Assignment:

Understanding of Hardware and Its Components

Section 1: Multiple Choice

1. Which of the following is NOT a component of the CPU?
    1. ALU
    2. RAM
    3. CU
    4. 1 and 3 both

    - 3. CU.

2. What is the function of RAM in a computer?
    - Random Access Memory (RAM) is a temporary storage component
3. Which of the following is a primary storage device?
    1. HDD
    2. SSD
    3. SD card
    4. 1 and 2 both

    - 4. 1 and 2 both.

4. What is the purpose of a GPU?
    - A Graphics Processing unit is a hardware component for displaying image, videos, and animations and spicily gaming.

Section 2: True or False

5. True or False: The motherboard is the main circuit board of a computer where other components are attached.
    - True.

6. True or False: A UPS (Uninterruptible Power Supply) is a hardware device that provides emergency power to a load when the input power source fails.
    - True.

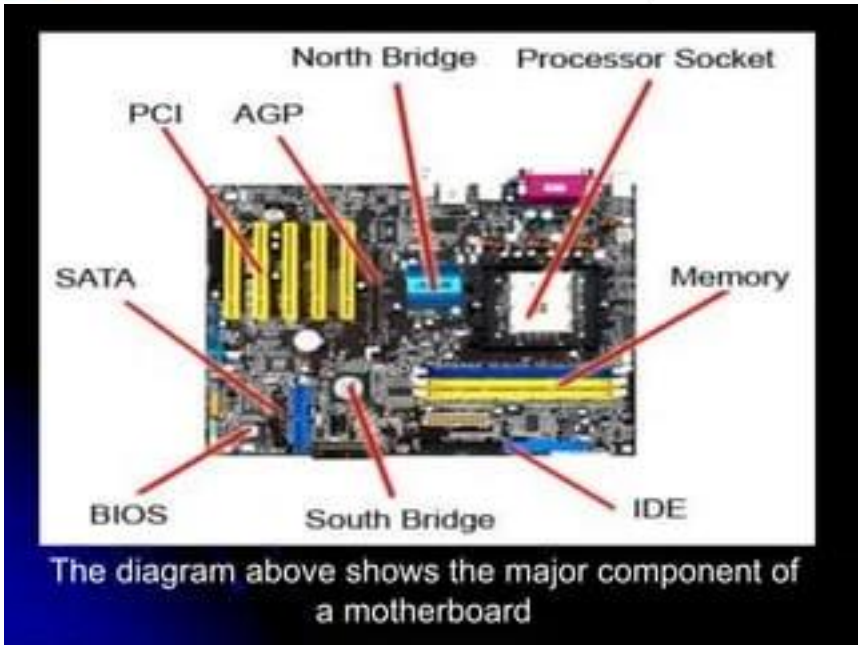
7. True or False: An expansion card is a circuit board that enhances the functionality of a component.
    - True.

Section 3: Short Answer

8. Explain the difference between HDD and SSD.
    - Hard Disk Drive (HDD) and Solid State Drive (SSD) are data storage devices. SSDs store data in flash memory and HDDs use spinning platters with magnetic disks.
    - In size SSDs are smaller than HDDs.
    - In speed SSDs are faster than HDDs. SSDs can have transfer rater of 500 MB/s to 3500 MB/s or more, Than the HDDs are typically slower at 30-150 MB/s.
    - In storage capacity is HDDs offer larger storage space at a lower cost per GB, But SSDs are becoming more common in sizes up to 8 TB.
    - In price HDDs are more affordable, especially for larger capacities, but SSDs are typically more expensive per GB.
9. Describe the function of BIOS in a computer system.
    - The Basic Input/Output System (BIOS) is a computer program that performs several functions when a computer starts up.
    - BIOS is the first software to run when a computer's hardware, including the computer on how to boot up.
    - BIOS identifies and configures the computer's hardware, including the hard drive, CPU, Memory, and other equipment.
    - BIOS manages the flow of data between the computer's operating system (OS) and attached devices, such as the keyboard, mouse, printer, and video adapter.
    - BIOS tests the computer's hardware before loading the operating system.
10. List and briefly explain three input devices commonly used with computers.
    - Are three commonly used input devices for computers. Keyboard, Mouse, Web Camera.
    - A Keyboard is a device that allow users to input data into a computer, such as words, numbers, symbols, and commands.
    - A Mouse is a pointing device that has a ball at the base that senses movement and sends a signal to the CPU when the mouse buttons are pressed.
    - A webcam is a video camera which is designed to record or stream to a computer or computer network.

Section 4: Practical Application

11. Identify and label the following components on a diagram of a motherboard:
    - CPU
    - RAM slots
    - SATA connectors
    - PCI-E slot



The diagram above shows the major component of a motherboard

12. Demonstrate how to install a RAM module into a computer.
    - Open the case remove the side of the computer case to access the motherboard.
    - Clean the slots remove any dust form the memory slots.
    - Align the notch on the RAM with the ridge in the slot.
    - Apply even pressure until you hear a clicking sound.
    - The clips should automatically close to secure the module.

Section 5: Essay

13. Discuss the importance of proper cooling mechanisms in a computer system. Include examples of cooling methods and their effectiveness.

- Air Cooling: Involves fans and heat sinks to dissipate heat. It's cost-effective and commonly used in most consumer PCs. Effective but limited in high-performance systems.
- Liquid Cooling: Uses a pump, radiator, and liquid coolant to transfer heat away from critical components. More efficient for overclocked systems or high-performance gaming PCs, as it offers better heat dissipation.
- Thermal Paste/Pads: Applied between the CPU/GPU and heat sink to improve heat transfer efficiency.
- Case Ventilation: Proper airflow (inlet and exhaust fans) inside the PC case enhances overall cooling by preventing heat buildup.

14. Explain the concept of bus width and its significance in computer architecture.

- Data Transfer Rate: A wider bus can carry more bits per cycle, increasing the overall data transfer rate. For example, a 64-bit bus can transfer twice as much data as a 32-bit bus in the same time.

- Performance: A larger bus width enhances performance, especially in tasks requiring high data throughput, such as gaming, video processing, and data-heavy applications.
- Memory Addressing: The bus width also affects how much memory the system can address. For instance, a 32-bit address bus can address up to 4 GB of memory, while a 64-bit address bus can theoretically address up to 18.4 billion GB (though practical limits are much lower).