UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

CANDIDATE NAME	

CENTRE NUMBER					

CANDIDATE NUMBER			

COMPUTING 9691/11

Paper 1 **October/November 2012**

1 hour 30 minutes

Candidates answer on the Question Paper.

No additional materials are required.

No calculators allowed.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
No marks will be awarded for using brand names for software packages or hardware.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **12** printed pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

For
iner's
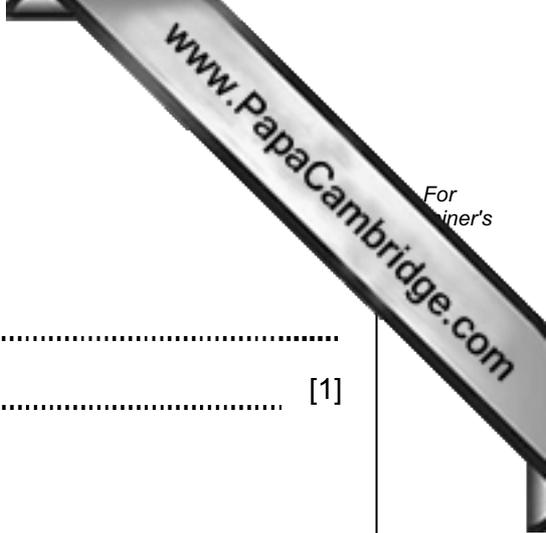
1 **(a)** Define the following:

(i) software

....

.... [1]

(ii) operating system software

....

.... [1]

(iii) application software

....

.... [1]

Students in a school use computers when studying science.

(b) State how the following software can be used by the students to help them with their studies:

(i) word processor

....

.... [1]

(ii) web browser

....

.... [1]
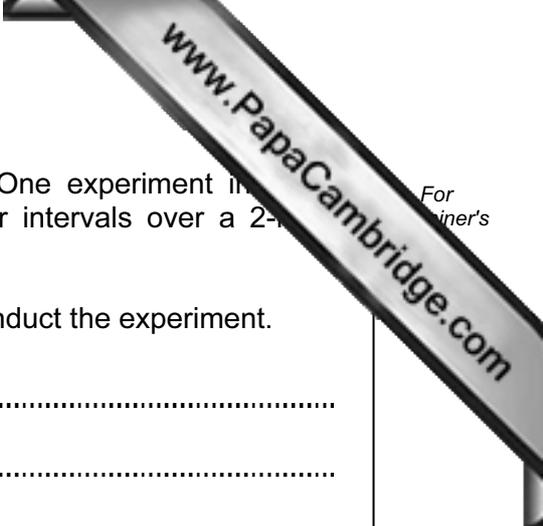
(c) The students carry out experiments during their lessons. One experiment i̶ taking the temperature of a beaker of chemicals at regular intervals over a 2-̶ period in order to measure the cooling rate of the chemicals.

(i) Explain how sensors and data logging can be used to conduct the experiment.

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.... [3]

(ii) Explain how different types of software can be used to report the findings to the rest of the class.

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....

.... [4]

ner's

4
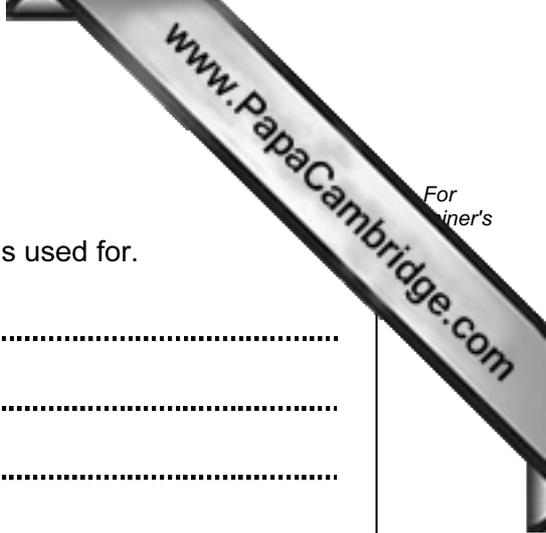
2   An expert system contains a rule base.

Name **three** other parts of an expert system and state what each is used for.

Part 1 ....

....

....

....

Part 2 ....

....

....

....

Part 3 ....

....

....

.... [6]

3   Two output formats are sound and animation.

For each format state an application where it would be appropriate. Justify your choice in each case.

   (i) Sound

   Application ....

   ....

   Justification ....

   .... [2]

   (ii) Animation

   Application ....

   ....

   Justification ....

   .... [2]

4 A teacher is responsible for the maintenance of the school network.

Describe the following examples of utility software and state how they would be used by the teacher.

For iner's

    (i) Hardware driver

        Description ....

        ....

        ....

        .... [2]

        Use ....

        .... [1]

    (ii) Virus checker

        Description ....

        ....

        ....

        .... [2]

        Use ....

        .... [1]

5 A new piece of software has been produced to control a drilling machine on a pro   line.

State **five** sections that will be in the user guide to accompany the software.

1 ....

....

2 ....

....

3 ....

....

4 ....

....

5 ....

.... [5]

6 **(a)** Describe the functions of the control unit in the processor during the execution of a program.

....

....

....

....

....

.... [3]

(b) State what is meant by:

(i) a buffer

....

.... [1]

(ii) an interrupt

....

.... [1]

(c) Describe how buffers and interrupts are used to control the transfer of data from a hard disk to primary memory on a stand-alone computer system.

....

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.... [4]

7   (a) Explain the use of a hashing algorithm when a random access file is being acces

....

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....

....

....

.... [3]

(b) (i) State what is meant by a *collision* when referring to a random access file.

....

.... [1]

(ii) Describe **two** methods used to overcome collisions in a random access file.

Method 1   ....

....

....

....

Method 2   ....

....

....

.... [4]

8 An interactive information system is being designed for use in the terminal building airport.

For iner's

(a) (i) State an input device which would be suitable for use in this application. Justify your choice.

Device ....

Justification ....

....

.... [2]

(ii) State an output device which would be suitable for use in this application. Justify your choice.

Device ....

Justification ....

....

.... [2]

(b) Discuss the human computer interface (HCI) with reference to:

(i) the content

....

....

....

....

....

(ii) the colours used

....

....

....

....

.... [5]

For
iner's
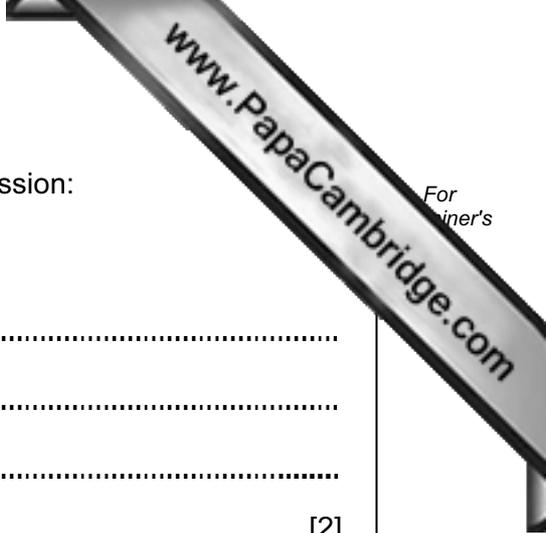
9 **(a)** Describe what is meant by the following types of data transmission:

(i) serial, simplex transmission

....

....

....

.... [2]

(ii) parallel, full duplex transmission

....

....

....

.... [2]

(b) Define the term protocol.

....

....

....

.... [2]

(c) When data is transmitted between devices it can be corrupted. One method to detect corruption is the use of parity.

Explain how parity can be used to detect the presence of errors in a transmission.

....

....

....

....

....

....

.... [4]

For
...iner's

10 (a) (i) Complete the truth table for this logic circuit.

A ———⟶ ⎤
          ⎥ AND ⟩——— C ——— ▷ NOT ◯——— D
B ———⟶ ⎦
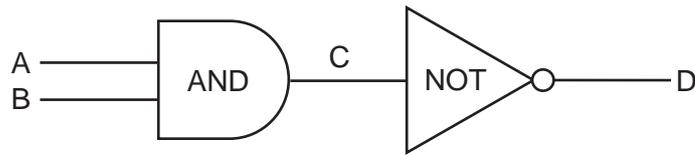
A	B	C	D
0	0		
0	1		
1	0		
1	1		

[1]

(ii) State a single logic gate which would have the same final outcome as this pair of logic gates.

.... [1]

For
iner's

(b) Complete the truth table for this logic circuit.

A	B	C	D	E	F
0	0	0			
0	0	1			
0	1	0			
0	1	1			

[4]