Candidate Name	Centre Number	Candidate Number

WELSH JOINT EDUCATION COMMITTEE

General Certificate of Secondary Education

WJEC CBAC

CYD-BWYLLGOR ADDYSG CYMRU

Tystysgrif Gyffredinol Addysg Uwchradd

178/04

INFORMATION AND COMMUNICATION TECHNOLOGY

PAPER 2

(Higher Tier – Grades D to A*)

A.M. WEDNESDAY, 6 June 2007

(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.

No certificate will be awarded to a candidate detected in any unfair practice during the examination.

Answer **all** *questions.*

1. **ROM** and **RAM** are two different types of memory found in computers such as the one shown below.

(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]

....

....

....

2. Write down the name of the type of business/organisation that would use the input devices shown in the table below. In **each** case state the type of data captured. [6]

An example has been done for you.

Input Device	*Business/Organisation*	*Data*
Bar code reader	Library	Book Number
OMR		
MICR		
OCR		

3. *(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]

....

4. 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) ....

Turn over.

5. 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.
$2 \times$ [2]

(i) ....

Advantage: ....

....

(ii) ....

Advantage: ....

....

6. 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]

....

7. *(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:** ....

....

Turn over.

8. 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]

....

....

9. 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*	*First name*	*Form*	*Date of Birth*
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]

....

Turn over.

10. 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) ....

11. Computer systems are said to be networked when they are linked together. Some are **LANs** while others are **WANs**.

(a) (i) Write down what **LAN** stands for:

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

(ii) Write down what **WAN** stands for:

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

(b) Other than sharing hardware, list **two** advantages of networks over standalone computers.
[2]

(i) ....

(ii) ....

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

Turn over.

12. A supermarket uses Point of Sales (PoS) terminals.

(a) Write down **one** method by which the code on the item can be input automatically at the PoS. [1]

....

(b) Records are held in a database for each item on sale in the supermarket containing data such as Product Code and Price.

Name **two** *other* items of data you would expect to be kept in the database. [2]

(i) ....

(ii) ....

(c) 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. [8]

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13. *'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]

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Turn over.

For continuation only.