**1. Why we can use PCMCIA in laptop computer?**

The PCMCIA was organized to provide a standard way of expanding portable computers. The PCMCIA bus was originally designed to provide a way of expanding the memory in a small, handheld computer, referred to generically as a PCMCIA host. The PCMCIA bus has been renamed PC Card to make it easier to pronounce. PC Card uses a small expansion card (about the size of a credit card). The interface is a thin, 68-pin connector that has remained relatively unchanged from the original specification. Although this form factor is primarily used in portable computers, PC Card adapters (converters) are available for desktop PCs.

**2. What is ExpressCard?**

ExpressCard was launched by PCMCIA as a way to support USB 2.0 and PCI Express (hence the term ExpressCard) connectivity for portable computers. In fact, with support for transfer rates 2.5 times that of CardBus, ExpressCard is capable of transferring data at 2.5Gbps, approximately the rate of a single lane of PCIe. ExpressCard adapters are 75mm in length. The standard ExpressCard, known as ExpressCard/34, is only 34mm wide.

**3. What is Docking Stations?**

A docking station is basically an extension of the motherboard of a laptop. Some laptops are designed to be desktop replacement laptops. That is, they will replace a standard desktop computer for day-to-day use and are thus more full-featured than other laptops. These laptops often have a proprietary docking port. A docking port is used to connect the laptop to a special laptop-only peripheral known as a docking station.

**4. What is the difference between Laptop system board and desktop system board?**

The primary differences between a laptop motherboard and a desktop motherboard are the lack of standards and the much smaller form factor. Most motherboards are designed along with the laptop case so that all the components will fit inside. Therefore, the motherboard is mostly proprietary.

To save space, components of the video circuitry (and possibly other circuits as well) are placed on a thin circuit board that connects directly to the motherboard. This circuit board is often known as a daughterboard.

Having components performing different functions (such as video, audio, and networking) integrated on the same board is a mixed bag. On one hand, it saves a lot of space. On the other hand, if one part goes bad, you have to replace the entire board, which is more expensive than just replacing one expansion card.

**5. What is the difference between Laptop processor and desktop processor?**

Just like in desktop computers, the processor is the brain of the computer. Laptops have less space, and thus, heat is a major concern. Nearly all desktop processors mount using pin connectors, whether on the CPU or on the motherboard (as is the case with LGA sockets). Pins and sockets are big and bulky, meaning they’re not a laptop’s friends. Laptop processors are generally either soldered directly to the motherboard or attached using the Micro-FCBGA (Flip Chip Ball Grid Array) standard, which uses balls instead of pins. In most cases, this means that the processor cannot be removed, meaning no processor upgrades are possible.

**6. Write down the elaboration:**

**PCMCIA-** Personal Computer Memory Card International Association

**ACPI –** Advanced Configuration and Power Interface

**APM-** Advanced Power Management

**SODIMM-** Small Outline Dual Inline Memory Module

**7. Write down the G1 Sleeping mode for Laptop (S1-S4) in short?**

**S1:** S1 is the most power-hungry sleep mode. The CPU stops executing instructions and the processor cache is flushed, but power is still provided to the CPU and memory. All devices not being used are powered down.

**S2:** S2 uses less power than S1 because in this state the processor is powered down. S2 is not typically utilized.

**S3:** S3 is also called Standby in Windows. When put into S3, the computer maintains power only to the RAM. This level is also called Suspend to RAM.

**S4:** S4 is called Hibernation in Windows. In S4, the information in RAM is written to the hard disk, and the RAM is powered off as well. This level is also called Suspend to Disk.

**8. What is power management & write the difference between Hibernate & Standby?**

Laptops were not designed with internal expandability in mind. Power management gives an opportunity to manage devices and how much power they consume, as batteries don’t last forever. Finding a way to manage power efficiently gives batteries longer lives and you more time with your daisies.

Difference between Hibernate & Standby state:

**Hibernation** is a sleep mode in Windows. It’s known as S4 sub mode G1 Sleeping. In this state the information in RAM is written to the hard disk, and the RAM is powered off as well. This means that a user can take the computer from S4 back to G0 and still work from where he or she left off, but it will take longer for the applications to be available. The other good news is, because the information in RAM is written to the hard disk, if a power loss occurs, the user’s information will not be lost. This level is also called Suspend to Disk.

**Standby** is also a sleep mode in Windows. It’s known as S3 sub mode G1 Sleeping. When put into S3, the computer maintains power only to the RAM. Because of this, and because all running application information is stored in RAM, when the user brings the computer back from S3, the user can start right where he or she left off. However, if you lose power while in S3, all of the information being held in RAM is gone. This level is also called Suspend to RAM.

**9. Describe Global State (G0 to G3).**

There are four global states, ranging from G0 (normal working state) to G3 (mechanical off).

**G0 Working:** The normal working state of a computer is called G0 Working. It’s assumed that all devices are running at full power. Most laptops will power down individual devices when they’re not being used, to save battery life.

**G1 Sleeping:** The first power-saving mode is called G1 Sleeping. G1 is divided into four submodes, or sleep modes, called S1–S4. Higher S state numbers indicate more power savings but also longer latency before the device can be powered back up to G0.

**G2 Soft Off:** The G2 power state is called soft off. We execute a soft off by clicking the Turn Off Computer or Shutdown buttons in Windows or by otherwise letting the operating system shut the computer down, without a physical power outage. To boot back up from G2, the entire boot process must be run.

**G3 Mechanical Off:** If a complete power loss occurs (such as by unplugging the cord), the system enters into G3 mechanical off. In this state, the computer can be safely disassembled. To bring the computer from G3 to G0, the complete boot process must be run.

**10. Describe Processor State (C0 to C3).**

There are four processor states:

**C0** is the operational state; no power is being saved.

**C1**, or Halt, is a powered-down state, but the processor can return to action nearly instantaneously.

**C2**, sometimes called Stop-Clock, uses less power than C1. The processor is still visible to software applications but takes longer to wake up if a request is made.

**C3** is Sleep mode. In this state, the processor cache is flushed, and it will take a few seconds for the processor to be available.

**11. What safe mode & three kinds of safe mode?**