1. When choosing whether to implement a device driver as a block or a serial device, which of the following information about the new device is most relevant?

   (a) The same data is likely to be read multiple times.
   (b) The device returns data in fixed-sized chunks.
   (c) The device is fast.
   (d) The device is attached by USB.

2. When a web browser requests a web page, it is performing a type of inter-process communication. This communication is best described as:

   (a) message passing
   (b) shared memory IPC
   (c) semaphore-based synchronization
   (d) None of the above

3. Disabled interrupts are effective at enforcing mutual exclusion in which of the following contexts?

   (a) an OS kernel on a symmetric multiprocessor (SMP) system
   (b) an OS kernel on a cluster of networked computers
   (c) an OS kernel on a single processor system
   (d) a web-based distributed application

4. “Elevator” scheduling is used by:

   (a) Ethernet cards
   (b) Flash drive controllers
   (c) **Hard disk controllers**
   (d) Operating system CPU schedulers

5. Which of the following is an example of a bounded-buffer producer consumer problem?

   (a) UNIX pipes, e.g. the command “ls | more”
   (b) two threads sharing access to struct foo
   (c) browsing and buying a plane ticket online
   (d) All of the above

6. Processors have memory management hardware primarily to:

   (a) increase the amount of physical memory available to the processor.
   (b) accelerate physical memory access.
   (c) **accelerate virtual address space computations.**
   (d) improve security.

7. Monitors:

   (a) use condition variables for synchronization
   (b) prevent multiple threads from executing monitor code at the same time
   (c) hide mutual exclusion details from calling routines
   (d) **all of the above**

8. Producer/consumer programs use mutual exclusion mechanisms (semaphores, monitors, etc.) to:

   (a) slow down consumers that run faster than producers
   (b) slow down producers that run faster than consumers
   (c) prevent the shared queue from becoming corrupted
   (d) **all of the above**