****Mikal Turgott****

****Question 1: Storage Technologies****

a) Explain the differences between Solid State Drives (SSD) and Hard Disk Drives (HDD) in terms of performance, reliability, and cost.

SSDs are much faster than a HDD. HDD read and write information on spinning metal platter while SSD utilizes flash memory instead. HDD is very reliability, especially on the long term spectrum, however, because it has disks within it and fragile components, dropping it may cause significant damage. A SSD on the other hand is a little more dense, so dropping it may not cause as much damage as you would from a HDD. Its long term reliability, however, is still in question due to its short tenure on the market so far. SSDs are typically more expensive that HDD, all relative to brands and storage size.

b) Describe situations in which you might choose an SSD over an HDD and vice versa for a computer system.

I may choose a SSD over an HDD when speed is at the forefront of the design. The information is accessed muched quicker through the flash memory than the relatively slower HDD.

I may choose HDD over SSD when money is a factor. The range of the cost varies quite a bit between the drives, especially when you are looking above the 1TB range. With that being said, a 1TB SSD price is almost double that of the 1TB HDD.

****Question 2: Memory Components****

a) Define RAM (Random Access Memory) and explain its role in computer performance.

RAM is the computer’s short term memory. It is used to quickly access the applications that is used in the computer and stored there so that it can be accessed almost immediately. It is different from the memory of HDD and SSD as those are long term memory.

b) Differentiate between volatile and non-volatile memory and provide examples of each.

The difference between volatile and non-volatile memory is in non-volatile memory, memory doesn’t dissipate when the computer is turned off. Volatile memory erases the when the computer is turned off.

****Question 3: Processing Power****

a) Explain the functions of a CPU (Central Processing Unit) and a GPU (Graphics Processing Unit) in a computer system.

The CPU is the brains of the computer. It runs the computer’s operating system and apps and is the primary for executing commands.

The GPU is the graphics card of the computer that is typically used for gaming. The GPU renders video and 3D graphics.

b) Discuss the types of tasks that each of these components is optimized for.

CPU optimized for general purpose computing, running software applications, managing system resources and handling I/O operations.

GPU: for parallel processing, leveraging its numerous processing cores to handle graphics rendering, along with mathematical calculations and it well suited for tasks involving 3D graphics, video editing, and scientific simulations.

****Question 4: Storage Devices and Peripherals****

a) Define external and internal storage devices and provide examples of each.

Internal storage devices are

b) List and explain the functions of at least three common input devices and three common output devices.

Three common input devices include:

mouse – which provides a cursor and pointing to select and interact with graphical user interfaces.

Keyboard – provides the ability to communicate within a human language

Microphone – for audio and speaking into the computer for communication

Three common output devices include :

The monitor – displays the function of what you are doing in the computer

Speakers – outputs sound

printer – prints on a paper what is display or requested to be printed

****Question 5: Network Devices and Hardware****

a) Describe the purpose of network devices in a computer network and explain how they facilitate communication between devices.

Network devices in a computer network are vital to communication between devices. Routers direct traffic between different networks. Switches efficiently connect devices within a local network segment. Access points enable wireless devices to connect to wired networks. Firewalls enhance security by controlling incoming and outgoing network traffic. Hubs connect devices in basic works. With the exception of hubs which are not common today, all these devices work in harmony to ensure efficient, secure data connection.

b) Differentiate between switches and hubs in networking, highlighting their respective advantages and disadvantages.

Switches, operating in the data link layer, effeciently directs data to specific MAC addresses based on the device, improving both security and performance. Switches can be very expensive and they require a lot of configuration.

Hubs, operating in the physical layer, broadcasts all data to all connected devices, making it very easy to setup and cost effective but less secure.

****Question 6: Coax and Fiber Optics****

a) Compare and contrast coaxial cables and fiber optic cables in terms of speed, bandwidth, and susceptibility to interference.

Coaxial cables offer a decent speed and bandwidth but are susceptible to interferences. Fiber optic cables provide exceptional speed, bandwidth, and immunity to interference due to the use of light signals.

b) Provide an example of a scenario where using fiber optics would be advantageous over coaxial cables.

Fiber optics would be advantegous over coaxial cables is in high-speed, long-distance data transmission for telecom and networking.

****Question 7: Peripherals and User Interaction****

a) Define what peripherals are and explain their significance in enhancing user interaction with computers.

Peripheral devices are hardware components that connects to your computer and provide additional functionality. They allow your computer to output, input, or both input and output specific functions, to include but not limited to: keyboards, speakers, game controllers.

b) Give examples of peripheral devices that fall under the categories of input, output, and input-output combined.

Some examples of peripheral devices are:

input: keyboard, mouse, microphone, webcame

output: printers, speakers, projector, monitor

both: game controller, smart card reader, scanners

****Question 8: Hardware Components in Network Setup****

a) Explain the roles of routers and access points in a network setup.

The role of a route and access points in a network setup is that routers are responsible for the flow of data between devices and networks, while the access points enable wireless connectivity and extend network coverage, allowing wireless devices to connect to the network and access resources.

b) Describe how a modem and a firewall contribute to network security and connectivity.

A modem is responsible for the connectivity by connecting your network to the internet and assigning public IP addresses. A firewall filters traffic and safeguards your device by detecting and preventing threats, and enforce security policies. They work together to connect you to the internet and then secures you by filter traffic together.