1. Name the devices A, B, C and D using the words from the list.

A  
Microphone

B  
Scanner

C  
Pen drive

D  
Web cam

2. Ring two items which are input devices.

- Flash memory card
- Graph plotter
- Laser printer
- Magnetic disc

3. Tick TRUE or FALSE next to each of these statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>TRUE</th>
<th>FALSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation software is used to create slide shows</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Laptop computers do not have USB ports</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>DTP software can be used to produce databases</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Measurement software is used to create magazines</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Buzzers are input devices</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

4. Complete each sentence below using one item from the list.

- A bar code reader is used to input data about products at a POS.
- A laser printer is used to produce high quality hard copy.
- A temperature sensor sends data to a microprocessor in a washing machine.
- A graphics tablet is used to input freehand drawings to a computer.
- A speaker is used to output sounds from the computer.
5 A school teacher is creating a slide show to describe a typical week in her life.

(a) Tick three items of hardware which she would use.

| Item          |  
|---------------|------------------|
| Database      | ✓                |
| Keyboard      | ✓                |
| Spreadsheet   |                  |
| Animation     |                  |
| Microphone    | ✓                |
| Video camera  | ✓                |

(b) She has been advised that it could be easier to use a Blog rather than create a slide show.

Give one advantage and one disadvantage of using a Blog.

One advantage from:
- She can update it more regularly
- More personal
- Can be used as a diary
- More interactive

One disadvantage from:
- Has to be continually updated
- Animation/video/sound more difficult to incorporate
- It's possible for people she might not want (e.g. outside school) to see her blog
- Not everyone she would want to see it might have the internet

6 A floor turtle can use the following instructions:

<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>PENUPT</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>
7. Draw four lines on the diagram to match the use to its most appropriate output device.

Use: dot matrix printer
Output device:
- to produce very large high quality hard copy
- to display data from a computer on to a large screen
- to alert mobile phone users to incoming calls
- to output multipart forms

8. A school keeps records of its students, using many different types of data. Explain what is meant by Boolean, alphanumeric and numeric data, using examples of student data.

Boolean
Meaning
Data that is only one of two possible values such as yes/no, true/false
Example
Gender/Absent or present

Alphanumeric
Meaning
Any character of the alphabet or number or punctuation mark
Example
Name/Tutor group/Address/Phone number

Numeric
Meaning
Must be a digit(s) or decimal number
Example
Number of siblings/exam marks/number of days present/absent
9. Tick TRUE or FALSE next to each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>TRUE</th>
<th>FALSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Records are updated immediately when using online processing</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>A transaction file is often created when batch processing is used</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>The processing of bank cheques is an example of batch processing</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>Batch processing is needed for operating ATMs</td>
<td>☑</td>
<td></td>
</tr>
</tbody>
</table>

10. A group of doctors want to have an expert system to help them with their diagnoses. Describe how such a system would be created.

- Data is gathered/colllected from experts
- Knowledge base is designed and 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 and output screen is designed and created
- The inference engine is designed and created
- The rules base is designed and created
- The system is tested

11. The manager of a bookshop uses a database to store data about the books she sells. This is part of the database.

<table>
<thead>
<tr>
<th>Title of book</th>
<th>Fiction (Y/N)</th>
<th>Number in stock</th>
<th>Next order due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Circle</td>
<td>N</td>
<td>15</td>
<td>20/06/11</td>
</tr>
<tr>
<td>Sanditon</td>
<td>Y</td>
<td>18</td>
<td>08/07/11</td>
</tr>
<tr>
<td>Vanity Fair</td>
<td>Y</td>
<td>23</td>
<td>16/10/11</td>
</tr>
<tr>
<td>The Old Curiosity Shop</td>
<td>Y</td>
<td>10</td>
<td>23/06/11</td>
</tr>
<tr>
<td>Pride and Prejudice</td>
<td>Y</td>
<td>12</td>
<td>23/06/11</td>
</tr>
<tr>
<td>Sense and Sensibility</td>
<td>Y</td>
<td>26</td>
<td>02/10/11</td>
</tr>
<tr>
<td>The Moon's a Balloon</td>
<td>N</td>
<td>12</td>
<td>21/08/11</td>
</tr>
</tbody>
</table>

(a) How many fields are there in this part of the database?

Four fields

(b) How many records are there in this part of the database?

Seven records

(c) The records shown are to be sorted in ascending order of Number in stock. What will be the title of the book which will be the first record in the database after it has been sorted?

The Old Curiosity Shop 1

Prepared by Mrs. Magda M. Kamel & Eng. Gamal Orphy
M: 01001025852
(d) What is the title of the book which has no more than 12 copies in stock and is not Fiction?

The Moon’s a Balloon

(e) Describe a validation check which could be carried out on the Next order due field.

Format check
Checks data in each record is in same format
Data in the form dd/mm/yy
Must be two digits then slash then two digits then slash then two digits

OR

Length check
No less than 8 characters
No more than 8 characters only

OR

(Invalid) character/type check
Only digits or slashes can be entered
No alphabetic or punctuation marks other than slash

OR

Range check
Day must be <32
Month must be less than 13
Year must be <100
All items must be >0
Whole date must be < today

12 The main memory in computers is becoming very large. Give three reasons why backing storage is still needed.

- Data in main memory will be lost when computer shuts down and it is needed for future use
- Data in main memory can be corrupted
- Data in main memory can be accidentally deleted
- Data/software may need to be switched from machine to machine

13 A large company has a LAN. The manager of the company wants to allow all the network users to access the internet and communicate with other companies.

(a) Describe the hardware and software he would need in order to achieve this.

- Router to connect LAN to Internet
- Proxy server to send requests for pages/receive pages for passing on to users
- Internet browser to search for information
- Email software to communicate with other (external) users
- Electronic conferencing hardware such as: Microphone, speaker and web cam
- Electronic conferencing software

(b) Give three disadvantages to the manager of allowing workers to access the internet.

Get distracted from own work
Viruses could be downloaded
Spyware could be downloaded
Hackers could get into the system
14 Describe two safety issues, caused by working with computers. For each safety issue give a method of prevention. Do not use the same method for both answers.

Problem – Electrocution might be caused due to
Prevention – RCB installed/don’t allow liquids near computers

Problem – Trailing cables trips users up
Prevention – Create ducts/cover cables with carpets etc.

Problem – Heavy equipment falling injuring users
Prevention – Sturdy tables

Problem – Description of how fire might be caused
Prevention – CO2 extinguisher/don’t overload sockets

15 Eric wants to type in details of new customers into a database. He needs to design an on-screen input form.

Describe four features, apart from navigational aids, of a well-designed on-screen input form.

Data fills the screen
Clearly defined input area for each field
Tick boxes/radio buttons to enter choices
Drop down menus to select data options

Appropriate spacing for each field
An easy to read font/font size
A sensible font colour/background colour
Easy to follow instructions for completing screen/help icon

No overlapping of items

16 After a system has been implemented it needs to be tested. Describe two testing strategies and state a reason why each is needed.

1. Testing each module with normal/live data/user testing
To see how system behaves in an ordinary day to day situation and system works as you would expect i.e. no error messages/to ensure system meets the needs of the user

2. Testing each module with abnormal and extreme data
To see how system reacts in unusual circumstances and to make sure error messages appear when data is abnormal

3. Testing whole system
To ensure the whole system works when all modules are combined

17 Many homes now have microprocessor controlled burglar alarm systems.

(a) Name two sensors used in such a system and for each explain what it is used for.

Sensor – infra red/movement/proximity
Use – detect movement of burglar

Sensor – pressure
Use – detect body weight

Sensor – temperature
Use – detect body’s presence by monitoring temperature

Sensor – light
Use – detect break in light beam

Sensor – sound
Use – detect any noise made by burglar
(b) Describe the role of the microprocessor in such a system.

- Microprocessor continually monitors sensors.
- If light sensor detects light beam interrupted
- If movement sensor activated
- If contact switch activated
- If pressure sensed by processor is greater than preset value
- If temperature sensed by processor is greater than preset value
- If sound sensed by processor is greater than preset value
- Microprocessor sends signal to output device

(c) There are many microprocessor controlled devices in the modern home. Describe the effects of these on people’s lifestyles.

- 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 analyzing food constituents
- Microprocessor controlled burglar alarm provides a sense of security
- Manual household skills are lost

18 A head teacher wants to send the school magazine to parents. Discuss the advantages and disadvantages of sending it by email or delivering it by hand.

Email
Advantages
Saves school cost of printing copies
Can include colour at no extra cost
Can include animated text effects
Disadvantage
Need to have everyone’s email address/not every home has an email address/computer/internet access
Email might be treated as Spam
People might not welcome unsolicited emails

By hand
Advantage
Can be sure everybody gets a copy
Easier to target who head wants to get it
Disadvantage
Cost of delivery/paying someone to deliver
One mark available for reasoned conclusion
19 International companies may use video conferencing instead of face to face meetings.

(a) Describe the use of three hardware devices in video conferencing.
Web cam/video camera to input/capture video (images of participants/documents)
Router/modem to transmit data to participants’ (computers)
Microphone to input voices of participants/to speak to other participants
Headphones/speakers to output voices to participants/hear other participants
Large screen/projector to see other participants
Router to connect to internet

(b) Describe two advantages to the company of such a system.
Saves travelling time
Do not have to pay for conference room
Do not have to hire transport/pay travel costs
Conferences can be called at short notice
Don’t have to carry bulky documents to conference

20 Encrypted data is used in on-line banking. Describe encryption.
Causes data to be scrambled/encoded
Requires an encryption key/software to encrypt
Requires decryption key/encryption software to decrypt the data
Results in data which is not understandable/readable
Protects sensitive data from being understood if it falls in to the wrong hands