Computer Systems - GCSE Computer Science Paper 2

1. No.8

0 8 . 1 Define the term **hardware**.

[1 mark]

0 8 . 2 Describe the role of each of the following components of a CPU:

[3 marks]

Clock

Control unit

Register

0 8 . 3 Give **one** reason why a CPU with **two** cores might perform faster than an equivalent CPU with only one core.

[1 mark]

0 8 . 4 Define the term **non-volatile memory**.

[1 mark]

0 8 . 5 Give **one** example of a type of **volatile** memory in a computer system.

[1 mark]

0 8 . 6 Explain why secondary storage is required in a computer system.

[2 marks]

2. No.9

0 9 . 1 Define the term **software**.

[1 mark]

0 9 . 2 Define the term **system software**.

[1 mark]

0 9 . 3 Define the term **application software**.

[1 mark]

3. No.10

1 0 . 1 Explain the role of main memory in the **execute** stage of the Fetch-Execute cycle.

[2 marks]

1 0 . 2 Describe the other **two** stages of the Fetch-Execute cycle.

[2 marks]

Fetch stage

Decode stage

4. No.11

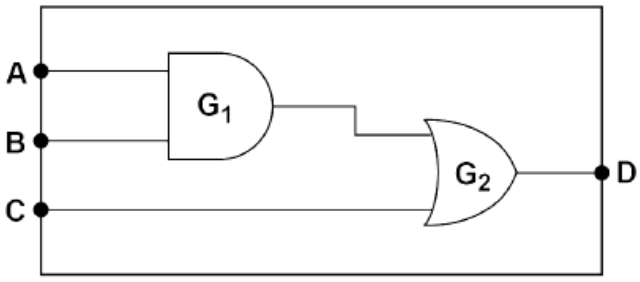
1 1 . 1 Complete the truth table for the **XOR** logic gate.

[1 mark]

A	B	A XOR B
0	0	
0	1	
1	0	
1	1	

Figure 3 shows a logic circuit.

Figure 3



1 1 . 2 State the type of logic gate labelled G_1 in **Figure 3**.

[1 mark]

_____

1 1 . 3 Write a Boolean expression to show how the output **D** is calculated from the inputs **A**, **B** and **C** in **Figure 3**.

You **must** use the correct symbols for the Boolean operators in your expression.

[2 marks]

D = _____

5. No.12

1 2 . 1 **Figure 4** shows three programs (**A**, **B**, **C**) that add two numbers and output the result. The programs are written in different programming languages.

Figure 4

A	B	C

`x = 14`
`y = 3`
`z = x + y`
`OUTPUT(z)`
	`LDR R0, #14`
	`LDR R1, #3`
	`ADD R2, R0, R1`
	`STR R2, 63`
	`OUT R2`
		`0000 00001110`
		`0001 00000011`
		`0110 00010000`
		`1010 10111111`
		`1110 00000000`

Identify the type of programming language used for each program shown in **Figure 4** by writing **A**, **B** or **C** in the correct row of **Table 2**.

You **must** only use each letter once.

[2 marks]

Table 2

	A, B or C
Assembly language	
High-level language	
Machine code	

1 2 . 2 State **one** advantage of writing programs in assembly language instead of a high-level language.

[1 mark]

1 2 . 3 Shade **one** lozenge to show which statement is true about program translators.

[1 mark]

A A compiler translates all the original program code before execution. ⬭

B Compiled code still needs the original program code to execute. ⬭

C Compiled code executes more slowly than code that is being interpreted. ⬭

D Interpreters generate machine code directly. ⬭