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To pass 75% or higher

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again

1. If two tasks are executing in parallel, which of the following statements is true?

1 / 1 point

- ☐ They are using exactly the same hardware at the same time.
- ☒ They are using different hardware, but running at the same time.
- ☐ Their executions are alternating in time.
- ☐ One task executes immediately after the other finishes.

✓ **Correct**
Correct!

2. What does the von Neumann bottleneck state about computer architectures?

0 / 1 point

- ☒ Power consumption is a limiting factor for performance.
- ☐ Temperature is a performance bottleneck.
- ☐ Clock frequency cannot be improved without considering temperature.
- ☐ Memory access time is a performance bottleneck.

✗ **Incorrect**
The statement is true, but this is not the von Neumann bottleneck.

3. What does Moore's law directly observe?**0 / 1 point**

- ☐ Power consumption doubles every 18 months.
- ☐ Transistor density doubles every 2 years.
- ☒ Processor power doubles every 2 years.
- ☐ Transistor switching delay is cut in half every year.

☒ **Incorrect**
Moore's law is not directly about power.

4. How is dynamic power consumption related to voltage swing?**1 / 1 point**

- ☒ Dynamic power is proportional to the square of the voltage swing.
- ☐ Dynamic power is proportional to the cube of the voltage swing.
- ☐ Dynamic power is proportional to the square root of the voltage swing.
- ☐ Dynamic power is proportional to the capacitance.

☒ **Correct**
Correct!

5. Why can't Dennard Scaling continue forever?**1 / 1 point**

- I. The speed of light limits the potential performance improvements.
- II. Voltage must remain above threshold voltage.
- III. Some noise margin must be maintained.

- ☐ I only.
- ☐ I and II, NOT III.
- ☒ II and III, NOT I.
- ☐ I, II, and III.

☒ **Correct**

Correct!

6. What factor limits clock rates in future designs?

0 / 1 point

- I. The speed of light.
- II. Excessive power consumption.
- III. Excessive temperature.

- ☐ I only.
- ☐ I and II, NOT III.
- ☒ II and III, NOT I.
- ☐ I, II, and III.

⊗ **Incorrect**
All three factors limit clock frequency in the future.

7. One benefit of concurrent execution on a single processor is that it can hide latency. What does this mean?

1 / 1 point

- ☐ When tasks execute in parallel, only the delay of the slowest task matters.
- ☒ One task can execute while another task is waiting on something.
- ☐ The concurrent execution time of two tasks is less than the sum of their sequential execution times.
- ☐ Total latency is reduced because two tasks can execute at the same time.

✓ **Correct**
Correct!