

IBDP Computer Science

Year 12 REVISION

Topics 2-4

Paper Sample 1

__ marks available

Candidate Name

1

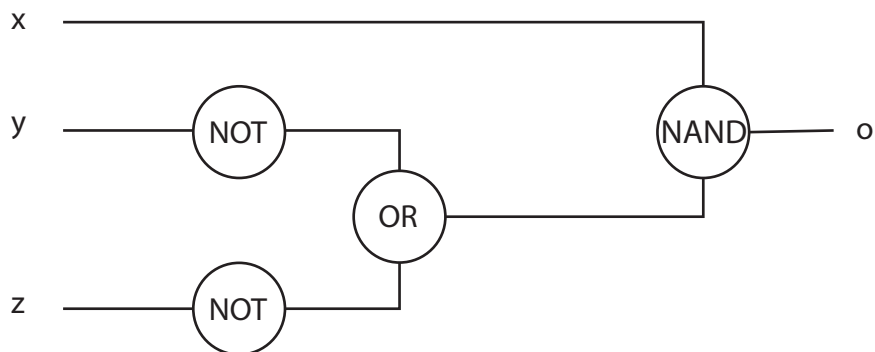
Draw the logic circuit for the following truth table:

A	B	O
0	0	1
0	1	0
1	0	0
1	1	1

[2]

2

Look at this logic circuit:



Complete the truth table for this logic circuit:

x	y	z	working area	o
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]

3

Construct a logic diagram from the following expression:

NOT A OR (A AND B)

[3]

4

Here is a byte of binary information.
State how many different values can be
represented by a byte.

1 0 1 0 1 0 1 1

[1]

5

Here is a decimal number.
Convert it to a byte of binary information.

1 3 4

working area

[4]

6

Here is a decimal number.
Convert it to a hexadecimal number.

1 6 3

working area

[4]

7

The machine instruction cycle is the process by which a program instruction is fetched, decoded, executed and the results are stored.
State where all instructions and data are stored.

[1]

8

Outline the role of the memory data register in the machine instruction cycle.

[2]

9

Explain the roles of the data bus and the address bus in the machine instruction cycle.

[4]

10

Distinguish between random access memory (RAM) and read only memory (ROM).

[2]

11

State the part of the central processing unit (CPU) that is responsible for carrying out calculations.

[1]

12

Hexadecimal is used to represent colours.
Calculate how many different colours can be represented using two hexadecimal characters.

[2]

13

Outline one reason for the use of standards in the construction of networks.

[2]

14

Identify two differences between a wide area network (WAN) and a local area network (LAN).

[2]

15

Outline the reason for compression when transmitting data over a network.

[2]

16

A school currently has a cabled network but wants to add wireless networking across the whole campus.

Identify two advantages to the students of the new wireless network.

[2]

17

Identify two reasons why fibre optic cable would be preferred over wireless connectivity.

[2]

18

Explain how data is transmitted by packet switching.

[3]

19

Explain the concept of redundancy with regards to the Internet.

[2]

20

Explain the purpose of a Domain Name Server.

[2]

21

State a reason that the performance of a network may vary during any given day.

[1]

22

What is the name of the device that provides client machines on a network with files and other resources?

[1]

23

Identify two differences and two similarities between a bubble sort and a selection sort when sorting an array of 10 elements.

[4]

24

A cycling tour lasts for 15 days. The total time for each competitor is recorded in a one-dimensional array, `TIMES[]`. After each day's race, the array entry for each competitor is increased by their time for that day.

There are 150 competitors and the 10 fastest times are transferred to the array `FASTEST[]` and displayed on a screen each day.

(a) Explain why a selection sort would be more efficient than a bubble sort in this case.

[2]

(b) Construct an algorithm to transfer the 10 fastest times from the array `TIMES[]` to the array `FASTEST[]`. Assume that the array `TIMES[]` is not sorted.