



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

COMPUTING

9691/01

Paper 1 Written
SPECIMEN PAPER

For Examination from 2011

1 hour 30 minutes

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
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.

Answer **all** questions.

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 **4** printed pages.

- 1 (a) State what is meant by
- (i) operating system software, [1]
 - (ii) applications software. [1]
- (b) Explain the difference between batch processing and real-time operating systems. [2]
- (c) Identify **one** application which would need to use batch processing and give a reason for your answer. [2]
- 2 (a) Explain the meaning of the following modes of data transmission.
- (i) Simplex [1]
 - (ii) Full-duplex [1]
 - (iii) Half-duplex [1]
- (b) (i) Describe how buffers and interrupts are used in the transfer of data from primary memory to secondary storage. [5]
- (ii) State which of the modes of data transmission in part (a) would be most suitable for the procedure in (b)(i), justifying your answer. [2]
- 3 A systems analyst is hired to carry out a feasibility study.
- (a) Describe **three** areas that the systems analyst should report in the feasibility study. [6]
- (b) Describe the methods that the systems analyst could use in order to collect information about the current system being used in the organisation. [5]

4 A building firm has expanded rapidly. A systems analyst is employed to plan the introduction of a computer system which will store customer records and details of stock and also keep the firm's accounts.

- (a) The systems analyst must decide between a solution that uses custom-written software and one that uses off-the-shelf software.

Explain what is meant by these terms and give advantages of each in this application. [5]

- (b) It is decided to purchase an integrated applications package.

State **three** distinct types of software that would be included in the package and give a use that each would be put to by the building firm. [6]

- (c) Communication between the computer system and the administration staff employed by the firm is to be through a human computer interface (HCI).

Discuss the importance of:

- (i) colour,
- (ii) layout,
- (iii) content,

in the design of the HCI. [9]

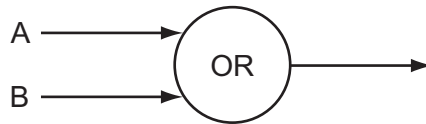
5 The computer system in a factory is used to store personnel records and to manage the payroll. Workers in the factory register when they arrive for work by placing a card in a machine (clocking on) and repeating the process when leaving (clocking off). This machine is not connected to the main computer system, although the information collected will eventually be used as the input to a device which will provide data for the payroll program.

The data on the cards consists of a bar code and OCR data. Describe how these two types of data are read by the input device and state what they are used for in this application. [6]

6 (a) Describe how an array is initialised in the memory of a computer. [4]

(b) Describe how the contents of an array may be searched serially to find a specific item. [4]

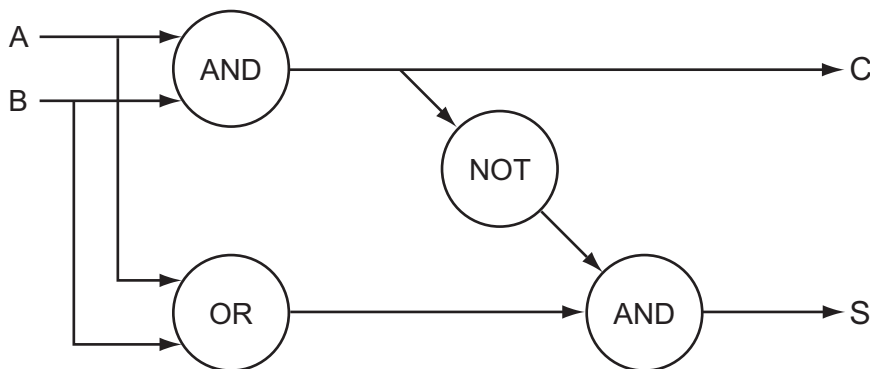
- 7 (a) Copy and complete this table for an OR gate.



A B	Output
0 0	
0 1	
1 0	
1 1	

[2]

- (b) (i) Copy and complete this table for the circuit.



A B	C S
0 0	
0 1	
1 0	
1 1	

[4]

- (ii) Give a possible use for this circuit in a processor, explaining your answer.

[2]

- 8 (a) State what is meant by a protocol.

[2]

- (b) Communication across a network can be done by using circuit switching or packet switching.

- (i) Explain the difference between circuit switching and packet switching.

[2]

- (ii) Give **one** advantage of using circuit switching and **one** advantage of using packet switching when sending data across a network.

[2]

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