



Codefez Systems Architecture, Memory & Storage Worksheet 3 Answers

Q	Answer	Mark	Guidance																		
1	1 mark for any of the following: <ul style="list-style-type: none">- ROM is non-volatile and RAM is volatile- RAM is easily expandable, ROM size is fixed- Contents of RAM change frequently (is writeable), contents of ROM never change (unless upgrading the bios)	3																			
2	1 mark for any of the following: <ul style="list-style-type: none">- Using the hard disk / secondary storage for virtual memory (VM)- Used as RAM / to store the contents of RAM / main memory- Needed when there isn't enough physical memory- Contents of the RAM need to be copied to VM to make space for more data in RAM- ... as such this process can be time consuming and slow down computer performance.	5																			
3	1 mark for any of the following: <ul style="list-style-type: none">- This would allow for the computer to load more programs / applications in the RAM- ... having less need for virtual memory- ... Virtual memory would use the hard drive which is slower due to the fact that it has moving components.	2																			
4	<table><tr><th>Statement</th><th>True</th><th>False</th></tr><tr><td>The ALU is a register</td><td></td><td>✓</td></tr><tr><td>The Control Unit directs and coordinates all computer operations.</td><td>✓</td><td></td></tr><tr><td>Each core in a CPU can process data independently from the others</td><td>✓</td><td></td></tr><tr><td>CPU Cache is a smaller memory bank than RAM</td><td>✓</td><td></td></tr><tr><td>The registers can individually store more data than the CPU cache</td><td></td><td>✓</td></tr></table>	Statement	True	False	The ALU is a register		✓	The Control Unit directs and coordinates all computer operations.	✓		Each core in a CPU can process data independently from the others	✓		CPU Cache is a smaller memory bank than RAM	✓		The registers can individually store more data than the CPU cache		✓	5	
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5	e.g. 1 mark for any of the following: Advantages <ul style="list-style-type: none">- More durable (no moving parts)- Faster read & write times (no moving parts)- Can be lighter in weight / smaller in size	4	Maximum of only 2 marks for advantages and a maximum of only 2 marks for disadvantages																		

	<ul style="list-style-type: none">- Less effected by fragmentation <p>Disadvantages</p> <ul style="list-style-type: none">- May have a shorter lifespan than magnetic drives (less read & write cycles before failure)- More costly (as the tech is newer)- May cost more per GB																																												
6	1 mark for each correct word: The PC stores the address of the next instruction to be carried out. This value is then copied into the MAR . The instruction held at the memory address is copied over to the MDR transferred along the DATA BUS . The instruction is copied over to the CIR and the CU then instructs the PC to increment by 1.							6																																					
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