

1. A character-stream device (B).

- A) transfers data in blocks of bytes
- B) transfers data a byte at a time
- C) is a device such as a disk drive access device
- D) is similar to a random access device

2. The (B) register of an I/O port can be written by the host to start a command or to change the mode of a device.

- A) Status
- B) control
- C) data-in
- D) transfer

3. DMA controllers (C).

- A) do not utilize an additional, special purpose, processor
- B) are a nonstandard component in PCs of today
- C) can steal memory access cycles from the main CPU
- D) can access main memory at the same time as the main CPU

4. Which of the following is true of a blocking system call? (C)

- A) The application continues to execute its code when the call is issued.
- B) The call returns immediately without waiting for the I/O to complete.
- C) The execution of the application is suspended when the call is issued.
- D) Blocking application code is harder to understand than nonblocking application code

5. A(n) (D) is a buffer that holds output for a device that cannot accept interleaved data streams.

- A) Escape
- B) block device
- C) cache
- D) spool

6. A(n) (A) is a front-end processor that multiplexes the traffic from hundreds of remote terminals into one port on a large computer.
- A) terminal concentrator
 - B) network daemon
 - C) I/O channel
 - D) context switch coordinator
7. Which of the following is a principle that can improve the efficiency of I/O? (C)
- A) Increase the number of context switches.
 - B) Use small data transfers
 - C) Move processing primitives into hardware
 - D) Decrease concurrency using DMA controllers
8. An expansion bus is used to connect relatively high speed devices to the main bus. (F)
9. A dedicated device cannot be used concurrently by several processes or threads. (T)
10. Although caching and buffering are distinct functions, sometimes a region of memory can be used for both purposes. (T)
11. Explain the concept of polling between a host and a controller.
12. Give an example of when an application may need a nonblocking I/O system call.

- 11. Ans.

When a host tries to access the controller, it constantly reads the status of a "busy register" and waits for the register to clear. This repetitive checking is termed polling.

- 12. Ans.

If the user is viewing a web browser, then the application should allow keyboard and mouse input while it is displaying information to the screen. If nonblocking is not used, then the user would have to wait for the application to finish displaying the information on the screen before allowing any kind of user interaction.