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

   A: Pen drive  
   B: Chip reader  
   C: Remote control  
   D: Graphics tablet

2. Ring two network devices.
   - CD RW  
   - PIN  
   - Hard disk  
   - Plotter  
   - Hub  
   - Switch

3. Tick whether the following items will appear in User or Technical documentation.

<table>
<thead>
<tr>
<th>Item</th>
<th>User</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequently asked questions</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>Program coding</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>System flowcharts</td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Trouble-shooting guide</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

4. Complete each sentence below using one item from the list.
   - a bar code reader  
   - a CD ROM  
   - an inkjet printer  
   - a keyboard  
   - a knowledge base  
   - a magnetic hard disc

   (a) The most suitable storage medium for storing data on a network server is a magnetic hard disc.
   (b) Lists of illnesses and their symptoms are stored in a knowledge base.
   (c) An optical disc which cannot have data updated is a CD ROM.
   (d) Photos are output using an inkjet printer.

5. Draw five lines on the diagram to match the software to its most appropriate use.

   - Desktop publishing software  
   - Measuring program  
   - Presentation software  
   - Inference engine  
   - Database

   - Keeping a record of phone numbers  
   - Matching illnesses to symptoms  
   - Producing a multimedia slideshow  
   - Monitoring the weather  
   - Producing a magazine
6. Tick whether the following statements apply to a CLI (Command Line Interface) or a GUI (Graphical User Interface).

<table>
<thead>
<tr>
<th>Instructions must be typed to get a computer to carry out an action</th>
<th>CLI</th>
<th>GUI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Icons represent programs</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>It is more important that users understand how a computer works</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Menus are offered to help choose an action</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

7. A student wishes to use floor turtle to draw this shape:
Name and explain the meaning of four instructions that the turtle graphics software would need to contain in order to draw the shape. No two lines are the same length.

![Shape diagram]

Start  
Finish

**Four matched pairs from:**

<table>
<thead>
<tr>
<th>INSTRUCTION</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORWARD n</td>
<td>Move n forward</td>
</tr>
<tr>
<td>BACKWARD n</td>
<td>Move n 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>
</tbody>
</table>

1 for instruction  
1 for meaning

8. A greenhouse is controlled by a microprocessor.
(a) Tick three physical variables that would be monitored.

<table>
<thead>
<tr>
<th>Physical variable</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>✓</td>
</tr>
<tr>
<td>Temperature</td>
<td>✓</td>
</tr>
<tr>
<td>Pressure</td>
<td>✓</td>
</tr>
<tr>
<td>Wind speed</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>✓</td>
</tr>
<tr>
<td>Wind direction</td>
<td></td>
</tr>
</tbody>
</table>
(b) Explain the difference between measurement and control.

- **Measurement** is the monitoring of physical variables without the microprocessor taking action.
- **Control** is when the microprocessor takes action depending on sensor readings.

(c) Give four advantages of using a computer rather than allowing the students to control the growing conditions.

Four from:
- Computer readings are more accurate than students.
- Computer takes more reliable readings.
- Students might forget to take readings.
- Computer readings can be taken/control can be carried out more frequently.
- Computer readings can be taken/control can be carried out any time of day or night.
- Computers can respond to changes immediately/quicker than students.
- Students might be unavailable to take readings during school holidays while computers can work continuously and without taking a break.

9 A sports shop owner uses a spreadsheet to calculate his profits. This is part of the spreadsheet.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Item</td>
<td>Selling Price</td>
<td>Cost price</td>
<td>Profit per item</td>
<td>Number in stock</td>
</tr>
<tr>
<td>2</td>
<td>Kino Trainers</td>
<td>$45.00</td>
<td>$40.00</td>
<td>$5.00</td>
<td>126</td>
</tr>
<tr>
<td>3</td>
<td>Goalagame Boots</td>
<td>$44.00</td>
<td>$38.00</td>
<td>$6.00</td>
<td>145</td>
</tr>
<tr>
<td>4</td>
<td>Melpchester Rovers shirt</td>
<td>$78.00</td>
<td>$65.00</td>
<td>$13.00</td>
<td>104</td>
</tr>
<tr>
<td>5</td>
<td>IOM football</td>
<td>$51.00</td>
<td>$42.00</td>
<td>$9.00</td>
<td>56</td>
</tr>
<tr>
<td>6</td>
<td>Beckett shinpads</td>
<td>$40.00</td>
<td>$32.00</td>
<td>$8.00</td>
<td>101</td>
</tr>
</tbody>
</table>

(a) Give the cell reference of the cell that contains $42.00

Any cell from e2:e6

(b) Give the cell reference of a cell that contains an integer.

Six rows

(d) Write down the formula which should go in cell D2.

\[ \text{D2} = \text{B2} - \text{C2} \]

(e) When the spreadsheet was created a similar formula to D2 had to go in cells D3 to D6. Describe how to enter these formulae without typing them.

Two from:
- Highlight D2 and click copy
- Highlight D3:D6 and click paste

OR
- Highlight D2 and manoeuvre to bottom right hand corner of D2
- Using fill handle/little black square/cross drag down to D6

OR
- Highlight D2:D6
- Click on fill then down
(f) This spreadsheet is an example of a financial model.
Give two examples of computer models, other than financial models.

Two from:
- Simulations
- Mathematical models
- Scientific models
- Civil engineering models

(g) Tick three reasons why computer models are used.

<table>
<thead>
<tr>
<th>Reason</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>The real thing may need to large a timescale</td>
<td></td>
</tr>
<tr>
<td>Computer models waste a lot of raw materials</td>
<td>✓</td>
</tr>
<tr>
<td>The real thing is quicker to build</td>
<td></td>
</tr>
<tr>
<td>If a computer model fails it doesn’t need rebuilding</td>
<td>✓</td>
</tr>
<tr>
<td>Once a computer model is built it doesn’t cost a lot to run</td>
<td>✓</td>
</tr>
<tr>
<td>A model doesn’t cost anything to make</td>
<td></td>
</tr>
</tbody>
</table>

10 Aftab owns a company which has a small network of computers.

(a) Give two advantages of having computers networked.

Two from:
- Only one printer is needed
- Only one scanner is needed
- Data can be shared between computers/data can be accessed by one computer from another more easily
- Software can be shared
- Software can be updated more easily
- All computers can access the internet through one connection

He wants to connect the computers to the internet.

(b) Name the device he would need to be able to do this.

Router or modem

(c) Give two benefits and two drawbacks of connecting to the internet.

Advantages – two from:
- Can communicate with other companies by email
- Can use the internet to place orders
- Can use the internet to buy materials
- Can hold video conferences
- Can create own website to publicise company

Disadvantages – two from:
- Workers may access undesirable sites
- Workers may waste time playing games-going on social network sites/updating their blog/online shopping/banking
- Viruses/malware could be downloaded
- Could make the company susceptible to hackers
11 Many banks offer internet banking. To access this online service customers have to log on to the system.
(a) Explain why authentication techniques are necessary.

Three from:
- Authentication techniques such as user names and passwords identify the user to the system
- Without authentication anybody would be able to access data
- Hackers would be able to amend/delete data without being prevented
- Banks would have to rely on other methods such as firewalls to prevent unauthorised access.

(b) Customer data is encrypted. Explain what encryption is and why it is used.

Three from:
- Causes data to be scrambled or encoded
- Requires an encryption key/software to encrypt
- Requires decryption key/encryption software to decrypt
- Results in data which is not understandable or readable
- Protects sensitive data from being understood if it falls in to the wrong hands

12 The growth of the internet has led to many new developments. Explain what the following terms mean.

Spyware
Two from:
- Software that gathers data from computers without the user realising
- It monitors and records all key presses
- It sends this information back to the hacker who sent it out

Spam
Two from:
- Electronic junk mail/sending of unsolicited emails
- Sent to everybody on a mailing list/many emails sent at once
- Can slow down networks
- Can fill up the receiver's mail box and therefore hard disk

Social networking site
Two from:
- Online communities of like minded users
- Enables users to share photos
- Enables users to communicate with each other
- Enables users to organise meetings
- Allows users to set up profiles
13 Anya has employed Raymond, a systems analyst, to create a new database system for sports day at her school. Here are some of the questions teachers and students might ask about the results of the athletics competition:

What position did Peter Njoka come in the 100 metres?
Who won the 1500 metres?
The winner of the 800 metres was wearing which Race ID?
Each athlete wore a Race ID consisting of one letter followed by three digits. The longest race is the 1500 metres.

(a) Complete the design table below filling in the field names and the most appropriate data types to create a database which would answer these questions.

<table>
<thead>
<tr>
<th>Field name</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race_ID</td>
<td>Text</td>
</tr>
<tr>
<td>Race_length</td>
<td>integer</td>
</tr>
<tr>
<td>Name</td>
<td>Text</td>
</tr>
<tr>
<td>position</td>
<td>integer</td>
</tr>
</tbody>
</table>

(b) Name and describe the most appropriate validation check which would be carried out on the Race_ID field.

Format check
- Checks the data is of the format beginning with a letter and ending in three digits and is only four characters long.

(c) Anya wants to have a system which will make it easy to enter data. Describe five features of a well designed input screen.

Five from:
- Appropriate spacing for each field
- Buttons to go forward/backwards
- Screen filled/not too much white space
- Drop down lists to choose an option (such as race length)
- Button to save data/submit/accept
- Clearly defined input area for each field
- Tick boxes/radio buttons to enter choices
- 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

14 Sarbjit has a desktop computer at home which he uses for internet banking.

(a) Identify two other computer systems he could use to do internet banking when away from home.

Two from:
- Smart phone
- Laptop with internet access
- Tablet computer
(b) Discuss the advantages and disadvantages to banks of using internet banking.

Six from:

**Advantages:**
- Fewer bank tellers so less paid out in wages
- Less actual cash handled – fewer robberies
- Have access to a wider customer base
- Fewer branch offices needed – less spent on rates/rent/utilities
- Less money spent on security staff

**Disadvantages**
- Initial cost of hardware/software is expensive
- Need to retrain staff
- Loss of customers/more difficult to sell other services due to lack of personal touch
- Costs of system maintenance

Note: Must have at least one of each to gain full marks

15 Give four advantages to bank customers of using ATMs rather than going to the bank to withdraw cash.

Four from:
- No embarrassment of not having sufficient funds
- Less time spent queuing
- Can get money any time of day or night
- Own bank may be further to travel to than nearest ATM
- Can use most ATMs/does not have to be own bank
- Have choice of languages so is easier to understand/be understood

16 Some mobile telephones (cell phones) can be used to make video calls. Describe four advantages of making video calls rather than sending messages by email.

Four from:
- You get immediate feedback
- You know you have the right person/don't have to worry that you’ve got the wrong email address
- You can ask questions immediately based on feedback/carry out an interactive conversation
- Less impersonal/less risk of upsetting recipient
- Can make yourself understood more easily
- You can see the other person’s reaction