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Assignment

Module -1: Understanding of Hardware and Its Components

Section 1: Multiple Choice

1.Which of the following is NOT a component of the CPU?

Answer - 2) RAM

2.What is the function of RAM in a computer?

Answer - RAM (Random Access Memory) is a computer's short-term memory that temporarily stores data and instructions that the CPU (Central Processing Unit) needs while running programs. It allows for quick access to

data, making applications run smoothly and efficiently. The more RAM a computer has, the better it can handle multiple tasks simultaneously. When the computer is turned off, the data in RAM is lost, unlike storage devices like hard drives or SSDs, which retain data permanently.

3.Which of the following is a primary storage device?

Answer – None of the options are primary storage device.

4.What is the purpose of a GPU?

Answer - A Graphics Processing Unit (GPU), also known as a video card or graphics card, is a specialized electronic circuit designed to accelerate the rendering and processing of images, videos, and animations, enabling smooth and high-quality visuals in games, videos, and

other graphic-intensive applications.

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 Answer

8.Explain the difference between HDD and SSD.

Answer -

Feature	SSD (Solid-State Drive)	HDD (Hard Disk Drive)
Storage Type	Flash memory	Magnetic disks
Speed	Faster read and write speeds	Slower read and write speeds
Size	Smaller	Larger

Noise	Silent	Noisy due to moving parts
Power Consumption	More energy efficient	Consumes more power
Durability	More durable (no moving parts)	More susceptible to physical damage
Cost	More expensive per GB	Less expensive per GB

9.Describe the function of BIOS in a computer system.

Answer - The BIOS (Basic Input/Output System) is a firmware that initializes and tests the hardware components of a computer during startup. It ensures that all essential hardware, such as the processor, memory, and storage, are functioning correctly before handing control over to the operating system.

Functions of BIOS in a Computer System

- 1. Power-On Self-Test (POST):**
 - **Checks and verifies hardware components like RAM, CPU, and storage during startup.**
 - **Displays error messages if any issues are detected.**
- 2. Bootloader Execution:**
 - **Finds and loads the operating system from the storage device into RAM.**
- 3. Hardware Initialization & Configuration:**

- **Sets up essential hardware like keyboard, mouse, and display before the OS loads.**

4. BIOS Setup Utility:

- **Provides an interface to configure system settings, such as boot order, time, and hardware settings.**

5. Basic Input/Output Management:

- **Acts as an interface between the OS and hardware, enabling basic communication.**

6. CMOS Setup & Management:

- **Stores system settings like date, time, and hardware configurations in CMOS memory.**

7. Security Management:

- **Offers password protection for BIOS settings and prevents unauthorized access.**

8. Power Management:

- **Helps control power-saving features like sleep mode and processor throttling.**

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

Answer - Three Common Input Devices Used with Computers

1. Keyboard

- **A keyboard is a primary input device used for typing text, commands, and shortcuts.**
- **It consists of keys for letters, numbers, and special functions (e.g., Enter, Shift, Ctrl).**

2. Mouse

- **A mouse is a pointing device used to control the cursor and interact**

with graphical elements on the screen.

- **It has buttons for clicking, scrolling, and selecting items, and can be wired or wireless.**

3. Scanner

- **A scanner is used to convert physical documents and images into digital formats.**
- **It captures printed text, photos, and graphics and stores them as files on a computer.**

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

Answer - Done

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

Answer - Done

Section 5: Essay

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

Answer - Importance of Proper Cooling Mechanisms in a Computer System

Proper cooling mechanisms are essential in a computer system to prevent overheating, which can lead to reduced performance, hardware damage, and system failures. Effective

cooling helps maintain optimal temperature levels, ensuring smooth operation and extending the lifespan of computer components like the CPU, GPU, and motherboard.

Common Cooling Methods and Their Effectiveness

1. Air Cooling (Fans & Heat Sinks)

- Uses fans and heat sinks to dissipate heat from components like the CPU and GPU.**
- Effectiveness: Cost-effective and sufficient for general use but may struggle with high-performance tasks.**

2. Liquid Cooling (Water Cooling Systems)

- Uses liquid coolant circulated through a closed-loop system to absorb and remove heat.**

- **Effectiveness: More efficient than air cooling, especially for gaming and high-performance computing, but is more expensive.**

3. Thermal Paste & Heat Pipes

- **Thermal paste improves heat transfer between the CPU/GPU and heat sink.**
- **Heat pipes help in quick heat dissipation.**
- **Effectiveness: Increases efficiency of cooling solutions by reducing heat buildup.**

4. Cooling Pads (For Laptops)

- **External cooling pads with fans help improve airflow beneath laptops.**
- **Effectiveness: Provides additional cooling for laptops but has limited impact on high-performance tasks.**

Conclusion

Proper cooling is crucial to prevent overheating, maintain system stability, and improve longevity. Choosing the right cooling method depends on the computer's workload, with air cooling suitable for general use and liquid cooling preferred for high-performance tasks like gaming or video editing.

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

Answer - Concept of Bus Width and Its Significance in Computer Architecture

Bus width refers to the number of bits that a computer's bus can transfer simultaneously. It determines how much data can be moved between the CPU,

memory, and other components in one cycle.

Significance of Bus Width:

- 1. Data Transfer Speed – A wider bus allows more data to be transferred at once, improving system performance. For example, a 32-bit bus transfers twice as much data per cycle as a 16-bit bus.**
- 2. System Performance – A larger bus width enables faster communication between the CPU, RAM, and storage, leading to quicker processing and better multitasking.**
- 3. Compatibility with Hardware – Bus width affects memory addressing and determines how much RAM a system can use. For example, a 32-bit processor can address up to 4GB RAM, while a 64-bit processor can handle much more.**

Example:

- . 16-bit bus → Transfers 2 bytes per cycle**
- . 32-bit bus → Transfers 4 bytes per cycle**
- . 64-bit bus → Transfers 8 bytes per cycle (faster and more efficient)**