(1) Name the objects A, B, C, D and E using the words from the list.

<table>
<thead>
<tr>
<th>CD ROM Drive</th>
<th>Joystick</th>
<th>Keyboard</th>
<th>Microphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midi interface</td>
<td>Monitor</td>
<td>Mouse</td>
<td>Plotter</td>
</tr>
<tr>
<td>Processor</td>
<td>Printer</td>
<td>Speaker</td>
<td>Web cam</td>
</tr>
</tbody>
</table>

A: Monitor  B: CD ROM Drive  C: Speaker  D: Mouse  E: Keyboard

2 Ring two output devices.
   joystick  pressure sensor
   scanner    bar code reader

3 Draw five lines on the diagram to match the hardware to where it would be used.

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar code reader</td>
<td>in a car designer’s office</td>
</tr>
<tr>
<td>Graphics tablet</td>
<td>in a bank for reading cheques</td>
</tr>
<tr>
<td>Joystick</td>
<td>at a point of sales terminal</td>
</tr>
<tr>
<td>Magnetic Ink Character reader</td>
<td>in a computer controlled greenhouse</td>
</tr>
<tr>
<td>Temperature sensor</td>
<td>in a flight simulator</td>
</tr>
</tbody>
</table>

4 Give three ways you can prevent other students from reading work you have saved on a computer.

   Three from:
   o Using passwords to prevent access to student’s work
   o Using password protection on individual files
   o Encrypting data
   o Frequent change of passwords
   o Using removable storage media
5. Tick whether the following are magnetic or optical media.

<table>
<thead>
<tr>
<th>Media</th>
<th>Magnetic</th>
<th>Optical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaz disk</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>DVD</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Compact disc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zip disc</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

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>PENCLOSE</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>

```
50      50
Start    250
```

```
PEN DOWN      PEN UP
LEFT 90       BACKWARD 250
REPEAT 8      PEN DOWN
FORWARD 50    REPEAT 8
RIGHT 45      FORWARD 50
End Repeat    RIGHT 45
End Repeat
```
7 A systems analyst has been asked to look at the possibility of computerising a video shop’s record keeping.

(a) Describe two ways of carrying out research into the existing system.
   Two from:
   - observation
   - interviews
   - questionnaires
   - examination of existing documentation

(b) After analyzing the existing system the systems analyst will design the computerized system. Give three items that the systems analyst will need to produce as part of the design.
   Three from:
   - data capture forms
   - screen layouts
   - reports/printout layouts
   - screen displays
   - validation routines
   - data/file structures

8 Tick two applications which use batch processing and two which use on-line processing.

<table>
<thead>
<tr>
<th>Application</th>
<th>Batch</th>
<th>On-line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booking a flight at a travel agent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Producing gas bills.</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Using EFTPOS in a supermarket.</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Reading data from bank cheques.</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

9 Name each type of network

(a) Star
(b) Ring
(c) Bus

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10. Give three items that should be included in the user documentation of a computer program.

Three from:
- Solution purpose
- Solution limitations
- Hardware requirements
- Software requirements
- How to use the system
- Input formats
- Output formats
- Sample runs
- Error messages
- Trouble-shooting guide

11. A property owner uses a database to store data about houses he sells. This is part of the database:

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>Air conditioning</th>
<th>Garden</th>
<th>Number of Bedrooms</th>
<th>Price ( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2132</td>
<td>Y</td>
<td>N</td>
<td>3</td>
<td>170000</td>
</tr>
<tr>
<td>L4323</td>
<td>N</td>
<td>Y</td>
<td>2</td>
<td>130000</td>
</tr>
<tr>
<td>L1232</td>
<td>N</td>
<td>Y</td>
<td>3</td>
<td>158000</td>
</tr>
<tr>
<td>L4321</td>
<td>N</td>
<td>N</td>
<td>4</td>
<td>210000</td>
</tr>
<tr>
<td>L5643</td>
<td>Y</td>
<td>Y</td>
<td>4</td>
<td>335000</td>
</tr>
<tr>
<td>L3423</td>
<td>N</td>
<td>Y</td>
<td>5</td>
<td>400000</td>
</tr>
<tr>
<td>L2342</td>
<td>Y</td>
<td>Y</td>
<td>4</td>
<td>285000</td>
</tr>
</tbody>
</table>

(a) The records shown are to be sorted in ascending order of price. What will be the reference number of the first record in the database after it has been sorted?

L4323

(b) Give the name of a field that contains a Boolean data type.

Air conditioning/Garden

(c) Identify the field type of the 'reference number' field.

Alphanumeric/Text

(d) Give two validation checks that could be carried out on the 'reference number' field.

Length check, Format check

(e) When new data is added to the database it has to be verified. Give two ways that this new data could be verified.

Visual verification, double entry

12. Complete the sentences using words from the list below.

(a) Bank cheques are read using _______ **MICR** _______

(b) Many items can be accessed from a magnetic tape one after the other. This is called

**serial** access.

(c) A software package which allows a computer to automatically manufacture goods

from drawings is called **CAD/CAM** _______
RAM is volatile & ROM is non-volatile.

Storing the user's work / storing the software that the user is using at that time.

9. Nine rows


B6

=SUM(F4:F7) or =F4+F5+F6+F7

14. Tick whether the following statements are TRUE or FALSE.

(a) RAM and ROM are types of Storage

RAM is volatile & ROM is non-volatile.

RAM contents will be lost when computer switched off, ROM contents will not.

RAM is volatile & ROM is non-volatile.

(b) Give one way a computer uses RAM.

Storing the user's work / storing the software that the user is using at that time.

16. Describe three ways that personal data held on a computer could be misused.

Hackers may read the data and pass it on.

Hackers may delete the data.

Hackers may amend the data.
17 Pupil records and school accounts are kept on a computer in the office of the school secretary.

(a) Select from the list **one** item of hardware and **two** items of software that are required.

- CAD
- floppy disc
- database
- data logger
- Graphics package
- hard disc
- spreadsheet

Hardware: hard disc  Software: database  Software: spreadsheet

(b) Give **two** occasions when a pupil’s record will need to be altered.

- Pupil leaves school
- New pupil joins school
- Personal details change: (address/phone etc.)

(c) The school is considering extending the system so that letters could be sent home to parents using the details that are stored on the computer. Name the process which would be used and the additional type of software they would need.

Process: mail merge  Additional type of Software: word processor

18 A school’s website contains details of homework set by teachers. Students can use their computers at home to do their homework and post their answers back to the school using e-mail.

(a) Describe **two** advantages to students using this method.

Two from:
- Don’t have to remember to take their books home/take their homework to school
- Can present their work more neatly
- Pupils can share ideas
- Less waste of paper

(b) Describe **two** problems which might arise from the student using the Internet at home.

Two from:
- Can get distracted playing games
- Parents unable to use the phone
- Undesirable sites may be accessed
- Phone bills will rise
- May receive unsolicited e-mails from undesirable characters
- Health problems may arise
- Demand on equipment
- Can waste time exploring unreliable sites

19 A school weather station is to be computised.

(a) Analogue temperature and moisture sensors will be used. Explain why computers are unable to read data directly from these sensors.

- Sensors transmitting analogue data
- Computers work in digital so it will not understand analogue data

(b) What device is needed to enable the computer to read the data?

- Analogue to Digital converter

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(c) Give two advantages of using a computer to collect the data rather than having it done by humans.

Two from:
- Take more accurate readings
- More readings can be taken in a short period of time
- Results can be more easily/quickly produced
- Graphs are more easily/automatically produced
- Safety reasons
- Doesn’t get tired

20 Jasbinder Sidhu owns a number of video rental shops around the country. He is planning to keep details of each member’s records on a computer database.

New members will fill in an application form and the manager will write the new member’s membership number on the form.

All the details will then be typed from the application form onto a screen input form. The details of any videos being borrowed will also be added.

Design a screen input form which the manager could use for typing in the new member’s details.

<table>
<thead>
<tr>
<th>Jasbinder Sidhu Video Rental Shop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members Data Entry/Update Form</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Membership Number:</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Member Personal Details:</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Family Name: ---------------------</td>
</tr>
<tr>
<td>First Name: ----------------------</td>
</tr>
<tr>
<td>Middle Name: ---------------------</td>
</tr>
<tr>
<td>Address:</td>
</tr>
<tr>
<td>Street: ---------------------------</td>
</tr>
<tr>
<td>Area: -----------------------------</td>
</tr>
<tr>
<td>City: -----------------------------</td>
</tr>
<tr>
<td>Zip Code: -------------------------</td>
</tr>
<tr>
<td>P.O. Box: -------------------------</td>
</tr>
<tr>
<td>Phone Number: ---------------------</td>
</tr>
<tr>
<td>Mobile Number: --------------------</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Video Details:</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Serial</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

21 A customer in a bookshop buys a book using a debit card.

Information about the book and the customer’s bank account is input using the shop’s EFTPOS terminal. Checks are made on this input data.

(a) Describe how the details of a book are input and describe a check which is performed on this input.
- Bar code read by reader/scanner or typed in
- Validation check carried out on check digit
(b) Describe how the details of the customer’s bank account are input and describe two checks that are performed on this input.

Magnetic stripe from debit card is swiped by magnetic stripe reader or Chip card inserted in Chip card reader [1]

Two from:
- Expiry date checked
- Checked that card not registered as stolen or lost
- Pin code is checked in using Chip card
- Account checked for sufficient funds [2]

22 Computers are used to model situations such as a flight or driving simulation.

(a) Give one other situation where computer models are used.

Use of spreadsheets e.g. financial/business models, or testing design, or testing new products [1]

(b) Give two reasons why computer models are used rather than the real thing.

Two from:
- It is too dangerous to build the real thing
- It is too expensive to build the real thing
- It is too time consuming to build the real thing
- Time scales are too vast
- It is too expensive to change options in the real thing [2]

23 A small company is ready to computerise its operations. A systems analyst has designed a new system and is ready to implement it.

(a) Describe three methods by which the new system could be implemented.

Three from:
Parallel running, Direct changeover, Phased implementation, Pilot running [3]

(b) During the implementation phase testing will need to be carried out. Describe the three different types of test data which would be used.

- Normal data: data within correct allowed range
- Abnormal data: data out of correct allowed range
- Extreme data: data on the edge or the boundaries of range

(c) Describe three items that would need to be included in an evaluation of the system.

Three from:
- Evaluating the new system in terms of its efficiency
- Evaluating the new system in terms of its ease of use
- Evaluating the new system in terms of the appropriateness of the solution
- Comparing the solution with the original task requirements
- Identifying any limitations and necessary improvements to the system
- Evaluating the users’ responses to the results of testing the system
24 Doctors are increasingly using expert systems to help with their diagnoses of patient illnesses.

(a) Describe how this type of expert system would be created.
- Doctors interviewed for requirements
- Data is collected from experts
- Knowledge base is designed/created
- Rule base is designed/created
- Inference engine is designed/created
- Input Screen is designed/created
- Output format is designed/created
- Interview a sample of patients

(b) Name two other applications which involve the use of expert systems.

Two from:
- Mineral prospecting
- Car engine fault diagnosis
- Tax advice & calculation
- Chess games

25 A company sells books over the Internet. It keeps a database of all its books and customers. The personal data of the customers is encrypted.

(a) What is meant by encryption?
- Data is converted to a form which is unreadable
- By using encryption keys
- Which only the sending and receiving computers can understand/decode

(b) Explain why encryption is needed.

It prevents hackers from being able to read information they have intercepted an example of data which is encrypted (credit card details/bank account details etc)

26 Many people are now doing their shopping by using the Internet. Describe the advantages and the disadvantages to the supermarkets and the customer arising from these developments.

Advantages to customer:
- Don’t have to travel long distances to shops
- Can shop at any time of day
- Don’t have to spend money on travelling
- Save travelling long distances to shops/banks
- Greater choice of goods than local shops

Disadvantages to customer:
- Hackers may intercept data and defraud customer
- Customers deprived of personal touch
- Less opportunity for socialising with friends/neighbours
- Can’t touch/feel/see the goods in reality
- More expensive phone bills
- Lack of exercise

Advantages to supermarkets:
- Supermarkets make more money (don’t have to have branches paying expensive rents in high streets)
- Supermarkets make more money (don’t have to employ so many workers)
- Cheaper to advertise on the Internet than television

Disadvantages to supermarkets:
- Initial cost of making workers unemployed
- Costs money to retrain employees to use new systems
- Loss of face to face free trial offers on new products
- Loss of business in existing supermarkets but same overheads

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