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

   A: Multimedia projector  
   B: Speakers  
   C: Motor  
   D: Dot matrix printer

2. Ring two items which are storage media.

   Buzzer  
   DVD RAM  
   Mouse  
   Memory stick  
   Keyboard  
   Sensor

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

<table>
<thead>
<tr>
<th>TRUE</th>
<th>FALSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring software is used to write letters</td>
<td>✔️</td>
</tr>
<tr>
<td>DTP software is used to create magazines</td>
<td>✔️</td>
</tr>
<tr>
<td>PDAs cannot be used unless plugged in to an electricity socket</td>
<td>✔️</td>
</tr>
<tr>
<td>Database software is used to create slide shows</td>
<td>✔️</td>
</tr>
<tr>
<td>A working knowledge of HTML is helpful when creating web pages</td>
<td>✔️</td>
</tr>
</tbody>
</table>

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

   A bar code reader  
   A buzzer  
   A dot matrix printer  
   A graph plotter  
   A graphics tablet  
   An inkjet printer  
   A pressure sensor  
   OCR  
   A trackerball  
   A webcam

   (a) A graphics tablet is used to input a hand drawn image to the computer.
   (b) A pressure sensor is used to input data to a microprocessor controlled weighing scale.
   (c) A trackerball is an input device used by people with limited motor skills.
   (d) A graph plotter is an output device used to produce large hard copies of car designs.
   (e) A buzzer is an output device used in microwave ovens.
5. Tick three appropriate features of spreadsheet software which make it suitable for creating and using computer models.

- What ifs
- Queries
- Automatic recalculation
- Internet browsing
- Animation
- Data and formulae replication

6. A student wishes to use floor turtle to draw this shape:

Name and explain the meaning of three instructions that the turtle graphics software would need to contain in order to draw the shape.

```
<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>PENUP</td>
<td>Lift the pen</td>
</tr>
<tr>
<td>PENDOWN</td>
<td>Lower the pen</td>
</tr>
</tbody>
</table>
```
7 The Regionalisa Bank sends messages to its customers. Sometimes the messages are sent by fax and sometimes by email. Tick whether the following statements are TRUE or FALSE.

<table>
<thead>
<tr>
<th>Statement</th>
<th>TRUE</th>
<th>FALSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A faxed message is more private</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>An emailed message arrives with the customer more quickly</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>A faxed document can be used for legal purposes</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>An email attachment can be edited electronically</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

8 Describe what real time processing is, using a microprocessor-controlled central heating system as an example.

- It is an example of online processing
- Requires immediate response
- Involves the use of sensors/temperature sensors are used in central heating
- Physical variables/temperature is monitored continuously
- Requires the use of feedback
- The output affects the next input
- Heater switched on increases temperature
- Temperature above preset level causes microprocessor to switch off heater and temperature below preset level causes microprocessor to switch heater on

9 Car mechanics use expert systems to diagnose car faults.

(a) Describe how an expert system diagnoses these faults.

- Data is read by sensors/downloaded from onboard computer/entered using keyboard/touch screen/answers to questions are typed in
- Uses interactive interface/Asks questions that based on previous responses
- Expert system analyses data
- Inference engine compares data
- Compares data with that held in the knowledge base using rules base
- Matches are found
- System suggests possible faults/solutions

(b) Give two other uses of expert systems.

- Medical diagnosis
- Prospecting analysis
- Tax advice
- Careers analysis
- Chess games
- Animal/plant classification/identification
The manager of a supermarket uses a database to store data about the food he sells. This is part of the database.

<table>
<thead>
<tr>
<th>Food type</th>
<th>Number in stock</th>
<th>Re-order (Y/N)</th>
<th>Last order received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato flakes</td>
<td>123</td>
<td>N</td>
<td>23/10/10</td>
</tr>
<tr>
<td>Chocolate bar</td>
<td>158</td>
<td>N</td>
<td>25/10/10</td>
</tr>
<tr>
<td>Beefburgers</td>
<td>135</td>
<td>N</td>
<td>24/10/10</td>
</tr>
<tr>
<td>Gravy</td>
<td>89</td>
<td>Y</td>
<td>17/10/10</td>
</tr>
</tbody>
</table>

For each of the following fields describe an appropriate validation check. You must describe three different validation checks.

(a) Number in stock

Range check
Number must be no lower than zero/no higher than highest number/158

(Invalid) character/type check
Only digits can be entered – no other characters

(b) Re-order (Y/N)

Boolean check
Data must be true or false/N or Y

Length check
Must be exactly one character

(c) Last order received

Format check
Data must be two digits followed by slash followed by two digits followed by two digits

Length check
Must have the same number of characters/be no more and no less than 8 characters

Range check
Day must be <32/Month must be less than 13/year must be <100/All must be >0/
Whole date must be < today
11 Draw four lines on the diagram to match the use to its most appropriate input method.

<table>
<thead>
<tr>
<th>Use</th>
<th>Input method</th>
</tr>
</thead>
<tbody>
<tr>
<td>To input text from a printed document</td>
<td>Bar code reader</td>
</tr>
<tr>
<td>To input data from a bank cheque</td>
<td>Chip reader</td>
</tr>
<tr>
<td>To input data from a bank card</td>
<td>MICR</td>
</tr>
<tr>
<td>To input data about a product at a POS</td>
<td>OCR</td>
</tr>
</tbody>
</table>

12 The manager of a company wants to improve the security of the computer network. She has decided to use authentication techniques so that employees can identify themselves to the system. Name three authentication techniques and describe how each technique would help keep the data more secure.

User ID and one of: password/PIN/Memorable data
Password has to be entered before access is gained/Password can be changed frequently to avoid hackers guessing them/Unsuccessful logins can throw you out of the system

Magnetic stripe/smart card/electronic key/bar code system/ID card
Prevents people without cards accessing system

Biometric data
Fingerprint/retina/iris/face/voice recognition used as input/Biometric data is difficult to replicate

13 The prolonged use of computers can lead to health and safety problems.

(a) List two health problems that may be caused by the prolonged use of computers.

RSI – wrists
RSI – fingers
Headaches
Back problems/neck pain
Sight problems/Eye strain/dry eyes

(b) List two safety problems that may be caused by the use of computers.

Electrocution
Tripping over trailing cables
Fire/overheating of computers

14 A group of international schools wish to hold a video conference instead of a face to face meeting. Discuss the advantages and disadvantages to a school of using video conferences.

Three advantages from:
Documents/equipment do not have to be carried around
School can call meeting at short notice
Do not have to pay for travelling
Do not have to pay hotel expenses
Do not have to pay for conference room facilities  
Travelling time is saved  
Might be dangerous to fly/travel  
Disabled people may find it difficult to travel

Three disadvantages from:  
Takes time to train students  
Difficult to call international meetings because of time differences  
Initial cost of hardware  
Equipment can break down  
Strength of signal/bandwidth/lip sync can be a problem/connection can be lost/power cuts

15 Joseph wants to type in details of new customers into a database. He needs to design an on-screen input form.  
Describe four navigation aids that would be part of a well designed on-screen input form.

Back/previous record button/arrow/facility  
Forward/next record button/arrow/facility  
New record button/arrow/facility  
Submit/save button/facility  
First record button/facility  
Last record button/facility  
Exit button/return to homepage button/facility  
Move to top of page if long form  
Search facility

16 A company is developing a new computer system. After the new system is developed, it will be implemented.  
(a) Name two methods of implementation. Give one advantage and one disadvantage of each.

Parallel running/implementation  
Advantage: Information is not lost/always a second copy/training can be gradual  
Disadvantage: Expensive to run two systems together/expense of paying two sets of workers

Phased implementation  
Advantage: Still have most of system if things go wrong/no expense of running two systems together/no expense of paying two sets of workers/if latest phase fails only need to go back to that point/training can be gradual  
Disadvantage: Lose some data if things go wrong/more expensive than direct as each phase has to be evaluated before moving to next phase.

Direct implementation/changeover  
Advantage: Benefits are immediately available/do not have expense of running two systems together/less likelihood of errors as system will have been fully tested/It is the quickest method of implementation  
Disadvantage: If things go wrong lose all data/old system is not available/training is more difficult to organise

Pilot running  
Advantage: Still have most of system if things go wrong/no expense of running two systems together/Can train staff in one area only/have to pay fewer workers than parallel  
Disadvantage: More expensive than direct changeover as more workers are needed/slower method than direct/takes time to implement for whole company
(b) After the system is implemented it will be evaluated. Identify **three** activities which would need to be carried out in evaluating the system.

Comparison of the solution with the original task requirements
Identification of any limitations to the system
Identification of any necessary improvements
Analysing/collating users’ responses to using the system
Comparison of test results of new system with old system results
Comparison of the performance of the new system with performance of the old system.

17 There are many microprocessor-controlled devices in the modern home. Describe the effects of these devices 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 computer-controlled greenhouse is used by a school in a country with a cold climate.

(a) Tick **three** sensors which would have to be used in the greenhouse.

<table>
<thead>
<tr>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure sensor</td>
</tr>
<tr>
<td>Movement sensor</td>
</tr>
<tr>
<td>Light sensor</td>
</tr>
<tr>
<td>Temperature sensor</td>
</tr>
<tr>
<td>Moisture sensor</td>
</tr>
<tr>
<td>Infra red sensor</td>
</tr>
</tbody>
</table>

(b) Explain why computers are unable to read the data directly from these sensors.
**Computers work in digital while sensors produce analogue data**

(c) Describe how the microprocessor uses data from the sensors to control the greenhouse.

Temperature is compared with preset value
If lower microprocessor switches on heater
If lower microprocessor shuts windows
If higher microprocessor switches heater off
If higher microprocessor switches fan on
If higher microprocessor opens windows
Humidity is compared with preset value
Moisture level is compared with preset value
If lower microprocessor switches on sprinkler
If higher microprocessor switches off sprinkler

Light is compared with preset value
If lower microprocessor switches on light bulb
If higher microprocessor switches off light bulb

19 A number of people use methods to defraud online bank customers. Name and describe two of these methods.

Phishing
Hackers send an e-mail asking for a customer’s details/appear to be from the bank/says that the bank needs the information/asks the customer for password, card or account number

Pharming
Redirects a genuine website's traffic to hacker's website

Spyware/key logging software
Software which detects key presses on the keyboard when the user logs on to bank account

20 Mobile telephones are used for accessing the internet. Give two advantages and two disadvantages of using a mobile telephone rather than using a PC to access the internet.

Two advantages from:
- Usually have mobile phone in your possession
- Easy to carry/are portable
- Can access internet almost anywhere

Two disadvantages from:
- Easily lost
- May have poorer signal
- Display is smaller/keyboard is smaller
- Content is more limited
- Can be slower to access internet
- Batteries might run out
- No mouse so can be more difficult to navigate