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

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

7759899603

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.

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For Examiner's Use

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]

For Examiner's Use

(c) The students carry out experiments during their lessons. One experiment involves taking the temperature of a beaker of chemicals at regular intervals over a 2-hour 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]

For Examiner's Use

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]

For Examiner's Use

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.

(i) Hardware driver

Description .....

.....

.....

..... [2]

Use .....

..... [1]

(ii) Virus checker

Description .....

.....

.....

..... [2]

Use .....

..... [1]

For Examiner's Use

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

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

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

5 .....

..... [5]

For Examiner's Use

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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.....

.....

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.....

.....

..... [4]

For Examiner's Use

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

.....

.....

.....

.....

..... [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]

For Examiner's Use

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

(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 Examiner's Use

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.

.....

.....

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.....

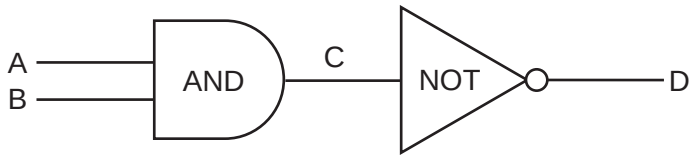
.....

.....

..... [4]

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

For Examiner's Use



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]

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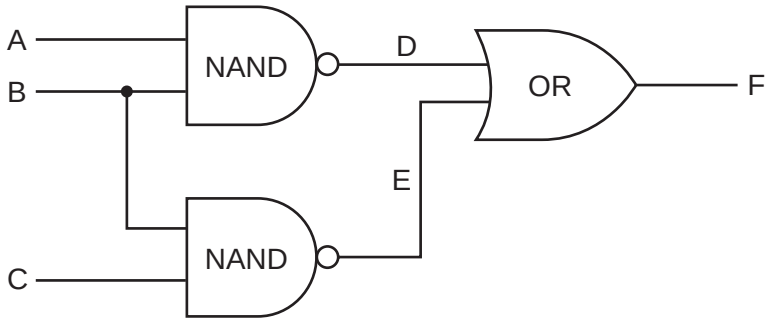
(b) Complete the truth table for this logic circuit.

For Examiner's Use



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

[4]

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