**2** A computer has a central processing unit (CPU).

The CPU includes the registers:
- Program counter (PC)
- Memory address register (MAR)
- Memory data register (MDR)
- Accumulator (ACC)
- Current instruction register (CIR).

**(a)** The table contains **five** statements about the role of registers in the fetch–decode–execute cycle of a CPU.

| Letter | Statement |
|---|---|
| A | PC stores the address of the next instruction to be accessed |
| B | MAR stores the instructions of the program that is running |
| C | MDR stores the data passed to it from the PC |
| D | ACC stores the result of each calculation |
| E | CIR stores the instruction currently being executed |

**Two** of the statements are **not** correct.

Identify the letter of each incorrect statement.

Suggest a corrected statement for each.

Incorrect statement 1 .....

Corrected statement .....

.....

.....

Incorrect statement 2 .....

Corrected statement .....

.....

.....

[4]

**(b)** The computer has a single core 3.5 GHz processor and an 8 kB cache.

**(i)** State what is meant by a 3.5 GHz processor.

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..... [1]

**(ii)** The CPU is changed to a dual-core 3.5 GHz processor.

Explain how the number of cores affects the performance of a CPU.

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..... [2]

**(iii)** The amount of cache is increased to 64 kB.

Explain how the amount of cache affects the performance of a computer.

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.....

..... [2]

**(c)** The computer has both primary and secondary storage.

**(i)** Random access memory (RAM) is one example of primary storage.

Describe what is meant by RAM.

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..... [2]

**(ii)** Read only memory (ROM) is another example of primary storage. ROM often stores the start-up instructions for a computer.

Identify **one** other item of data that is commonly stored in ROM.

.....

..... [1]

**(iii)** Some computers make use of virtual memory.

State the purpose of virtual memory.

.....

..... [1]