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

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

4170434852

COMPUTING **9691/12**

Paper 1 **May/June 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 **10** printed pages and **2** blank pages.

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For Examiner's Use

1 **(a)** **(i)** Give **two** differences between ROM (Read Only Memory) and RAM (Random Access Memory).

1 .....

.....

2 .....

..... [2]

(ii) State a program stored in ROM, giving a reason why it must be stored in ROM.

Program .....

Reason .....

.....

..... [2]

(iii) State the purpose of this program.

.....

..... [1]

(b) Define what is meant by:

(i) an input device

.....

..... [1]

(ii) an output device

.....

..... [1]

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For Examiner's Use

(c) A local hockey league is run by a secretary from home. The secretary is responsible for all fixtures and league tables.
The secretary is blind and uses her home computer for carrying out the necessary tasks.
State a suitable hardware peripheral for each of input, output and storage, which the secretary could use. Justify your choices.

Input .....

Justification .....

.....

Output .....

Justification .....

.....

Storage .....

Justification .....

..... [6]

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For Examiner's Use

2 **(a)** Define the following types of software:

(i) operating system

.....

..... [1]

(ii) applications software

.....

..... [1]

(b) **(i)** Explain the difference between custom-written software and off-the-shelf software.

.....

.....

.....

..... [2]

(ii) Explain **four** advantages of using off-the-shelf software.

.....

.....

.....

.....

.....

.....

..... [4]

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For Examiner's Use

(c) A student is completing a project for submission to the Geography department about rainfall in their area.
Explain how the student could use the following software:

(i) word processor

.....

..... [1]

(ii) spreadsheet

.....

..... [1]

(iii) desktop publishing

.....

..... [1]

(d) The student uses a single-user, multi-tasking operating system.
Describe what is meant by a single-user, multi-tasking operating system.

.....

.....

.....

.....

.....

.....

.....

..... [4]

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For Examiner's Use

3 **(i)** State what is meant by a real-time operating system.

.....

..... [1]

(ii) Describe an application which needs to be carried out in real time.

.....

..... [1]

(iii) Explain why your choice needs to be a real-time application.

.....

.....

.....

..... [2]

4 Describe the following methods of automated data capture. Give an example, in each case, of an application where it would be used.

(i) Optical Mark Recognition (OMR)

.....

.....

.....

.....

.....

..... [3]

(ii) Optical Character Recognition (OCR)

.....

.....

.....

.....

.....

..... [3]

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For Examiner's Use

5 A systems analyst is employed to produce a new computer system. The systems development life cycle includes a feasibility study.
Explain the purposes of the feasibility study.

[5]

6 A single operator controls a section of railway tracks using a computer system. The operator sits at a desk in front of a set of monitors which are used to display the information that he requires to keep the trains running safely.
The operator relies on a user interface to both receive information from the computer system and to give instructions to the computer system.
Discuss the importance of good interface design for this application.

[6]

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For Examiner's Use

7 **(a)** **(i)** Change the denary integer 278 into a binary number, using 10 bits.

.....

..... [1]

(ii) Change the binary number 10101100 into a positive denary integer.

.....

..... [1]

(b) A school stores data about the courses offered. A program which uses this data declares the following variables and data types:

CourseName as a **String**
CourseLevel as a **Character**
StartDate as a **Date**

(i) "Computing" would be an appropriate value to be stored in **CourseName**.
Give a value appropriate to each of the other two variables:

CourseLevel .....

StartDate ..... [2]

(ii) The table shows three fields that are used in the records for data stored about students.
Give the data type for each field. Give a reason for your choice in each case.

Field name	Data type	Reason
StudentName		
NumberOfPrizesWon		
AverageExaminationMark		

[6]

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For Examiner's Use

8 **(a)** The manager of a firm has been advised to link all the firm's computers to form a Local Area Network (LAN).

(i) Explain to the manager **two** benefits of connecting the computers in a LAN.

Benefit 1 .....

.....

Benefit 2 .....

..... [2]

(ii) One computer is connected to its own printer using parallel data transmission. Explain what is meant by parallel data transmission.

.....

.....

.....

..... [2]

(b) Explain the difference between packet switching and circuit switching. Give **one** advantage and **one** disadvantage of each.

Packet switching

Advantage .....

.....

Disadvantage .....

.....

Circuit switching

Advantage .....

.....

Disadvantage .....

..... [6]

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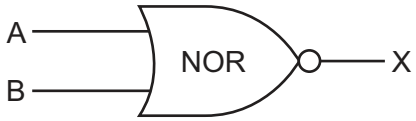
For Examiner's Use

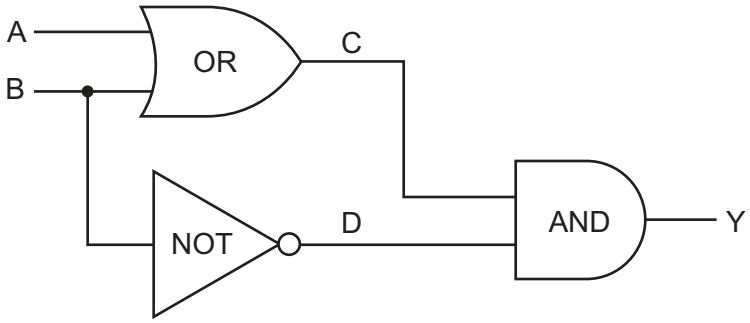
9 **(a)** Complete the truth table to show the output from the logic gate shown.



A	B	X
0	0	
0	1	
1	0	
1	1	

[2]

(b) Complete the truth table to show the outputs from the logic circuit shown.



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

[4]

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