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 2013**
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 **16** printed pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1 An airport wishes to update its computer facilities to improve its service to passengers.

A systems analyst has been asked to help with the process.

Name and describe **two** methods of fact finding the systems analyst could use. Explain how each would be carried out in this case.

Method 1 ....

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Method 2 ....

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.... [4]

2 A large oil refinery is monitored and controlled by a computer system.

The operators in the refinery's control room monitor processes (for example, checking the temperature) and take actions (for example, open or close valves).

(a) Describe a suitable human computer interface to enable the operators to monitor the processes.

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.... [5]

(b) Name **two** suitable input devices which could be used in this interface. Give reasons for your choice of devices.

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.... [4]

3 **(a)** Describe the difference between *verification* and *validation* of data.

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.... [2]

(b) Two different validation checks are described using each of the following flowcharts.
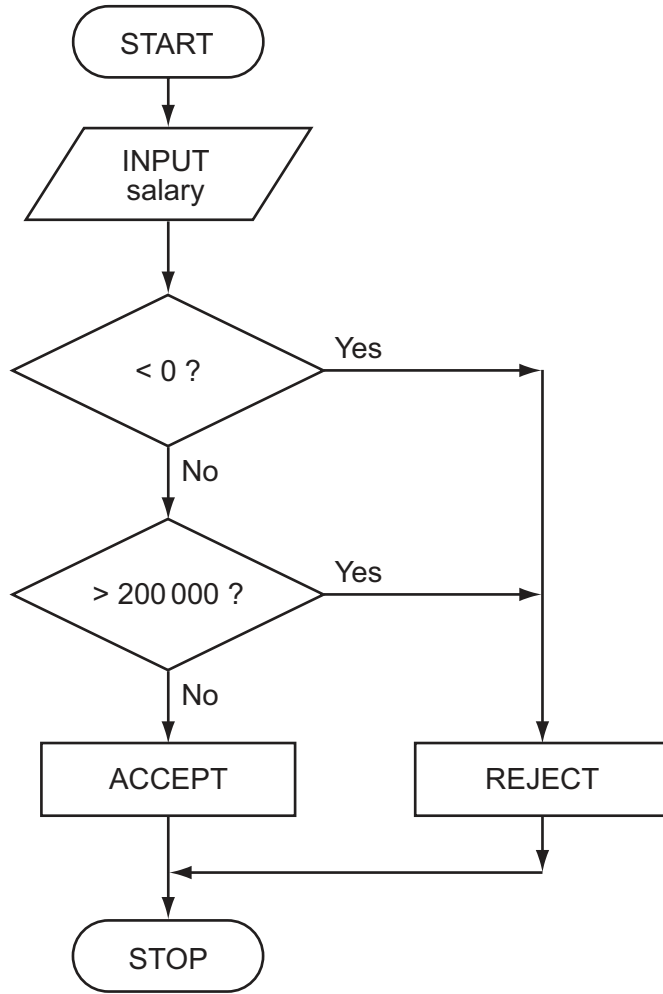
Name the types of validation check.

(i)

Type of validation check .... [1]

(ii)

START

INPUT
salary

< 0 ? — Yes

No

> 200 000 ? — Yes

No

ACCEPT

REJECT

STOP
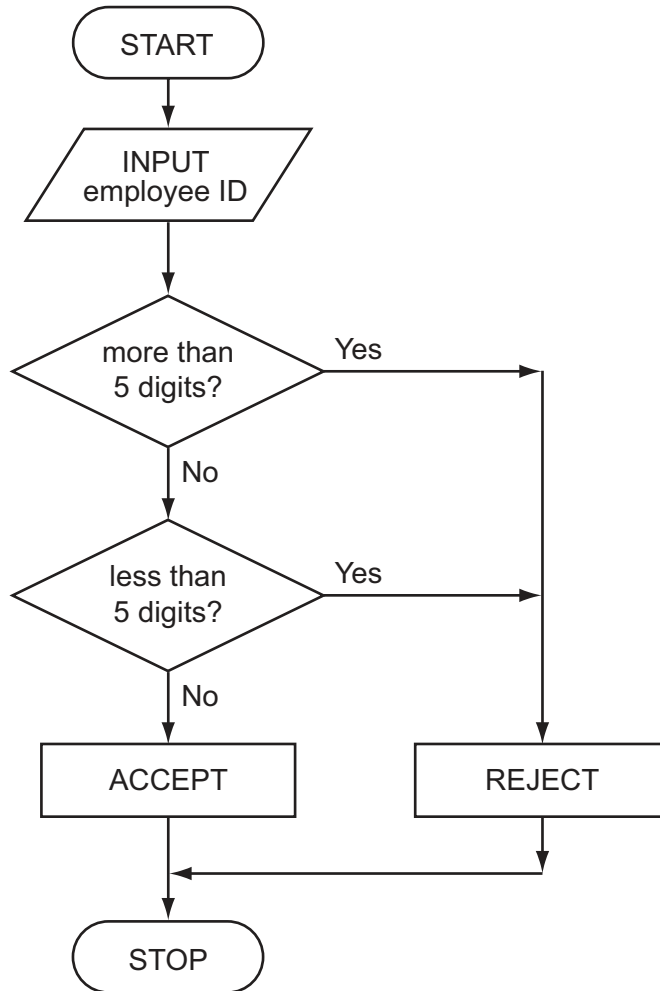
Type of validation check .... [1]

(c) Check digits are another validation method. The *modulo-11* method multiplies each digit by its digit position, adds the totals together and divides the result by eleven. The remainder is the check digit.

Note: the check digit is digit position 1.

(i) Calculate the check digit (_) for the following number:

<div align="center">

3   0   4   5   _

</div>

Show your working.

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.... [2]

(ii) The employee ID **39421** was entered into the computer as **34921**.

Explain how the check digit validation check will flag **34921** as an invalid employee ID.

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.... [2]

4 **(a)** Draw the logic circuit that directly corresponds to the following logic statement:

X = 1 IF (A is NOT 1 OR B is 1) AND (B is 1 OR C is 1)

A ———

B ——— X

C ———
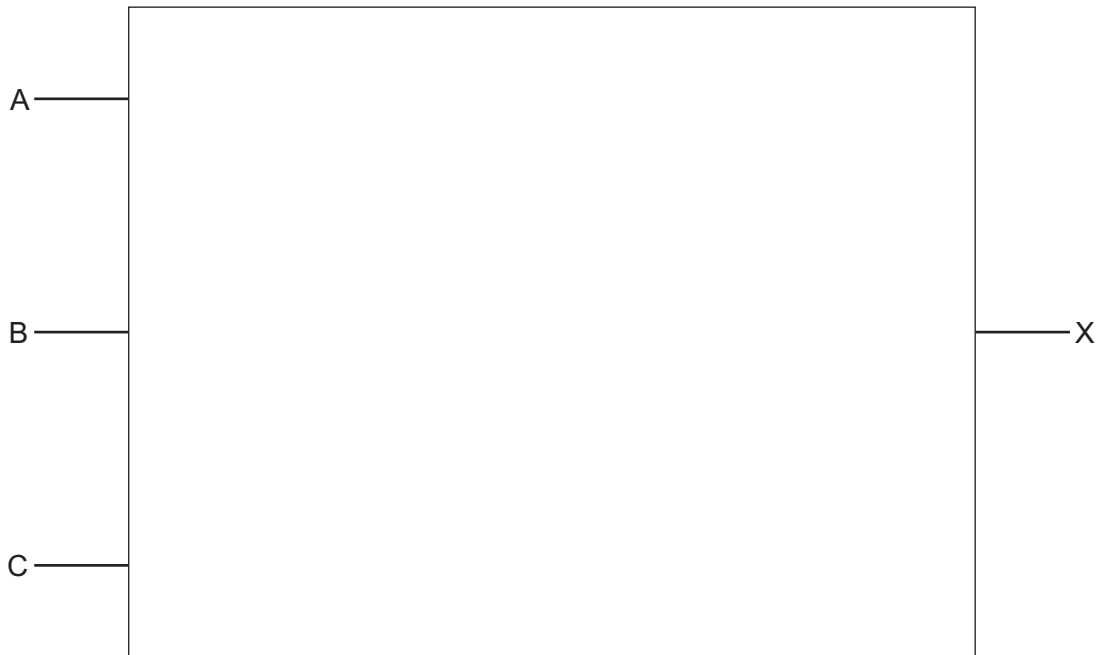
[4]

(b) Complete the truth table for the above logic statement.

A	B	C	Working space	X
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[4]

5 (a) What is meant by an interrupt?

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.... [1]

(b) A user starts the printing of a document, and then carries on editing a second document while printing continues.

Explain how interrupts make this possible.

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.... [4]

(c) Once a week the user runs a virus checker.

What action will be taken if the virus checker detects a virus in a file?

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.... [2]

(d) The computer is running a single-user operating system.

Describe what this means.

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.... [2]

6 **(a)** Describe the main differences between RAM and ROM.

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.... [3]

(b) Data logging devices contain both RAM and ROM.

Describe the role of each type of memory in these devices.

RAM ....

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ROM ....

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.... [2]

(c) The data logging device is used for automatic data capture.

Name another device used for automatic data capture and describe an application where it is used.

Device ....

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Application ....

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.... [2]

(d) A river is being monitored for acidity levels and oxygen levels.

Describe how data logging equipment and sensors are used to monitor this river.

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.... [4]

7 **(a)** Describe **one** benefit and **one** drawback of using each of the following network topologies:

Bus

Benefit ....

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Drawback ....

....

....

Star

Benefit ....

....

....

Drawback ....

....

....

Ring

Benefit ....

....

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Drawback ....

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....[6]

(b) Discuss the different types of hardware needed to operate a local area network (LAN) and a wide area network (WAN).

LAN ....

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WAN ....

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.... [3]

8 A finance company wish to use spreadsheets to monitor, control and predict costs.

(a) What features of spreadsheet software make them suitable for these tasks?

[3]

(b) The company are considering buying a custom-written accountancy package.

Describe the relative advantages and disadvantages of using custom-written accountancy software rather than off-the-shelf accountancy software.

Advantages

Disadvantages

[4]

(c) Identify **two** applications where generic applications software is not appropriate.

1 ....

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2 ....

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.... [2]

9 (a) What is an expert system?

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.... [1]

(b) An expert system was developed to identify faults (and suggest solutions) in television sets.

Describe how the expert system is used to identify faults by considering the inputs, processing and outputs.

Inputs ....

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Processing ....

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Outputs ....

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.... [7]