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 May/June 2012 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
1. A Flash memory card [1]
   B Magnetic disc [1]
   C Magnetic stripe [1]
   D Joystick [1]

2. CRT monitor [1]
   DVD ROM [1]
   Magnetic tape [1]
   Number pad [1]
   Plotter [1]
   Trackerball [1]

3. True  False

   Control software is used to create slide shows ✓
   Palmtop computers do not have DVD drives ✓
   Presentation software can be used to produce databases ✓
   An internet browser uses an inference engine ✓
   Motors are output devices ✓

4. (a) A dot matrix printer produces hard copy in harsh conditions. [1]
    (b) A microphone inputs sounds. [1]
    (c) A multimedia projector is used to show slideshows. [1]
    (d) A presence check is a validation rule. [1]
    (e) A magnetic tape is used to create backups from a server’s hard disc. [1]

5. Three from:
   Temperature sensor
   Pressure sensor
   Moisture sensor
   Humidity sensor
   Light sensor
   Motion sensor [3]
6. to select options from a list → keyboard
   to type data into a database → optical mark reader
   to input candidate examination answers → chip reader
   to input data directly from a bank card → mouse

7. PEN DOWN
   BACKWARD 140
   LEFT 90 PENDOWN
   REPEAT 5 REPEAT 4
   FORWARD 50 FORWARD 60
   RIGHT 72 RIGHT 90
   END REPEAT
   PENUP

   One mark for every line except the square then one mark per two instructions

8. |                        | True | False |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Encryption prevents hackers from understanding the data</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Encryption destroys viruses</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Encryption prevents unauthorised access to computer systems</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Encryption is the scrambling of data</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

9. Five from:
   Data is gathered/collected from experts
   Knowledge base is designed/created
   A structure to relate each item in the database / knowledge base is created
   An interrogation technique to access the data is created
   A user interface/method of displaying the results/method of inputting data/ input screen/output screen is designed/created
   The inference engine is designed/created
   The rules base is designed/created
   The system is tested
10 **Four** from:
- User/customer is in direct contact with the main computer/CPU
- Appears that nobody else can access system at that point/processing is almost immediate
- Computer asks customer for details of flight
- Computer asks for personal details of passengers
- Computer searches for matching flights
- Computer may display list of seats available
- Computer may ask customer to select a seat
- (Customer selects seat from those available and) computer flags seat as booked
- Computer asks customer to complete payment details
- Computer checks details are valid by communicating with customer’s bank
- Computer checks if sufficient funds
- Airline’s database is updated immediately
- Number of seats available reduces by number booked
- Prevents double booking
- Confirmation/e-ticket may be sent to customer by email

11 **Three** matched pairs from:

- **Hub**
  - Broadcasts data packets to computers in a LAN
- **Switch**
  - Directs data to specific computers
- **Bridge**
  - Connects two LANs together to form a larger LAN/Directs data packets to specific networks
- **NIC**
  - Enables computer to be connected to a network

12 **(a)**

<table>
<thead>
<tr>
<th>Number of bedrooms</th>
<th>integer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>currency</td>
</tr>
<tr>
<td>Property Type</td>
<td>Boolean</td>
</tr>
<tr>
<td>Floor space/area</td>
<td>numeric</td>
</tr>
</tbody>
</table>

1 mark for each correctly filled gap
(b) **Five** from:
- Parallel running is running the old and new system together
- Direct changeover is stopping the old system and starting the new one immediately
- Parallel running is more expensive to implement than direct changeover....
  ....more expensive as two sets of workers have to be employed
- Benefits of direct changeover are immediate whereas this is not the case with parallel running.
- Parallel running is slower to implement
- If new system fails there is no backup system with direct changeover but there is with parallel running
- With parallel running training can be gradual unlike direct changeover which is difficult to organise [5]

13 **Three** matched pairs from:

- Normal
  Within a given range such as 30 out of 50

- Abnormal outside the given range or of wrong data type such as 56 out of 50 or ‘sixty’

- Extreme
  At the boundaries of the given range e.g. 0 or 50 [6]

14 **Two** matched pairs

- Proxy server
  The proxy server can restrict the web sites students can access/can block access to sites with objectionable material

- Firewall
  Limits the computers (using IP address) that can access the system/that can be accessed from within the school

  Applying parental guidance settings.
  Can block undesirable topics [4]

15 (a) **Six** from:

- Checks to see if the value of A7 is “D”
- If it is, the value in B7/4.00 is multiplied by the value in B2/10%
- If it isn’t, checks to see if the value in A7 is “N”
- If it is, the value in B7/4.00 is multiplied by the value in B3/15%
- If it isn’t, checks to see if the value in A7 is “P”
- If it is, the value in B7/4.00 is multiplied by the value in B4/20%
- If it isn’t, “FALSE” is generated
- A7 contains “D”

  In this example answer is $4.00 \times 10\% / \text{answer is $0.40}$ [6]

(b) **$1.00** [1]
(c) **Three** from:
   Clicked on C7 and manoeuvred to bottom right hand corner of cell
   Until black cross appears
   Black cross dragged down to C18

   Or **three** from:
   
   Right clicked on C7 select copy from menu
   Selected C8 to C18
   Right click and click on paste

   Highlight cells C7 to C18
   Click on Fill
   Click on down

   \[d\] \(= b7 - c7\)

   \[e\] **two** from:
   can see what will happen without spending a lot of money
   results can be seen in a shorter space of time
   you can ask many whatif questions which would be impractical in real life
   Easier to change data/variables
   You can test predictions more easily/model can make predictions more accurately

16  **Window** – an area on the screen that displays information for a specific program.

   Icon represents a folder or a program – can be seen within a window or freestanding on screen

   Menus – contains lists of options for a certain program/software

   Pointing device/Pointer – used to select menu options/icons/close/open windows
17 Six from:

*Advantages of DTP*
- Can be sure every local family gets to see it
- Not everybody has a computer/internet/modem
- Can read it anywhere/not limited to where computer is.

*Disadvantages of website*
- Can't be sure every local family gets to see it
- Not everybody has a computer/internet/modem
- Can't read it anywhere/ limited to where computer is.

*Disadvantages of DTP*
- Takes time to physically distribute by hand
- Might need to pay somebody to distribute by hand
- Costs of ink/paper/printing
- Not as easy to update
- Not interactive/hyperlinks
- No animation/video
- No sound

*Advantages of website*
- No costs of ink/paper/printing
- Easier to update
- Interactive/hyperlinks
- Animation/video
- Sound

Allow one mark for a reasoned conclusion

18 Six from:
- Car workers have been made unemployed
- Car workers have had to be retrained
- Car workers have become deskillled
- More technical staff have been employed
- Work areas are cleaner
- There is a healthier environment
- Workers have a safer environment
- Fewer manual tasks

[6]