1, What is the function of the control bus in the fetch-decode-execute cycle? (1)

A) To specify the location of the data in memory

B) To send data to or from the CPU

C) To carry control signals to other parts of the CPU

D) To perform arithmetic and logical operations

2. Which bus is used to send data to or from the CPU? (1)

A) Control bus

B) Address bus

C) Data bus

D) Both A and B

3. State the function of the address bus in the fetch-decode-execute cycle? (1)

4. Describe the role of the Control Unit in the fetch-decode-execute cycle? (2)

5. Describe the FDE cycle beginning with the control unit sending a signal for the next instruction to be fetched. (4)

6. What is responsible for the speed of the fetch-decode-execute cycle in a computer system? (1)

A) The CPU

B) The ALU

C) The Control Unit

D) The Clock

EXTENSION:

Write a definition of the role of each of the items mentioned in the MCQs.

ANSWERS

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1. C The control bus carries signals from the Control Unit to other parts of the CPU. In the first instance, it carries the signal to tell the address bus to go and to the memory address where the next instruction is held.

2. C The data bus carries data from RAM to the CPU for decoding. It also carries data that needs storing back to the RAM.

3. The function of the address bus is to carry the address of the next memory location so the data or instruction held there can be carried back to the CPU for decoding and executing.

4. The Control Unit is responsible for co-ordinating other parts of the CPU. It sends a signal to the address bus (via the control bus) initiating the fetch part of the FDE cycle. When the instruction is received the control unit decodes it and sends it for execution.

5. The Control Unit sends a signal along the control bus to the address bus. The address bus carries the next address to RAM where the data/instruction there is brought back by the data bus. The control unit decodes the instruction and sends it for execution. Execution depends on the instruction but much of it is handled in the Arithmetic Logic Unit.

6. D the clock. The clock ensures that each step—fetching, decoding, and executing an instruction—happens at the **right time**. The clock's regular ticks coordinate the flow of instructions.

Extension:

Most definitions already in the answers above.

Arithmetic Logic Unit – the part of the CPU that is responsible for carrying out mathematical and logic operations.