6-A-Day – Computer Science GCSE (50)

Q1	1 mark per nibble 1100 0110	2	

Q2	1 mark per bullet
	• Taking the move as input
	• Checking if array element input is free …
	    o …Outputting if it is taken
	• Writing "A" to the correct array element
	• Counting how many free space there are…
	    o …Outputting the number of free spaces (if good attempt at counting free spaces)
	
	e.g.
	`INPUT move`
	`IF numbers(move) = "" then`
	`    numbers(move) = "A"`
	`ELSE`
	`    output "taken"`
	`ENDIF`
	
	`free = 0`
	`FOR x = 0 TO 100`
	`    IF numbers(x) = "" then`
	`        free = free + 1`
	`    ENDIF`
	`NEXT x`
	`OUTPUT free`
	
	e.g.
	`INPUT move`
	`IF numbers(move) = "" then`
	`    numbers(move) = "A"`
	`    numberFree = numberFree - 1`
	
	`ELSE`
	`    output "taken"`
	`ENDIF`
	
	`OUTPUT numberfree`
		6	The output mark can only be awarded if a reasonable attempt at adding the free spaces have been performed
			
			Counting how many free spaces there are can be done by either:
			• Looping through each element of the array and updating a variable if free/taken
			• Subtracting 1 each time an element is taken (this must work, i.e. there is no initialisation of the variable e.g. to 101, as that would run every time and reset the variable). If Initialisation is used, this must be outside a loop and must be 101.

Q3	It has more cores.	1 (AO2 1a)	Although Computer 1 has a lower clock speed than the CPU in Computer 2 it has more cores, which means that it can be faster than Computer 2. Any answer relating to splitting a program into processes that be carried out consecutively will be accepted.
Q4	RAM SSD HDD Graphics card (GPU)	2 (AO2 1a)	Marks can be awarded for other appropriate responses: E.g. Motherboard Sound card
Q5	• data is transferred faster (1)… • …which makes a CPU more efficient (1) • It is faster to transfer to and from cache (1)… • …than transferring to and from RAM (1).	2 (AO2 1a)	1 mark to be awarded for each correct identification and 1 mark to be awarded for the associated explanation to a maximum of 2 marks.
Q6	• An instruction is fetched from memory • The instruction is then decoded • The decoded instruction is then executed so that the CPU performs continuously • The process is repeated • The program counter is incremented • The instruction is transferred to the MDR • The address of the instruction to be fetched is placed in the MAR	4 (AO1 1a)	1 mark is to be awarded for each correct answer to a maximum of 4 marks.