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

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

COMPUTING **9691/13**

Paper 1 **October/November 2011**

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.

1 **(a)** Describe the purpose of the following:

(i) Input devices;

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(ii) Output devices.

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..... [2]

(b) A point-of-sale (POS) terminal in a supermarket has a number of output devices. State **two** different output devices used at the POS terminal and state the purpose of each.

Device 1 .....

Purpose .....

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Device 2 .....

Purpose .....

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..... [4]

(c) Customers may apply for a store card if they do not have one already. The sto
allows customers discount when they buy goods. They apply for a store card a
checkout and the applications are then batch processed.

Describe a batch processing operating system.

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..... [4]

2 **(a)** One stage of the systems development life cycle is to collect information abo requirements of the system.
For each of the following methods of information collection give **one** advantage an **one** disadvantage.

(i) Questionnaires

Advantage .....

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Disadvantage .....

..... [2]

(ii) Interviews

Advantage .....

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Disadvantage .....

..... [2]

(b) When a new system has been developed it must be installed into the organisation for which it has been produced.

Describe:

(i) parallel implementation

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..... [2]

(ii) pilot implementation

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..... [2]

3 A large power-generating plant is controlled from a central operations room. The ope
are controlled by a small group of very experienced engineers using computers w
monitor the processes being carried out.
Describe the characteristics of the user interface and why they are appropriate to this
application.

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4 Explain how a knowledge-based (expert) system can be set up and used to help scientists at a national botanical centre to identify plants.

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..... [6]

5 **(a)** Describe how the contents of a one-dimensional array can be initialised to zero.

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(b) **(i)** Describe how a stack is implemented using an array.

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..... [4]

(ii) Describe how a check can be carried out before adding another value to the stack.

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..... [3]

6 State **two** different types of optical storage medium.
Give a use that a school student could make of each with their computer at home.

Storage medium 1 .....

Use .....

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Storage medium 2 .....

Use .....

..... [4]

7 **(a)** An information system is provided at a central location in a tourist resort. Tour able to use it to find details of:

- current events
- hotels and other accommodation
- transport available.

(i) Explain why a menu-based interface is used with the information system.

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(ii) Explain why indexed sequential access to the data is used on the system.

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..... [6]

(b) The central information office takes bookings from tourists for all the events and
that are featured in the information system.

(i) Explain why taking back-ups of the information collected is necessary.

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(ii) Describe a procedure for doing these back-ups.

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..... [4]

8 A factory specialises in making components for cars.
The offices of the factory have a number of stand-alone computers. The decision is take
link these machines in a network.

(a) (i) State **two** items of hardware which would be necessary to network the computers.

Hardware 1 .....

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Hardware 2 .....

..... [2]

(ii) State **one** extra item of hardware which would be required if the network was to be linked to the Internet.

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(b) When data is transmitted around a network it can be corrupted.
Explain, giving examples, how parity can be used to detect errors in transmitted data.

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(c) The production line in the factory is computerised. One part of the production li
pair of rollers which take warm plastic as an input and roll it into sheets for the next
of the process. The rollers have to be kept the same distance apart throughout th
process. This is controlled by a computer which monitors the output from the rollers.

(i) Explain why the company use custom-written software on the computer that controls the rollers.

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..... [2]

(ii) The thickness of the plastic sheets should be 5mm. The computer can control the thickness by moving the rollers closer together or further apart.

Explain why the computer is set to keep the thickness between 4.9mm and 5.1mm and not exactly 5mm.

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(iii) Explain the process control system which the computer uses to control the thickness of the plastic sheets.

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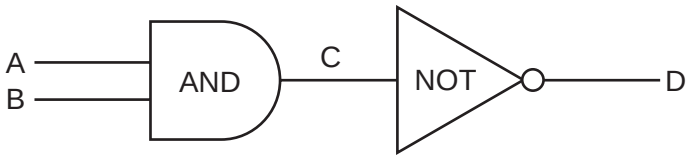
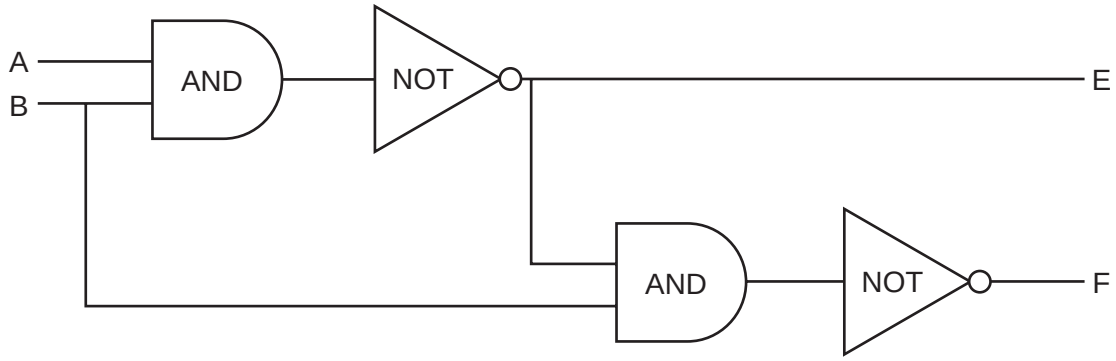
9 **(a)** Complete the table to show the outputs for the possible inputs to this circuit.



A	B	C	D
0	0		
0	1		
1	0		
1	1		

[2]

(b) Complete the table to show the outputs for the possible inputs to this circuit.



A	B	E	F
0	0		
0	1		
1	0		
1	1		

[4]