Candidate Name	Centre Number	Candidate Number
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WJEC CBAC

GCSE

178/04

INFORMATION AND COMMUNICATION TECHNOLOGY

PAPER 2

Higher Tier

A.M. FRIDAY, 6 June 2008

1½ hours

Examiner's Use Only	
Total Mark	

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue the answer at the back of the book, taking care to number the continuation correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

Answer **all** *questions.*

1. *(a)* Different types of computers are used by people in the workplace.

(i) ..... are types of powerful computers used to control large computer systems. [1]

(ii) ..... are sometimes used by electricity or gas meter readers. [1]

(b) Name **two** devices which contain *embedded* computers. [2]

Device 1 .....

Device 2 .....

2. Complete the table shown below to show how *different* types of organisations make use of the input devices. [6]

An example has been done for you.

Input Device	*Organisation*	*Use*
Bar code reader	Library	Scanning the code when a book is borrowed
Optical Mark Reader		
Touch Screen		
Sensors		

3. An architectural company uses a Computer Aided Design (CAD) package to design buildings.

(a) Give **three** *different* features of the CAD package and describe how **each** could be used *by an architect* to design a house.

(i) .....

.....

[2]

(ii) .....

.....

[2]

(iii) .....

.....

[2]

(b) (i) Give **two** advantages *to the company* of using CAD.

Advantage 1 .....

Advantage 2 .....

[2]

(ii) Give **two** disadvantages of using CAD.

Disadvantage 1 .....

Disadvantage 2 .....

[2]

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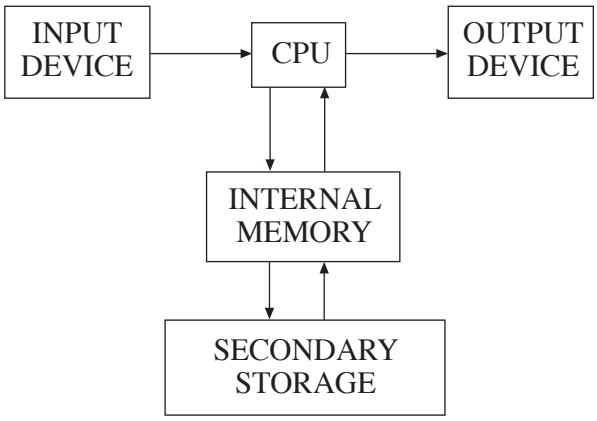
4. The hardware components of a computer system are shown below.



(a) Name **two** different *output* devices.

Device 1 .....

Device 2 .....

[2]

(b) **RAM** and **ROM** are different types of *internal* memory.

(i) Give a use for **RAM**.

.....

[1]

(ii) Give a use for **ROM**.

.....

[1]

(c) From the list below, select the *most suitable* secondary storage medium for **each** of the following.
Do not use any storage medium more than once.

DVD **Tape Streamer** **Hard Disk** **USB memory stick**

(i) Taking homework files to and from school.

.....

[1]

(ii) An on-line database for a large school.

.....

[1]

(iii) Backing up the school's user accounts and pupils' work.

.....

[1]

(iv) Giving parents a free electronic copy of the latest school prospectus including video clips.

.....

[1]

5. Computer Assisted Learning (CAL) is used in a number of subjects in schools.

(a) Using specific examples, describe in detail the advantages of using CAL in the classroom.

Example 1 .....

Description/Advantage:

.....

.....

.....

[3]

Example 2 .....

Description/Advantage:

.....

.....

.....

[3]

(b) Give **one** disadvantage of using CAL.

.....

[1]

6. 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*.

Pupil id	*Surname*	*Firstname*	*Form*	*DOB*
8345	Daaavies	David	7C	57/02/09
8356	Thomas	Pat	7Y	15/04/96

(a) Explain the terms: [3]

(i) **field;** .....

(ii) **record;** .....

(iii) **file.** .....

(b) Part of the database shown above contains **two** mistakes, one of which could be prevented by a *verification* process, the other by a *validation* process.

Complete the table below by identifying **each** mistake, identify whether it is a validation or verification error and state a method which could have been used to prevent the error.

Mistake	*Validation or Verification*	*Method which could have been used to prevent the error*

[6]

(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.

.....

.....

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

.....

.....

[2]

(d) A variety of data types can be found in this database.

(i) Give the data type for *Pupil id*.

.....

(ii) Give the data type for *Form*.

.....

[2]

7. The *Data Protection Act* **(DPA)** of 1998 contains eight basic principles.

(a) Write down the principle that is designed to protect data that is held about you by an organisation. [1]

.....

.....

(b) Write down the principle that is designed to prevent data held about you containing errors. [1]

.....

.....

(c) Write down **two** *other* principles of the DPA. [2]

(i) .....

.....

(ii) .....

.....

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

Exemption 1 .....

Exemption 2 .....

8. Most schools and businesses have computer networks.

(a) What name is given when computers on **one** site are connected together?

..... **A** ..... **N** ..... [1]

(b) What name is given when computers on **different sites** are connected together?

..... **A** ..... **N** ..... [1]

(c) Give **three** reasons why networks are useful compared with a number of stand alone computers. [3]

(i) .....

.....

(ii) .....

.....

(iii) .....

.....

(d) In the space below, draw and label a diagram of a star network. Show the position of the **fileserver**, **workstations** and **printer** on your diagram. [4]

9. Two types of software are *application software* and *operating system software*.

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

(i) .....

(ii) .....

(b) Linux is an operating system, name **two other** *operating systems*. [2]

(i) .....

(ii) .....

(c) One of the functions of an operating system is to provide a user interface.
Give **three** *other* functions of an operating system. [3]

(i) .....

(ii) .....

(iii) .....

(d) Give **three** different features of Graphical User Interfaces (GUI) which make them easy to use. [3]

(i) .....

(ii) .....

(iii) .....

(e) Complete the table below by suggesting a suitable application for **each** type of operating system. [3]

Type of Operating System	*Application*
Batch processing	
Real time (transaction processing)	
Real time (process control)	

(f) Complete the following table by matching the appropriate type of operating system from the list below with the given definitions. [3]

single program **multi-programming** **multi-tasking**

Types of operating systems	*Definition*
	more than one program is held in RAM at the same time
	one program is run at a time
	the processor divides its time between programs, a time-slice is allocated to each process

10. A garage is updating its billing system.

(a) Give **three** activities a systems analyst would carry out when *analysing* the existing system. [3]

Activity 1 .....

.....

Activity 2 .....

.....

Activity 3 .....

.....

(b) Give **three** activities a systems analyst would carry out when *designing* the new system. [3]

Activity 1 .....

.....

Activity 2 .....

.....

Activity 3 .....

.....

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

Describe what is meant by *parallel running* and state when it is no longer required. [2]

.....

.....

11. Hospitals use computer control.
Give **two** different examples of computer control in hospitals and for **each** state an advantage.
Use a *different* advantage for each.

Example 1 .....

Advantage .....

.....

.....

Example 2 .....

Advantage .....

.....

.....

[4]

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12. ***'The paperless school office is nearly upon us'***

Comment on the above statement by suggesting **five** ways ICT has helped to advance this development. In addition point out **at least four** advantages or disadvantages of a paperless office. [9]

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Turn over.

For continuation only.