1. Ring two output devices which would be used to provide high quality printouts.

- **Deskjet printer**
- **Dot matrix printer**
- **Graphics tablet**
- **Laser printer**
- **Monitor**
- **Speaker**

2. Ring two items which must be present in an IT system for you to take part in an electronic video conference using a wide area network.

- **CD ROM Drive**
- **Floppy disk drive**
- **Graphics tablet**
- **Microphone**
- **Midi**
- **Modem**

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

   - a **bar code reader**
   - a **data logger**
   - an **OCR**
   - a **simulation**
   - a **magnetic stripe reader**
   - **DTP**
   - **validaton**
   - **verification**

   - Recording the weather conditions in a remote area would be done using **a data logger**
   - Data from the back of a cheque card is input using **a magnetic stripe reader**
   - Airline pilots are trained using **a simulation**
   - Inputting text directly from a document is done by using **OCR**

4. Tick two benefits of using computers in hospitals.

<table>
<thead>
<tr>
<th>Benefit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients are always cured.</td>
<td></td>
</tr>
<tr>
<td>Patients’ medication can be controlled</td>
<td>✓</td>
</tr>
<tr>
<td>automatically.</td>
<td></td>
</tr>
<tr>
<td>Doctors can find patients’ records more</td>
<td>✓</td>
</tr>
<tr>
<td>quickly.</td>
<td></td>
</tr>
<tr>
<td>Patients’ beds are more comfortable.</td>
<td></td>
</tr>
<tr>
<td>Fewer doctors are needed.</td>
<td></td>
</tr>
<tr>
<td>Doctors don’t have to be paid as much.</td>
<td></td>
</tr>
</tbody>
</table>

Prepared by Mrs. Magda M. Kamel & Eng. Gamal Orphy
M: 01001025852
5 Systems analysts have been employed to computerise a car dealer’s record keeping. They will be creating one database of cars for sale and one of potential buyers.

(a) Ring two ways that the system could be implemented.

Create screen layouts Design the file structure Direct changeover

Interview salesmen Parallel running Specify the hardware [2]

(b) Give three reasons why the car dealer would want the record keeping system computerised. Three from:

- It will be easier/faster to find car details
- It will be easier/faster to find potential buyer details
- It will be easier/faster to match potential buyer requirements with stock
- Standard letters can be used to notify potential buyers of new stock
- Easier/faster to sort records into order
- Less storage space required
- Easier/faster to find records
- Files/records can be accessed by more than one person at the same time [3]

(c) Circle the field which would be the best choice as the key field for the car database.

Colour Make

Maximum speed Registration number [1]

(d) Here is part of the database which was created.

<table>
<thead>
<tr>
<th>Make</th>
<th>Model</th>
<th>Registration number</th>
<th>Colour</th>
<th>Number of doors</th>
<th>Maximum Speed (Km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford</td>
<td>Mondeo</td>
<td>KYP 2987</td>
<td>Red</td>
<td>4</td>
<td>182</td>
</tr>
<tr>
<td>Opel</td>
<td>Vectra</td>
<td>TRS 3421</td>
<td>Blue</td>
<td>5</td>
<td>178</td>
</tr>
<tr>
<td>Renault</td>
<td>Clio</td>
<td>KUP 2367</td>
<td>Grey</td>
<td>4</td>
<td>156</td>
</tr>
</tbody>
</table>

(i) Name two fields which could be validated using a range check.

- Number of doors
- Maximum speed [2]

(ii) Which two fields would be most suited to using drop down list boxes (Lookup Table)?

Two from:

- Colour
- Number of doors
- Model [2]

6 Tick the two features of a CAD system which would not be found in standard office software.

<table>
<thead>
<tr>
<th>Feature</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3D option</td>
<td>√</td>
</tr>
<tr>
<td>Save</td>
<td></td>
</tr>
<tr>
<td>Print preview</td>
<td></td>
</tr>
<tr>
<td>Enlarge</td>
<td></td>
</tr>
<tr>
<td>Crop image</td>
<td></td>
</tr>
<tr>
<td>Automatic dimensioning</td>
<td>√</td>
</tr>
</tbody>
</table>
7 Describe the inputs, processing and outputs of a computer controlled central heating system.

**Input -**
- Times the system should operate
- Temperature from sensor
- Temperature from user via keypad/required temperature

**Processing -**
- Sensor temperature is compared with Programmed value
  - If higher heater switched off by microprocessor
  - If lower heater switched on by microprocessor

**Output -**
- heater switched on or off

---

8 Tick two applications which use batch processing.

<table>
<thead>
<tr>
<th>Application</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserving a hotel room using an on-line booking system.</td>
<td></td>
</tr>
<tr>
<td>Producing electricity bills.</td>
<td>✓</td>
</tr>
<tr>
<td>Computer controlled greenhouses.</td>
<td></td>
</tr>
<tr>
<td>Withdrawing money from an ATM.</td>
<td></td>
</tr>
<tr>
<td>Reading data from bank cheques.</td>
<td></td>
</tr>
<tr>
<td>A computerised burglar alarm system.</td>
<td></td>
</tr>
</tbody>
</table>

---

9 Computers are often used to create financial models.

(a) One of the features which make spreadsheets suitable for this is the ability to handle both text and numbers. Name three other features which make them suitable for this purpose.

Three from:
- Automatic recalculation
- Can handle formulae
- Can produce graphs
- Have inbuilt worksheet functions
- Can be used to make predictions
- Can see most (if not all) values and observe changes as they happen

(b) Apart from financial models, there are other uses for computer modelling.

(i) Give three examples of such uses.

Any reasonable examples which make use of whatif scenarios such as:
- Designing structures of buildings/architects designs
- Flight simulation
- Car driving simulation
- Simulating chemical reactions

(ii) Give two reasons, other than cost, why models are used instead of the real thing.

Real thing may be:
- Too dangerous
- Too large a time scale required
- Wasteful of materials
- Takes much longer to build the real thing

---

10 Computers are now widely used in supermarkets.

(a) State the input device which is used to enter data about an item when it is purchased.

**Bar code reader**  **keyboard**  **electronic/digital weigh scales**

(b) Describe how the supermarket’s computer checks that the data has been entered correctly.

Two from:
- Check digit calculated Compared with Check digit entered
- Existence check performed Number entered is compared with List of numbers on computer database/system

---

Prepared by Mrs. Magda M. Kamel & Eng. Gamal Orphy
M: 01001025852
(c) The supermarket computer is able to automatically re-order items when the supermarket is running low on stock. Describe this process, using the sample databases below.

This is part of the database of items in the supermarket.

<table>
<thead>
<tr>
<th>Product</th>
<th>Number in Stock</th>
<th>Re-order level</th>
<th>Re-order quantity</th>
<th>Supplier code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kollege Corn Flakes</td>
<td>152</td>
<td>200</td>
<td>1000</td>
<td>L23456</td>
</tr>
<tr>
<td>Cripey Orange Juice</td>
<td>217</td>
<td>120</td>
<td>400</td>
<td>G12345</td>
</tr>
<tr>
<td>Nice Café Coffee</td>
<td>321</td>
<td>200</td>
<td>500</td>
<td>L23456</td>
</tr>
</tbody>
</table>

This is part of the suppliers’ database.

<table>
<thead>
<tr>
<th>Supplier code</th>
<th>Name of supplier</th>
<th>Address of supplier</th>
<th>Supplier phone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>L23456</td>
<td>Lu Chen</td>
<td>14, Kinshasa Highway, Box 41324</td>
<td>723 45 67</td>
</tr>
<tr>
<td>G12345</td>
<td>Hameen</td>
<td>2356, Avenue Rios, Box 23456</td>
<td>24 17 39 81</td>
</tr>
</tbody>
</table>

The process may include:
- Every time a product is bought number in stock reduces by 1
- Number in stock is compared with Re-order level
- If less then needs re-ordering
- Kollege Corn Flakes needs re-ordering
- Read off re-order quantity
- Read off up supplier code
- Use suppliers database
- Lookup supplier code
- Read off suppliers name, address
- Print off re-order request
- Print off address label

11 Ali and Lee work in different offices of a multi-national company. They use e-mail to send messages to each other.

(a) Describe the computer processing involved after a message has been written on Ali’s computer and before Lee opens the e-mail.

- Message is transmitted to the senders ISP/central host computer
  - Or Message is transmitted to intermediate computers
- Stored on a central host computer
  - Stored on the intermediate computers
- Received by the addressee’s host computer/ISP
- The addressee logs in to a local computer and receives the mail
(b) Describe two advantages and two disadvantages of using electronic mail rather than using ordinary letter post.

Advantages: Two from:
- Messages can be sent instantaneously by e-mail/delivery times are quicker
- You do not have to leave your house to send e-mail
- Replies to e-mails can be quicker
- Sending e-mail can be cheaper/the cost of a phone call is less than the cost of a stamp [2]

Disadvantages: Two from:
- Signatures/important documents cannot be sent by e-mail
- Vulnerable/Possibility to be hacked
- You have to have a computer/e-mail account/Internet
- You have to have a modem
- You have to have an ISP
- You cannot attach physical objects [2]

12 When customers log in to a home banking service on the Internet they are asked to enter two items of information.
(a) Name these two items.
User id/account no./customer no.
Password [2]

(b) Using home banking customers can see their account balance and stop a cheque.
Name three other services which are available to them. Three from:
- Transfer money between accounts
- Pay bills/invoices
- Order a cheque book
- Look at account transactions for a given period
- Request a change of PIN(Personal Identification Number)/password
- Amend/create standing orders/direct debits
- Print statements
- Change/update personal details [3]

(c) Name one service which is not available to customers using home banking.
Withdraw cash/pay in cash [1]

(d) Describe two advantages and two disadvantages of using home banking rather than visiting a bank.
Advantages: Two from:
- Do not have to waste time travelling long distances to banks
- Do not have to spend money on travelling expenses travelling long distances to banks
- No embarrassment of having to ask for loans face to face
- Can bank when banks are closed
- Do not have to waste time waiting for a response to telephone banking [2]

Disadvantages: Two from:
- Lose personal touch
- Less opportunity for socialising with friends/neighbours
- More expensive phone bills
- Lack of exercise
- Hackers can access personal details and transfer money to their account
- You have to have a computer/Internet access
- Unable to withdraw cash [2]
13(a) Give one example of an application which uses an expert system. One from:
- Medical diagnosis
- Car fault diagnosis
- Rock/Oil Prospecting
- Tax/Legal advice
- Chess games

(b) Describe how the expert system will be created.
- Gathering data from experts
- Designing knowledge base
- Creating a knowledge base
- Creating a structure to relate each item in the database/knowledge base
- Creating an interrogation technique to get at the data
- Designing a method of displaying/interface the results
- Use of Inference engine
- Design/create rule base

14 Robots are commonly used in the car manufacturing industry instead of employing people.
(a) One advantage of using a robot is that human errors are eliminated. Give two reasons why errors still occur.
- Loss of power to the robot
- Fault/bug in the software/wrongly programmed
- Hardware breaks down
- If anything goes out of the synchronisation process the robot would not know what to do
- Missing components/components in wrong place

(b) Give two other advantages of using a robot to build cars.
- For safety reasons/in hazards
- Cheaper than a human over a long period/will not need paying
- Will not take breaks/can operate continuously
- Will work at a consistent rate
- Will not go on strike
- Can lift heavy loads
A large company has decided that it needs to computerise its staff records and has employed a systems analyst to help. Her first task will be to analyse the existing system by collecting information about it.

(a) Name three methods of collecting information that she will use. Three from:

- Conducting interview with staff
- Using questionnaires with the busy staff
- Observing work practices/current system in action
- Examining existing documents
- Collecting used documents and forms

(b) Describe three rules she could follow to ensure that staff data will be protected and remain confidential. Three from:

- Information shall be obtained fairly
- Information shall be obtained lawfully
- Data must be kept secure (against unauthorised access and loss)
- Data held only for one or more specified and lawful purpose
- Data shall not be used for anything other than that purpose
- Data shall not be disclosed for anything other than that purpose
- Data held for any purpose shall be adequate in relation to that purpose
- Data held for any purpose shall be relevant in relation to that purpose
- Data held for any purpose shall be not excessive in relation to that purpose
- Data shall be accurate
- Data shall be kept up to date
- Data shall not be kept for longer than necessary
- An individual shall be entitled to be informed by any data user whether he holds personal data of which that individual is the subject
- To have access to any such data held by a data user
- Where appropriate to have such data corrected or erased

(c) Next she will design a database to store the records, using the existing hardware and software. Name three items about the database, other than security-related items, that she will need to design. Three from:

- Design database structure/define key fields/specify indexing structure
- Design user interface
- Design input/output/screen/reports layouts
- Specify processing requirements
- Define required filters/queries
- Define validation routines