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. 1and 3both
Answer: RAM
Reason: CPU consists of ALU and CU. RAM is outside the CPU.

2. What is the function of RAM in a computer?
Answer: RAM stores data and instructions temporarily so the CPU can access them quickly while the computer is running.

3. Which of the following is a primary storage device?
1. HDD
2. SSD
3. SD card
4. 1and 2both
Answer: HDD and SSD both.
Reason: HDD and SSD are internal primary storage devices.

4. What is the purpose of a GPU?
Answer: A GPU is used to process graphics and visual data. It handles rendering images, videos, and animations faster than a CPU.

SECTION 2: TRUE OR FALSE

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

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

SECTION 3: SHORT ANSWERS

8. Explain the difference between HDD and SSD.
HDD (Hard Disk Drive):

➤ Uses spinning magnetic disks.

➤ Slower performance.

➤ Can break easily due to moving parts.

➤ Cheaper and offers larger storage.

SSD (Solid State Drive):

➤ Uses flash memory (no moving parts).

➤ Much faster than HDD.

➤ More durable and reliable.

➤ More expensive per GB.

Conclusion: SSD = speed + durability; HDD = cheap + high capacity.

9. Describe the function of BIOS in a computer system.
BIOS (Basic Input/Output System):

➤ Runs when the computer starts.

➤ Performs POST (Power-On Self Test).

➤ Detects hardware like CPU, RAM, keyboard, storage.

➤ Loads the operating system from storage into RAM.

➤ Provides low-level hardware control.

10. List and briefly explain three input devices commonly used with computers.

Keyboard – Used to type text and commands.

Mouse – Used to point, click, drag, and interact with GUI.

Scanner – Converts physical documents into digital form.

SECTION 4: PRACTICAL APPLICATION

11. Identify and label the following components on a diagram of a motherboard:

- **CPU**
- **RAMslots**
- **SATAconnectors**
- **PCI-E slot**

CPU Socket– Center or top area with a square socket.

RAM Slots – Long thin slots, usually 2 or 4, beside CPU.

SATA Connectors – Small L-shaped ports, usually on the right side.

PCI-E Slot– Long expansion slot below CPU, used for GPU.

12. Demonstrate how to install a RAM module into a computer.

Steps:

1. Turn off the computer and unplug the power cable.

2. Open the side panel of the cabinet.

3. Locate the RAM slots next to the CPU.

4. Push the slot levers outward to unlock.

5. Align the RAM's notch with the slot notch.

6. Press the RAM firmly downward until both levers click and lock.

7. Close the cabinet and restart the system to check detection.

SECTION 5: ESSAY

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

Proper cooling is essential because computer components like CPU, GPU, and power supply generate heat during operation. If heat is not removed, the system becomes slow, unstable, or may shut down to prevent damage.

Cooling helps maintain performance, ensures longer hardware life, and prevents overheating failures.

Cooling Methods:

Air Cooling: Uses fans and heat sinks. Cheap and effective for normal usage.

Liquid Cooling: Uses coolant and a radiator. Very effective for high-performance systems like gaming or servers.

Thermal Paste: Applied between CPU and heat sink for better heat transfer.

Case Ventilation: Proper airflow inside the cabinet improves overall cooling.

Effectiveness: Liquid cooling > Air cooling > Passive cooling.

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

A bus is a communication pathway that transfers data between components like CPU, RAM, and motherboard.

Bus width = number of bits that can be transferred at one time (e.g., 8-bit, 16-bit, 32-bit, 64-bit).

Significance:

A wider bus transfers more data per cycle.

Increases system speed and performance.

A 64-bit bus moves double the data of a 32-bit bus in the same time.

Determines how fast CPU communicates with RAM.

Conclusion: Bigger bus width = higher data transfer speed = better performance.