Chapter 10-11 Review Questions

10.6. Suppose a disk is rotating at 7200 rpm. What is the minimum latency time for this disk? What is the maximum latency time for this disk?

Maximum latency time = 1/rotational speed time/sec

7200 rotation per minute= 120 rotation per second

=1/200

=0.00833 sec = 8.33 millisecond

Maximum latency time = 8.33 millisecond

10.7. What is a disk array? What advantages does a disk array offer over those of a single disk?
A disk array is a group of hard drives to work as one. It provides sharing of data among multiple devices. Disc array also provides storage redundancy.

10.8) How does the layout of a typical optical disc differ from that of a magnetic disk? How many tracks does a standard single-layer CD-ROM contain?
Opticals are portable and can hold a lot of data, also used for off site archiving.
Magnetic is used for storing, reading and writing for current use.
A CD-ROM contains one single spiral track that can stretch to three miles long.

10.9) What are advantages and disadvantages of magnetic tape.
A lot of storage, cheap and can edit the content easily, record without interruption.

Special equipment is needed to use the tape, Magnets can damage the tape, data can erode in 15 years.

10.10. What do the numbers 1920x1080 represent when describing a display?

The numbers represent the screen resolution. This is high quality resolution.

10.11. How many pixels are there in a 1024x768 display? What is the picture ratio of this display?

There are 786432 pixels in 1024x768 display. The picture ratio is 4:3 for this display because 1024/4 = 256 and 768/3 = 256.

10.12. A recent Apple iPad has a resolution of 2048x1536 and a diagonal scan size of 9.7 inches. What is the picture ratio of this display? What is the pixel density?

The picture ratio of this display is 4:3. This is because 2048/1536 is 1.333 which is 4/3. The pixel density is 264 pixels/inch because the formula for = = approximately 264 pixels/inch.

10.13. What is true of the red, blue, and green pixel values if the color of the pixel is white?

What if it's black?
The values of RGB for white is all 255,255,255 which is the max out of 256 bit while the values of black in RGB is the opposite of 0,0,0 which is the lowest of the scale.

10.14. Explain the purpose of a GPU. What is the relationship between the CPU and a GPU and the display?

The purpose of a GPU is to have a hardware component completely dedicated to processing on screen graphics independently. It is important today, because more modern graphic usability require more power than back then which was mostly text based. The relationship between a GPU and CPU is that the CPU will output requests of major GPU operations to the video card. There is also a process called streaming which allows the CPU to dispatch instructions with its multiple cores to the GPU.

10.15. Explain how a raster scan works.

A raster scan takes stored pixels from bitmaps from an area of computer memory then transferred in the sequence of raster scan order. The order goes from top left, row by row, pixel by pixel, to bottom right. While that is happening values behind the scene that are to be displayed is simultaneously read from the video memory in sync while it appears on screen. Both memory and video scanner are controlled by a scan generator.

10.16. What does OLED stand for? How does OLED technology differ from LCD technology?

- OLED: Organic Light Emitting Diode
- OLED uses organic compounds, consumes less power, is brighter, and uses transistors to generate light, whereas standard LCD is passive, backlit, filtered, and produces less light

10.17. What are two types of printers in primary use today?

Laser and inkjet

10.18. What is the measure used to indicate in the resolution of a printer?

Resolution can be measured in many ways:
1. Samples per inch (spi, scanners)
2. Pixels per inch (ppi monitors)
3. Dots per inch (dpi, printers)

10.19. Name at least three user input devices other than touch screens that are commonly found in smartphones and other mobile devices.

Light pens
Graphics tablets
Stylus
Video digitiser
Scanner
Graphics tablets

10.20. What does NIC stand for?

Network Interface Card

11.3. What is the purpose of a bus interface or bus bridge?
The bus interface unit is the part of the processor that interfaces with the rest of the PC. Its name comes from the fact that it deals with moving information over the processor data bus, the primary conduit for the transfer of information to and from the CPU. The bus interface unit is responsible for responding to all signals that go to the processor, and generating all signals that go from the processor to other parts of the system.

11.4. Explain what you expect to find on a motherboard.
The **motherboard** is the computer's **main circuit board**. It's a thin plate that holds the CPU, memory, connectors for the hard drive and optical drives, expansion cards to control the video and audio, and connections to your computer's ports (such as USB ports). The motherboard connects directly or indirectly to every part of the computer. So therefore, in the motherboard, we the four part that we should look at them.
The first one is form factor. While you can get capable motherboards in any size, its form factor is an important factor in choosing a motherboard. (decide the size of computer).
The second one is CPU socket and chipset. When choosing a motherboard, look for one with a CPU socket that will accommodate your chosen type of CPU. Not only do processors from Intel and AMD have different socket requirements, but different processors from the same manufacturers will also require a specialized socket.
The third one is slots. Motherboards typically have three types of slots. Memory slots let you plug RAM modules into the computer. The more slots you have, the more memory you can add.
The four one is connectors. Motherboards have a broad range of both internal and external connectors.
The last one is features. Different motherboards also support additional features. For instance, some motherboard chipsets will include the ability to not just connect multiple hard drives.

11.5. What is the predominant master bus found on modern personal computers? What advantages does this bus offer over other buses?
 PCI-Express. It uses specialized buses for every device. The PCI-E can run at 16Gb/s vs 133 Mb/s the PCI can do. In other words, PCI-E is just a better version of the original, PCI.

11.6. What are major similarities and differences between the PCI-Express bus and the PCI bus?
- PCIe is much faster compared to PCI.

- PCIe uses a serial interface while PCI uses a parallel interface.
- PCIe speed is classified into lanes, each capable of delivering up to 1GB/s data transfer.
- PCI slots are standardized while PCIe slots vary depending on the number of lanes the slot is intended for.
- Even though PCIe is better, most manufacturers still use the PCI as a standard.

11.7. What are the advantages of USB as a means to connect peripheral devices to the computer?
- Higher Speed - USB's are faster than serial ports.
- Multiple Devices - You can connect multiple devices with USB
- Self-Powered - Don't need a separate power supply to use it.
- Plug in and Use - Self explanatory
- Hot-Swappable - Can plug in and take out peripherals whenever and no problems usually arise.

11.8. What is a topology? Describe the basic USB topology?

A topology is a physical and logical structure of a network. The basic USB topology holds four wires. Two lines make up a single data pair to carry the data, as well as address and control information. The other two lines can be used to provide power to devices connected to the bus. New versions of the USB cable have five or seven additional pins for additional full duplex data capability, and the cables are polarized to force the hierarchical stricture from the host controller.

11.9. What are the advantages of USB as a means to connect peripheral devices to the computer?

The advantages of USB as a means to connect peripheral devices to the computer is that external devices to plug into a computer as they are required. They are viewed as a multipoint bus and multiple devices can be connected to a USB. They use hubs that provide multiple connection points to I/O points.

11.10. What is a "loosely coupled" computer system? How does it differ from a "tightly coupled" system?

Loosely coupled system is a system in which part of a system are not depended on one another. A tightly coupled system is a system in which the parts are dependent on one another.

11.11. Define cluster.

A cluster is a group of loosely coupled computers configured to work together as a unit. Each computer in a cluster is a complete unit.

11.12. Briefly explain each of the four reasons for creating a cluster. Give an example of each

reason if you can.

The first reason to create a cluster is to increase the available computing power by combining power of individual systems.
The second reason is that clustering provides fault-tolerant systems. Each computer in a cluster can operate by themselves so that if one goes down it will not bring down the entire system.
The third reason is that clustering is used to create high-availability systems. Computers belonging to a cluster can be placed anywhere in the world and accessed anywhere remotely or physically allowing clusters to be convenient.
The fourth reason is that clustering can be used for load-balancing systems with large workloads. Many tasks or storage for files can be split up to be accessed easier and for organization.

11.13. What is a *shared-nothing* cluster?

a distributed architecture in which each node is totally independent. There is not a single point of contention in the system, as the nodes do not share memory or disk storage.

11.14. Explain grid computing.

According to HowStuffWorkTech, Grid computing is a computer network in which each computer's resources are shared with every other computer in the system. Processing power, memory and data storage are all community resources that authorized users can tap into and leverage for specific tasks. A grid computing system can be as simple as a collection of similar computers running on the same operating system or as complex as inter-networked systems comprised of every computer platform you can think of.