

3 A computer has a central processing unit (CPU), memory and secondary storage.

(a) The computer has a Von Neumann architecture.

Circle **three** registers that are found in the Von Neumann architecture.

- | | | |
|------------------------------|---------------------|-----------------------|
| accumulator | arithmetic register | binary counter |
| binary register | control register | current data register |
| current instruction register | data counter | instruction counter |
| logical register | program counter | storage register |

[3]

(b) State the purpose of the CPU in the computer.

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..... [1]

(c) Computer A has a 2.1GHz quad-core processor.

Computer B has a 2.5GHz dual-core processor.

Computer C has a 5.2GHz single-core processor.

(i) Identify which computer is most likely to execute more instructions simultaneously.

Justify your answer.

Computer

Justification

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[3]

(ii) Explain why Computer C can execute more instructions per second than Computer B.

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..... [2]

(d) All three computers have the same instruction set.

Define the term instruction set.

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..... [1]