**Chapter 7: input/output**

**MULTIPLE CHOICE**

1. The \_\_\_\_\_\_\_\_\_ contains logic for performing a communication function between the peripheral and the bus.

A. I/O channel B. I/O module

C. I/O processor D. I/O command

1. The most common means of computer/user interaction is a \_\_\_\_\_\_\_\_\_\_.

A. keyboard/monitor B. mouse/printer

C. modem/printer D. monitor/printer

1. The I/O function includes a \_\_\_\_\_\_\_\_\_ requirement to coordinate the flow of traffic between internal resources and external devices.

A. cycle B. status reporting

C. control and timing D. data

1. An I/O module that takes on most of the detailed processing burden, presenting a high-level interface to the processor, is usually referred to as an \_\_\_\_\_\_\_\_\_.

A. I/O channel B. I/O command

C. I/O controller D. device controller

1. An I/O module that is quite primitive and requires detailed control is usually referred to as an \_\_\_\_\_\_\_\_\_.

A. I/O command B. I/O controller

C. I/O channel D. I/O processor

1. The \_\_\_\_\_\_\_\_\_ command causes the I/O module to take an item of data from the data bus and subsequently transmit that data item to the peripheral.

A. control B. test

C. read D. write

1. The \_\_\_\_\_\_\_\_ command is used to activate a peripheral and tell it what to do.

A. control B. test

C. read D. write

1. \_\_\_\_\_\_\_\_ is when the DMA module must force the processor to suspend operation temporarily.

A. Interrupt B. Thunderbolt

C. Cycle stealing D. Lock down

1. The 8237 DMA is known as a \_\_\_\_\_\_\_\_\_ DMA controller.

A. command B. cycle stealing

C. interrupt D. fly-by

1. \_\_\_\_\_\_\_\_ is a digital display interface standard now widely adopted for computer monitors, laptop displays, and other graphics and video interfaces.

A. DisplayPort B. PCI Express

C. Thunderbolt D. InfiniBand

1. The \_\_\_\_\_\_\_\_ layer is the key to the operation of Thunderbolt and what makes it attractive as a high-speed peripheral I/O technology.

A. cable B. application

C. common transport D. physical

1. The Thunderbolt protocol \_\_\_\_\_\_\_\_\_ layer is responsible for link maintenance including hot-plug detection and data encoding to provide highly efficient data transfer.

A. cable B. application

C. common transport D. physical

1. The \_\_\_\_\_\_\_\_ contains I/O protocols that are mapped on to the transport layer.

A. cable B. application

C. common transport D. physical

1. A \_\_\_\_\_\_\_\_ is used to connect storage systems, routers, and other peripheral devices to an InfiniBand switch.

A. target channel adapter B. InfiniBand switch

C. host channel adapter D. subnet

1. A \_\_\_\_\_\_\_\_ connects InfiniBand subnets, or connects an InfiniBand switch to a network such as a local area network, wide area network, or storage area network.

A. memory controller B. TCA

C. HCA D. router

**SHORT ANSWER**

1. Interface to the processor and memory via the system bus or central switch and interface to one or more peripheral devices by tailored data links are two major functions of an \_\_\_\_\_\_\_\_\_\_\_\_\_.
2. An external device connected to an I/O module is often referred to as a \_\_\_\_\_\_\_\_\_\_ device.
3. We can broadly classify external devices into three categories: human readable, communication, and \_\_\_\_\_\_\_\_\_\_.
4. The U.S. national version of the International Reference Alphabet is referred to as \_\_\_\_\_\_\_\_\_\_.
5. The categories for the major functions or requirements for an I/O module are: control and timing, device communication, data buffering, error detection, and \_\_\_\_\_\_\_\_\_.
6. In \_\_\_\_\_\_\_\_\_\_ mode the I/O module and main memory exchange data directly, without processor involvement.
7. There are four types of I/O commands that an I/O module may receive when it is addressed by a processor: control, test, write, and \_\_\_\_\_\_\_\_\_.
8. When the processor, main memory, and I/O share a common bus, two modes of addressing are possible: memory mapped and \_\_\_\_\_\_\_\_.
9. The \_\_\_\_\_\_\_\_ is a single-chip, general-purpose I/O module designed for use with the Intel 80386 processor.
10. A \_\_\_\_\_\_\_\_ controls multiple high-speed devices and, at any one time, is dedicated to the transfer of data with one of those devices.
11. In a \_\_\_\_\_\_\_\_\_ interface there are multiple lines connecting the I/O module and the peripheral and multiple bits are transferred simultaneously.
12. In a \_\_\_\_\_\_\_\_ interface there is only one line used to transmit data and bits must be transmitted one at a time.
13. The most recent, and fastest, peripheral connection technology to become available for general-purpose use is \_\_\_\_\_\_\_\_\_\_, developed by Intel with collaboration from Apple.
14. \_\_\_\_\_\_\_\_ enables servers, remote storage, and other network devices to be attached in a central fabric of switches and links, connecting up to 64,000 servers, storage systems, and networking devices.
15. A \_\_\_\_\_\_\_\_ machine is an instance of an operating system along with one or more applications running in an isolated memory partition within the computer, enabling different operating systems to run in the same computer at the same time, as well as preventing applications from interfering with each other.