

CS286-Computer Organization & Architecture

Possible Quiz Questions (Quiz #7)

on October 14th, 2026

The following is a list of possible questions for our quiz on October 14th. Some of the questions will not be asked in the quiz. All the questions that will appear in the quiz will appear exactly as shown below (however, numeric parameters may be changed). The quiz is closed textbook, closed notes and closed neighbors. Note that the questions, which did not appear in this quiz, still may appear in the exams. You will find a solution for these questions during lectures.

- #1:** What are the five basic steps in a processor datapath?
- #2:** What does “IF” stage in a processor datapath do?
- #3:** What does “ID” stage in a processor datapath do?
- #4:** What does “EX” stage in a processor datapath do?
- #5:** What does “ME” stage in a processor datapath do?
- #6:** What does “WB” stage in a processor datapath do?
- #7:** What is “PC (Program Counter)” register for?
- #8:** What does “CPI” stand for? What does it mean?
- #9:** What is “processor clock cycle”?
- #10:** What is “processor clock cycle time”?
- #11:** Show the formula to calculate the execution time (for scalar processors) using, IC (instruction count), R (clock cycle rate), and one more parameter.
- #12:** Processors with a lower clock rate execute the same binary programs faster than the processors with a higher clock rate. How is this possible?

#13: For the following performance metrics for processors, show which way each metric is better:

Execution time: short long

CPU Clock rate: low high

Clock cycle time: short long

CPI: small large

MIPS rate small large

#14: What are “scalar datapath processors”?

#15: What are “pipeline datapath processors”?

#16: What are “super-scalar datapath processors”?

#17: What are “super-pipeline datapath processors”?

#18: What are “VLIW datapath processors”?

#19: What are “vector datapath processors”?

#20: What are “structural hazards”? Show an example of the structural hazard (using assembly instructions).

#21: What are “data hazards”? Show an example of the data hazard (using assembly instructions).

#22: What are “control hazards”? Show an example of the control hazard (using assembly instructions).

#23: What are the four different types of data dependency?