling expenses
   Can work from home
   Will save time travelling
   Do not have to pay hotel expenses
   Do not have to pay for conference room facilities
   Safer as participants do not have to travel
   Don’t have to transport/carry equipment/lots of documents/documents don’t get lost in transit

   **Disadvantages**
   Takes time to learn new technology/to be trained
   Difficult to have international meetings because of time differences
   Initial cost of hardware
   Equipment can break down/power cuts can stop conference
   Strength of signal/time lag/lip sync can be a problem/ connection can be lost/power cuts
   Loss of personal/social contact
   Legal documents cannot be signed

   +1 for reasoned conclusion

16 Three from:
   Phishing is done by email
   Can invite you to go to a website/respond to an email
   Pharming is done by installing malicious code on a pc or server
   Redirects a genuine website’s traffic to hacker’s website

17 Seven from:
   Type in/use keyboard
   Use touch screen
   Scan Bar code/use bar code reader
   Swipe Magnetic stripe/magnetic stripe reader
   Use biometric methods
   OMR
   Chip reader

   **Three max. for methods**
   Magnetic stripe quicker than keying in
   Bar codes more accurate than keying in
   Magnetic stripe more accurate than keying in
   Keyboard entry more robust than bar codes
   Keyboard can be used to enter additional data unlike bar code reader
   Magnetic stripe more robust than bar codes
   Biometric methods difficult to forge
   Biometric methods more accurate than other methods