Sample Questions for Midterm 2

These are questions like the questions you may find on the second exam. I am not providing solutions to these questions; they only serve as a guide to what to expect.

1. Suppose that a computer has a 400 MHz clock, and that a mouse attached to the system generates a 4-byte message at most 30 times each second. Suppose that the instructions in the operating system that are executed to receive, decode, and process the mouse message use 400 clock cycles per message. What is the fraction of CPU time required to communicate with the mouse?

2. What is the average time to read or write a 2096 byte sector for a disk rotating at 10800 RPM, given that the average seek time is 8 ms, the controller overhead is 2 ms, and the transfer rate is 4 MB/sec.?

3. What are vectored interrupts?

4. List the steps taken when an interrupt occurs, assuming there is an interrupt vector.

5. What are the advantages of NAND-based flash memory over NOR-based flash memory?

6. What is the purpose of the interrupt status register?

7. Is it possible to have a TLB hit and a cache miss? Explain.

8. A device is in service without interruption for 4 years and then is out of service for 2 weeks before being placed in service again. It then stays in service 2 years and is out of service for 1 week. What is its average availability?

9. Which RAID schemes use bit-interleaving? Which use block interleaving?

10. Are there any RAID schemes that improve performance? Which ones?