**Assignment:**

**Define Moore’s law** and explain why it has now stopped being true. Be sure to describe all of the physical limitations that have prevented Moore’s law from continuing to be true.

There are five specific concepts or ideas that you need to mention in order to receive full credit. One item carries 4 points, another carries 3 points, and the remaining three carry one point each. These are specified explicitly in the peer review grading rubric.

Definition: Moore’s Law (which is more of an observation than a law) is the idea that the number of transistors on a microchip will double every two years (sometimes said to be 18 months). This period is referred to as the “doubling period”.

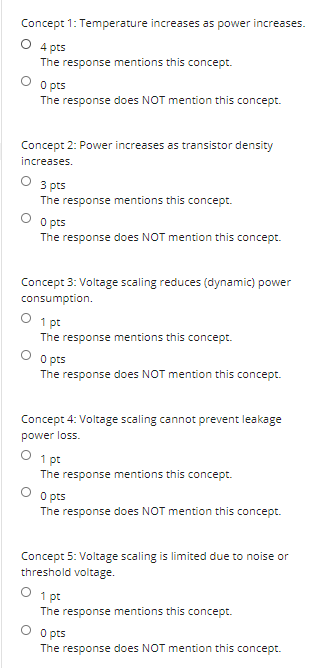
Physical Limitations we are encountering:

**Power & Heat:**

* Power required/consumed increases with the transistor density.
* Temperature increases as power consumption increases. This can potentially melt components on the chip.

**Voltage Scaling:**

* You can scale the voltage to reduce consumption of dynamic power, but you cannot do this indefinitely
  + Voltage scaling can make the transistors less robust to noise – this depends on the threshold voltage of the transistors, but if you scale down too much, noise can more frequently swing your readings above and below thresholds making state switches unreliable
  + You will always encounter leakage. Stray voltage, current leakage, and therefore power leakage.

1. ****