



OXFORD LEARNING CENTRE
Advanced Level(Upper 6)

COMPUTER SCIENCE
PAPER 1

6023/1

MID YEAR PAPER 1

3 hours

Additional materials:

Answer paper

TIME 3 hours

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces provided on the answerpaper/answer booklet.

Answer **all** questions.

Write your answers on the separate answer paper provided.

If you use more than one sheet of paper, fasten the sheets together.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question. You are reminded of the need for good English and clear presentation in your answers.

This paper consists of 3 printed pages

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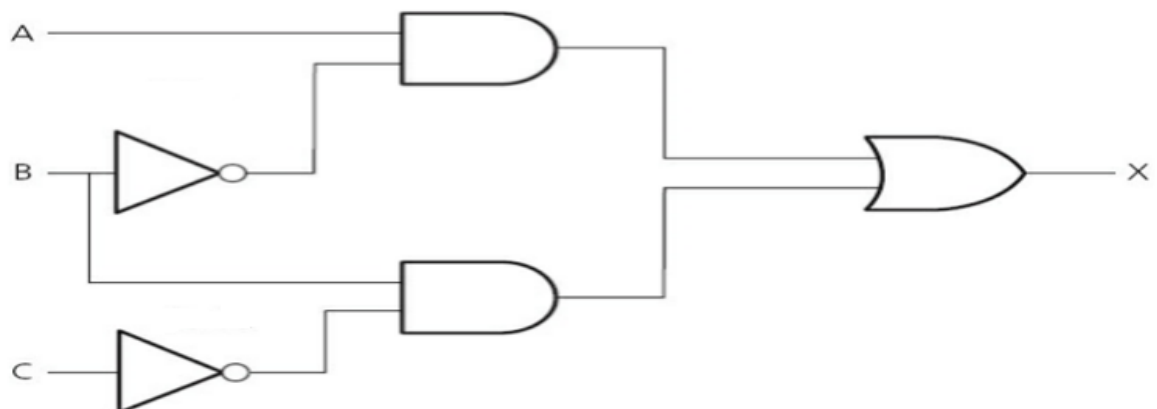
- 1 (a) Translate the numbers 102 and -73 into binary using two's complement. Show in binary the result of adding these two binary numbers. [5]

- (b) Find the product of the binary numbers 101101 and 101000 [2]

(c) A computer stores numbers in the Floating Point form, using 8 bits mantissa and 8 bits for exponent. Both the mantissa and the exponent are stored in two's complement form.

11010000 00000001

- i. Calculate the denary number for the above floating point representation above [3]
 - ii. Explain why the floating point above is not normalised [2]
 - iii. Normalise the floating point representation above [3]
- 2 (a) State and explain 4 TCP/IP layers [8]
- (b) State any **one** protocol which for each layer in (a) [4]
- 3 Compare the Routing Information Protocol (RIP) and Open Shortest Path First (OSPF) routing protocols [8]
- 4 (a) (i) Draw a diagram to represent the Von Newmann Architecture. [4]
- (ii) Explain the role of an accumulator in the Fetch Execute Cycle. [2]
- (iii) With the aid of a diagram, illustrate the Fetch Execute Cycle. [4]
- (b) Compare features of the Von Newmann Architecture and the Havard Architecture. [4]
- 5 (a) The following is a logic circuit



Write a Boolean Expression and logic statement that describes the above logic circuit. [4]

(b) Use a diagram to represent the NOR gate. [2]

6 Describe **five** security problems that might be created by the introduction of the network of microcomputers. [10]

7 A binary search tree is a data structure where items of data are held such that they can be searched for quickly and easily

The following data items are to be entered into a binary search tree in the order given:

London, Paris, Rome, Berlin, Amsterdam, Lisbon, Madrid

a) Draw a binary tree to show how these values will be stored [3]

b) State the root node in your diagram [1]

c) If Madrid is to be searched for in this binary tree, list the data items which have to be accessed. [2]

d) Write the output of the binary search tree in form

i) Pre-order traversal

ii) In-order traversal

iii) Post-order traversal [9]

8 Explain any **five** benefits Cloud Computing [10]

9 A software school club has developed a new product for e-learning usage.

(a) Define *e-Learning*. [2]

(b) Explain any 2 benefits to school [2]

(b) Outline how an organisation can use any 3 Ps of marketing in launching and marketing this newly developed product. [6]