

1. Different types of computers are used by different organisations, for example *microcomputers* are used in schools.

(a) State the *type* of computer a salesman is likely to use when travelling by train. [1]

.....

(b) State the *type* of computer used to control a bank's large network of computers. [1]

.....

(c) Televisions contain *embedded* computer systems (microprocessors).

Name **two** *other* devices which may contain *embedded* computer systems. [2]

Device 1

Device 2

(d) Robots are used in the car manufacturing industry.

Give **two** advantages *to the manufacturer* of using robots to produce cars. [2]

.....
.....

2. All computers have a *user interface*.

Name **three** different types of user interface. [3]

(i)

.

(ii)

..

(iii)

3. A user interface allows humans to communicate with computers.

One such type of interface is a Graphical User Interface (GUI).

(a) List **four** features of a GUI. [4]

(i)

(ii)

(iii)

(iv)

(b) Give **one** disadvantage of using a GUI. [1]

.....

(c) Name **two** other *different* types of user interface and give an advantage for **each** type.

(i)

Advantage:

(ii)

Advantage:

4. All computers have an operating system.

(a) Explain what is meant by the term *operating system*. [2]

.....
.....

(b) List **three** *different* functions of an operating system. [3]

(i)

(ii)

(iii)

(c) Name **one** operating system with which you are familiar. [1]

.....

5. The following types of software are used in computer systems:

_applications software;

_operating systems.

(a) Name **two** different types of *applications software*. [2]

(i)

(ii)

(b) List **three** of the main functions of an operating system. [3]

(i)

(ii)

(iii)

(c) Different types of operating systems are used for various applications. Complete the table

below by suggesting a suitable application for **each** of the operating systems. [3]

<i>Operating System</i>	<i>Application</i>
Batch processing	
Real time (process control)	
Real time (transaction)	

6. A *user interface* is the term for the way a user communicates with the operating system.

One type of user interface is a *Graphical User Interface* (GUI).

(a) Name **four** different features of a GUI. [4]

(i)

(ii)

(iii)

(iv)

(b) Other than a GUI, name **three** *different* types of user interface. [3]

(i)

(ii)

(iii)

Expert Systems

7. A doctor wishes to use an *expert system* to help with her work.

(a) Explain what is meant by the term *expert system*. [2]

.....
.....

(b) List **two** of the main components of an expert system. [2]

(i)

(ii)

(c) Give **one** benefit to the *patient* of using an expert system. [1]

.....

(d) Give **one** benefit to the *doctor* of using an expert system. [1]

.....

(e) Describe **one** possible *drawback* of using such a system. [1]

.....
.....

8. *Expert systems* are widely used in medicine to help treat patients.

(a) Explain what you understand by the term *expert system*. [2]

.....

(b) Give **two** advantages *to a doctor* in using an expert system. [2]

(i)

(ii)

(c) Give **one** advantage to a patient of the use of an expert system. [1]

(d) Give **one** disadvantage of using such a system. [1]

Embedded Systems and Robotic Control

9. Embedded computer systems are used in a large number of devices.

(a) Explain what is meant by an *embedded computer system*. [2]

(b) Give **two** examples of devices/machines which contain embedded computer systems. [2]

(i)

(ii)

(c) Robots are used in car manufacturing as they speed up the production process.

Give **two other** advantages of using robots in car manufacturing. [2]

(i)

(ii)

Booking Systems

10. A computer system is being installed in a theatre to deal with bookings. Currently it has a manual system.

(a) Give **three** different methods a systems analyst would use to collect data when *analysing* the existing system. [3]

(i)

(ii)

(iii)

(b) Cost is one issue a systems analyst would consider when *designing* the new system. Give

three other issues that need to be considered. [3]

(i)

(ii)

(iii)

(c) When the system is installed, *parallel running* takes place.

(i) State what you understand by the term *parallel running*. [1]

(ii) State when parallel running is no longer required. [1]

(d) Give **one** advantage and **one** disadvantage of the new computerised booking system. [2]

Automated Stock Control

11. Explain in detail how ICT is used in the purchasing of goods and stock control in a supermarket. Include in your answer reference to (i) data captured at the PoS terminal; (ii) production of the itemised bill; (iii) payment for the goods; (iv) automatic stock control.

12. From the list below, select the *most suitable* storage medium for **each** of the following.

Do not use any storage medium more than once.

CD Rom, Memory Stick, Tape Streamer, Hard Disk

(a) Transferring a 6MB image file from one standalone computer to another. [1]

.....

(b) A *direct-access* database for a large hospital. [1]

.....

(c) Backing up the school's user accounts and pupils' work. [1]

.....

(d) Distributing a 125Mb file containing video and music clips. [1]

.....

13. (a) From the list below, select the *most suitable* storage medium for **each** of the following.

Do **not** use any storage medium more than once.

USB Memory Stick, CD Rom, Tape Streamer, Hard Disk

(i) Distributing free software with a magazine. [1]

.....

(ii) An on-line database for a large supermarket. [1]

.....

(iii) Backing up a school's file server. [1]

.....

(iv) Transferring a 20Mb file from one standalone computer to another. [1]

.....

(b) (i) Explain the term '*disk cache*'. [1]

.....

(ii) Give an example of when you would use a '*disk cache*'. [1]

.....

14. ROM and RAM are two different types of memory found in computers.

(a) (i) State what **ROM** is used for. [1]

.....

(ii) State what **RAM** is used for. [1]

.....

(b) Give the meaning of the following terms.

(i) **BIT** [1]

(ii) **BYTE** [1]

(c) Write down what you understand by the terms *Kilobyte* and *Megabyte*. [2]

.....
.....
.....

15. The *Data Protection Act* (DPA) has eight basic principles.

(a) List **four** of these principles. [4]

(i)

(ii)

(iii)

(iv)

(b) Give **two** rights individuals have regarding data held about them on computer. [2]

(i)

(ii)

(c) Give **two** exemptions from the DPA. [2]

(i)

(ii)

16. The Data Protection Act of 1998 contains eight basic rules or principles.

(a) Write down the rule or principle that would prevent *data collected for insurance purposes being passed on for sales marketing*. [1]

.....
.....

(b) Write down **three** *other* rules or principles given in the Data Protection Act. [3]

(i)

(ii)

(iii)

(c) Give **three** organisations or types of data that are exempt from the Data Protection Act. [3]

(i)

(ii)

(iii)

17. A school keeps a database of pupils on computer. Part of the database is shown below.

The database is made up of *fields*, *records* and *files*.

<i>Pupil Id.</i>	<i>Surname</i>	<i>First name</i>	<i>Form</i>	<i>Date of Birth</i>
3245	Jones	Sian	07C	12/02/95
3256	Evans	Tom	07Y	15/04/95

(a) Explain the terms:

(i) **field:** [1]

(ii) **record:** [1]

(iii) **file:** [1]

(b) Other items of data that would be included in this database are *address*, *telephone number* and *postcode*. List **three additional** items of data that could be included. [3]

(i)

(ii)

(iii)

(c) Some of the fields in this database are of fixed length while others are of variable length.

(i) Give **one** advantage of using *fixed length* fields. [1]

.....

(ii) Give **one** advantage of using *variable length* fields. [1]

.....

(d) The database uses a variety of data types.

(i) Give the data type for *Pupil Id.* [1]

.....

(ii) Give the data type for *Form.* [1]

.....

18. A school keeps a database of pupils on computer. Part of the database is shown below. The database is made up of fields, records and files.

<i>Pupil Number</i>	<i>Surname</i>	<i>Firstname</i>	<i>Form</i>	<i>DOB</i>
3245	Jkones	Sian	BC	12/02/91
3256	Evans	Tom	RY	15/04/91
3259	Begum	Marisa	RY	22/90/90

(a) Define the terms:

- (i) field; [1].....
- (ii) record; [1].....
- (iii) file. [1].....

(b) List **three** other fields that could be found in this database. [3]

- (i)
- (ii)
- (iii)

(c) There is one *validation* error and one *verification* error in the database.

On the lines below,

- identify **each** error
- state whether the error is most likely to be found by validation or by verification
- state the validation or verification technique used to identify each error

Error 1

Verification or Validation ?

How error is identified.

Error 2

Verification or Validation ?

How error is identified.

(d) Some of the fields in this database are of *fixed length*, while others are of *variable length*.

(i) Give **one** advantage of using fixed length fields. [1]

.....

(ii) Give **one** advantage of using variable length fields. [1]

.....

(e) A variety of data types are found in this database.

(i) Give the data type for *Pupil Number*. [1]

.....

(ii) Give the data type for *Form*. [1]

19. (a) Give **two different** types of screen used to display output from a computer. [2]

(i)

(ii)

(b) Screens and printers are output devices. Name **two other** output devices used by computers.

(i)

(ii)

20. (a) Name an application that uses *real time processing* and explain why this type of processing is suitable. [2]

Application:

Explanation:

.....

(b) Name an application that uses *real time transaction processing* and explain why this type of processing is suitable. [2]

Application:

Explanation:

.....

(c) Explain what is meant by the following terms: [2]

(i) **multi-tasking:**

.....

(ii) **multi-access:**

.....

Examples of Final Extended Questions

21. Advances in computer technology have led to the development of new methods of electronic communication and transfer of data.

Identify

_ four 'new' methods of communications technology and [4]

_ discuss the benefits derived from using these four methods. [6]

.....

.....

.....

.....

.....

.....

22. 'Electronically stored data can be misused more easily than manually recorded data'.

Discuss the above statement. Include in your answer:

- developments in ICT that support the statement;
- at least **three** examples of the misuse of personal data held on computer;
- steps taken by organisations to prevent the misuse of electronically stored data. [11]

Networks

23. Most schools and businesses have computer networks.

(a) The term **LAN** is used when computers on *one site* are connected together.

Write down what **LAN** stands for. [1]

.....

(b) The term **WAN** is used when networks of computers on *different sites* are connected together.

Write down what **WAN** stands for [1]

.....

(c) Computer networks can be arranged in different ways, for example a star network.

(i) In the space below, draw and label a *star* network. Include the network structure, a few workstations, a server and a printer. [4]

(ii) Name **two other** types of computer network topologies. [2]

(I)

(II)

24. Complete the table below to match **each** of the tasks to the stages of systems analysis.

The first one is done for you. [3]

A installing the hardware and software

B using questionnaires, carrying out interviews to gather information

C deciding upon the content of database tables including the fields and data types

D updating software

<i>Stages of System Analysis</i>	<i>Letter</i>
Analysis	B
Design	
Implementation	
Maintenance	

25. In designing a new ICT system a systems analyst has to consider the following, gathering data, designing the new system, changeover methods and documenting the system. Describe what is involved in each of the following [8].

(a) Gathering data

.....
.....

(b) Designing the new system

.....
.....

(c) Changeover methods

.....
.....

(d) Documenting the system

.....
.....

All answers to these questions are available on the WJEC Past Papers Interactive system.

Note that you will only have 10-12 questions, there are 25 here for revision purposes only.