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 Magnetic stripe (1)  B Chip (1)  C Optical marks (1)  D Bar code (1) [4]


3

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer programs are examples of hardware</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>An internet browser is an example of software</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A pointer is used to select items in a command line interface</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>A PDA is larger than a desktop computer</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

4 (a) A microphone is used in the recording of voices for presentation software [1]
(b) A remote control is used to control a multimedia projector [1]
(c) A keyboard is used to write a letter [1]
(d) A chip reader is used to read information from a bank card [1]
(e) A joystick is used in a flight simulator [1]

5 Three from:
- Can act as a web server
- Can act as a buffer (between internet and LAN)
- Server passes on requests to the internet
- Passes the requested web pages to individual computers
- Can cache/store the webpages
- Subsequent requests for that/those web page(s) are responded to more quickly
- Can be used to monitor internet usage
- Can block certain sites [3]
6 Three from:
  Can store more data
  Easier to carry/more portable
  Majority of computers have USB ports/many school computers don’t have CD drives
  Speed of access is quicker
  Speed of data transfer is quicker
  Pen drives are more robust/less prone to damage  [3]

7 PENDOWN
   FORWARD 70.
   PENUP
   FORWARD 70.
   PENDOWN
   FORWARD 40.
   RIGHT 90
   FORWARD 50.
   RIGHT 90
   FORWARD 80

   1 mark for each pair of statements  [5]

8 (a) Two from:
   Web log
   Personal journal/online diary
   Owners’ observations/opinions on a topic
   Can have links to other sites
   Others can post comments
   Frequently updated by owner  [2]

(b) Two from:
   Allows users to create/edit web pages using a web browser
   Many people can contribute/edit/update entries
   Anyone can contribute so not to be taken as totally accurate
   Holds information on many topics which can be searched  [2]

9

<table>
<thead>
<tr>
<th>Activity</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawing money from an ATM</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing utility bills</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Booking a plane ticket</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing payslips</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

[4]
10 Three from:
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) [3]

11 (a) Three from:
Computer (readings) more accurate than students
Students might forget to take readings/readings can be taken at regular intervals
Students might be unavailable to take readings during school holidays
Computers can analyse the results immediately/ can produce graphs more quickly
Readings can be taken more frequently
Readings can be taken any time of day or night [3]

(b) Five from:
Save spreadsheet in suitable format
Create graphs
Load word processing software
Frames could be created
Insert spreadsheet/import spreadsheet/copy and paste spreadsheet/embed spreadsheet
Insert/copy and paste graphs
Type in text/description of weather
Edit text/description of weather
Import/insert pictures
Format report [5]

(c) Three from:
Cheaper to make than the real thing
Real thing may represent too large a time scale (genetics etc.)
Real thing may be wasteful of materials
Real thing may be on too vast a scale
Easier to change data/variables
Costs less to change data/variables
The real thing may be impossible to access/create [3]

12 Five from:
The stock file is searched
Until a match is found with the entered bar code
The number in stock of the matching record is read
One/number purchased is subtracted from the number in stock
The number in stock is compared with the re-order number
If it is equal to/less than the re-order number then more goods are automatically re-ordered
The new value of number in stock is written back to the file
Next bar code is read [5]
13  (a)  C3  

(b)  Any one of A1:G1 or of A1:A6 or of B2:B6 or B8 or E8 or F8  

(c)  =E5–D5  

(d)  =C2*F2 or =C2*(E5–D5)  

(e)  Two from:  
   Highlight/click on/select G2  
   Copy G2 and paste into G3:G6  

   Highlight/click on/select G2  
   Copy/Fill down to G6  

14  (a)  Three from:  
   Examining documents about the system  
   Distribute questionnaires to users of the system  
   Interview users of the system  
   Observing the system/staff  

(b)  Three from:  
   Field name  
   Field type  
   Key field  
   Field length  
   Validation check/rules  

(c)  Direct changeover – new system replaces existing system immediately/overnight (1)  
   Parallel running – new system runs alongside/together with existing system (1)  
   Phased implementation – new system is implemented part by part (1)  
   Pilot running – system is implemented in one branch/one office (at a time) (1)
15 (a) Two from:
Optical Mark Recognition
Pencil/pen marks are read by scanner/Reader
Position of marks are identified [2]
Exam papers/school registers/lottery/multiple choice questionnaires [1]

(b) Two from:
Optical Character Recognition
Text is read by scanner
image compared with characters stored in computer
Converted to text for use with other software [2]
Utility bill/turnaround documents/word processors/mail/passports/id cards/car number plates [1]

(c) Two from:
Magnetic Ink Character Recognition
characters read by magnetic reader
characters compared with characters stored in computer
Converted to text for entry into system [2]
Bank cheques [1]

16 (a) Three from:
Robots produce the same standard every time
Cost – once bought they do not have to be paid/fewer employees so lower costs
No industrial disputes
Greater productivity
Greater accuracy
Can work in hazardous/extreme conditions/can lift heavier loads
Robots don’t take breaks/can work 24 hours a day 7 days a week [3]

(b) Three 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 [3]
17 **Hardware:**
- Network cards
- Modem/router
- Hub

**Software:**
- (Internet) browser
- Firewall software
- Anti-virus software
- Anti-spyware software

**Others:**
- ISP
- Cables
- Telephone line

Must have at least one hardware item and one software item to gain full marks. [4]

18 (a) **Two** from:
- Pressure
- Moisture
- Motion

(b) Computers work in digital
- Sensors send analogue data
- ADC

(c) Compares temperature with pre-set value
- If temperature lower than preset value microprocessor switches on heater
- If temperature higher than/equal to preset value microprocessor switches off heater/does nothing

19 **Two** from:
- Visual verification/checking
- Read through data on screen
- Compare with source document

**Two** from:
- Double data entry
- Data is typed in twice by one typist
- Data is typed in by two operators
- Computer compares versions
- If different freezes/sounds buzzer