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

A: Flash memory card  
B: Magnetic disc  
C: Magnetic stripe  
D: Joystick

2. Ring two items which are output devices.

- CRT monitor
- DVD ROM
- Number pad
- Plotter
- Magnetic tape
- Trackerball

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>Control software is used to create slide shows</td>
<td>✔</td>
<td>☑</td>
</tr>
<tr>
<td>Palmtop computers do not have DVD drives</td>
<td>☑</td>
<td>✔</td>
</tr>
<tr>
<td>Presentation software can be used to produce databases</td>
<td>✔</td>
<td>☑</td>
</tr>
<tr>
<td>An internet browser uses an inference engine</td>
<td>☑</td>
<td>✔</td>
</tr>
<tr>
<td>Motors are output devices</td>
<td>✔</td>
<td>☑</td>
</tr>
</tbody>
</table>

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

- A bar code reader
- A dot matrix printer
- A graphics tablet
- A laser printer
- A microphone
- A multimedia projector
- A presence check
- A speaker
- A temperature sensor
- A magnetic tape

(a) A dot matrix printer produces hard copy in harsh conditions.
(b) A microphone inputs sounds.
(c) A multimedia projector is used to show slideshows.
(d) A presence check is a validation rule.
(e) A magnetic tape is used to create backups from a server’s hard disc.
5 The head teacher of a school wants to build a weather station. She wants to use a computer to collect the results. List three sensors that would be needed.
- Temperature sensor
- Pressure sensor
- Moisture sensor
- Humidity sensor
- Light sensor
- Motion sensor

6 Draw four lines on the diagram to match the use to its most appropriate input device.
- 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 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>PENUP</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>

![Diagram](image)

Complete the set of instructions to draw this shape by filling in the blank lines.

PEN DOWN

LEFT.................. 90

REPEAT........... 5...

FORWARD.............. 50

RIGHT.................. 72.

END REPEAT......

END REPEAT....

PENUP
8. **Tick True or False next to each statement describing encryption.**

| Encryption prevents hackers from understanding the data | True |
| Encryption destroys viruses | True |
| Encryption prevents unauthorised access to computer systems | True |
| Encryption is the scrambling of data | True |

9. A group of car mechanics wants to have an expert system to help them with their work in diagnosing car engine faults.

Describe how such a system would be created. Five from:

- Data is gathered/collected from experts
- Knowledge base is designed/created
- A structure to relate each item in the database / The rules base is designed/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 system is tested

10. Describe online processing of data, using the booking of airline tickets as an example.

- 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/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. A manager of a new company has just purchased some computers. She wishes to connect these computers together to form a LAN.

Name and describe three network devices she might need to have in order to achieve this.

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 Chi has asked Toby, a systems analyst, to create a new database system for his property agency in France. He only deals with apartments and houses. Here are some of the questions customers ask:

Have you got a house for less than €500,000?
Have you got an apartment with three bedrooms?
Have you got a house with more than 160 square metres floor space?

(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>Number of bedrooms</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></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>

(b) Compare and contrast parallel running and direct changeover as ways of implementing the new database system.

Five from:
- Parallel running is running the old and new system together while Direct changeover is stopping the old system and starting the new one immediately
- Parallel running is more expensive to implement than direct changeover 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

13 A teacher has developed a new system for keeping a record of student examination marks on her laptop and wishes to test it. Each examination is marked out of 50. Identify three types of test data she could use and describe each type using an example.

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

14 Schools are concerned with the possibility that students are using the schools’ internet connections to access undesirable sites.
Name and describe two security methods the schools could use to prevent this from happening.

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

Firewall
- Limits the computers (using IP address) that can access the system/that can be accessed from/within the school
- Apply parental guidance settings.
- Can block undesirable topics
15 Paul, a manufacturer of goods, offers discounts. The discounts are coded D, N or P. Paul keeps the details on this spreadsheet.

(Commas are used as delimiters in the formulae shown below.)

<table>
<thead>
<tr>
<th>Code</th>
<th>Rate</th>
<th>Discount</th>
<th>Discounted Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Discount</th>
<th>Discounted Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>$0.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>$11.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>$5.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>$7.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>$14.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Explain what the formula in cell C7 does.

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 x 10% / answer is $0.40

(b) What value would you expect to see in cell C12?

$1.00

(c) The formula was entered into cell C7 using a keyboard.

Explain how to make this formula appear in cells C8 to C18 by just using a mouse:

- Clicked on C7 and move to bottom right hand corner of cell
- Until black cross appears
- Black cross dragged down to C18

Or:

- Right clicked on C7 select copy from menu
- Selected C8 to C18
- Right click and click on paste

Or:

- Highlight cells C7 to C18
- Click on Fill
- Click on down

(d) What formula should be typed into cell D7 to calculate the discounted price?

= b7 – c7

(e) Paul could extend this spreadsheet to calculate his total profit. He could then use it as a model. Give two reasons why financial models are used.

- 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 Describe four features of a graphical user interface (GUI).
- 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 A head teacher wishes to publicise school activities to make his school better known in the neighbourhood. He could do this by using the school’s website or producing a magazine using DTP to be delivered by hand. Discuss the advantages and disadvantages of each method.

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 Robots are now used on many car production lines. Describe how their use has affected the nature of employment in the car industry.

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.