Module -1: 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

2) **What is the function of RAM in a computer?**
   RAM (Random Access Memory)
   :- Is a temporary memory in a computer that store data while the computer is turned on.
   :- It work like a short-term memory for your computer.
   :- When you turn off your computer then your data erased from ram.

3) Which of the following is a primary storage device?
   1. HDD
   2. SSD
   3. SD card
   4. 1 and 2 both

4) **What is the purpose of a GPU?**
   GPU (Graphics Processing Unit)
   :- It helps make graphics and visuals (like in games and videos) look good and run smoothly.

Section 2: True or False

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

6) 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) An expansion card is a circuit board that enhances the functionality of a component.
Answer :-True

Section 3: Short Answer

8) Difference between HDD and SSD.

HDD (Hard Disk Drive)	SSD (Solid State Drive)
HDD is a storage device that store data using rotating magnetic disks.	SSD is a storage device that stores data using flash memory chips.
Speed slow	Speed fast
Cheaper in cost	Expensive in cost
HDD power consumption is high.	SSD power consumption is low.

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

- BIOS (Basic Input Output System) is a small program stored on the motherboard chip.
- When you press power button, BIOS is the first thing that runs.
- The function of BIOS in computer system are :-
  1) Start the computer
  2) Check hardware
  3) Load the operating system (like windows, linux, and etc).

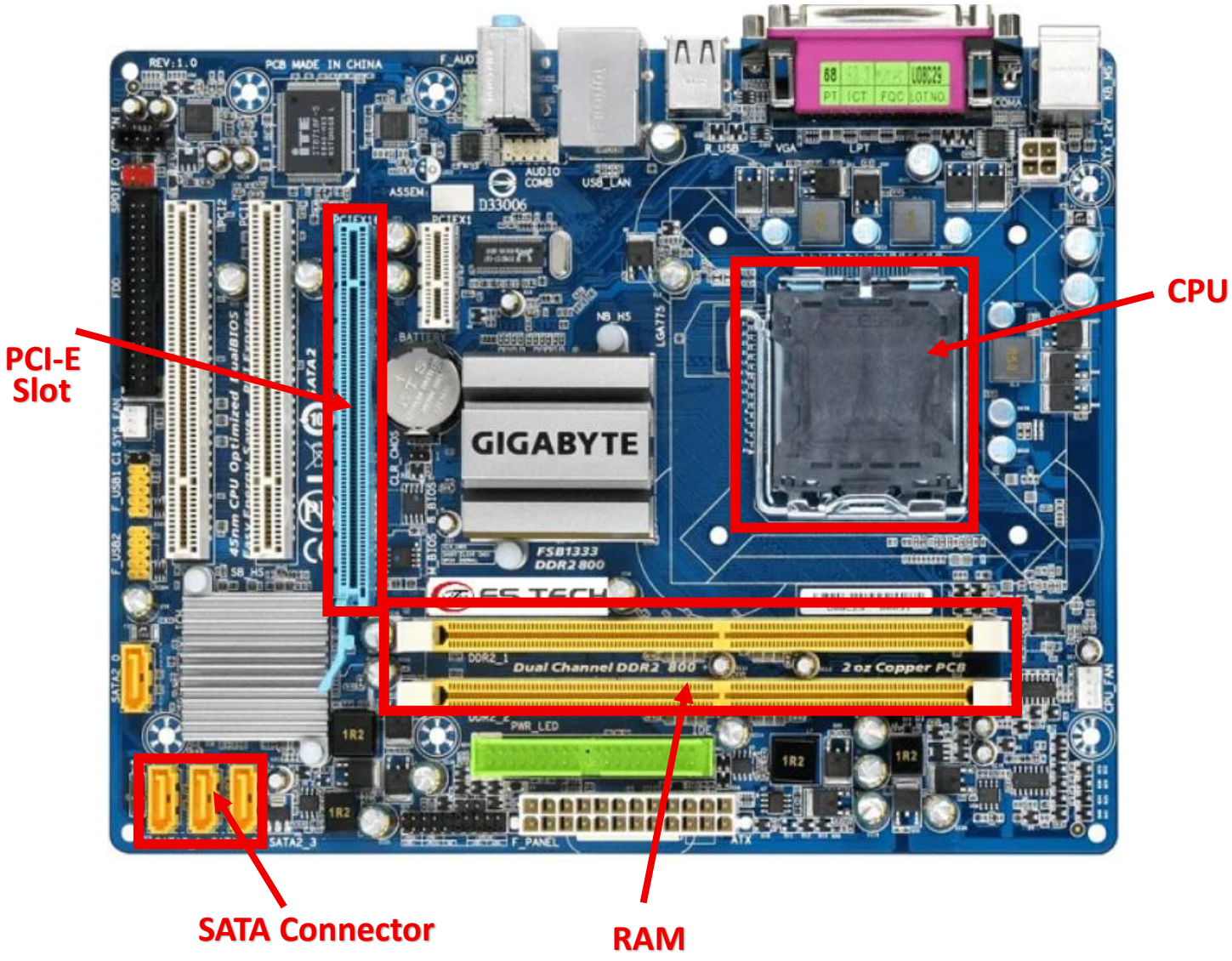
10) List and briefly explain three input devices commonly used with computers.

- Input device are commonly used with computers are:-

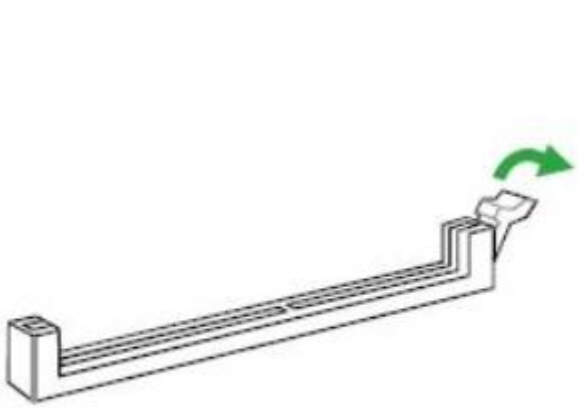
- **Keyboard :-** A keyboard is use to enter text, number, and commands into the computer.
- **Mouse :-** A mouse is a pointing device used to select item, and perform some action like clicking and dragging.
- **Scanner :-** A scanner is used to scan data or image and convert it into digital form and store in computer.

Section 4: Practical Application

11) Identify and label the components on motherboard:-
    - CPU - RAM - PCI-E Slot - SATA Connector



12) Install RAM Module into a computer



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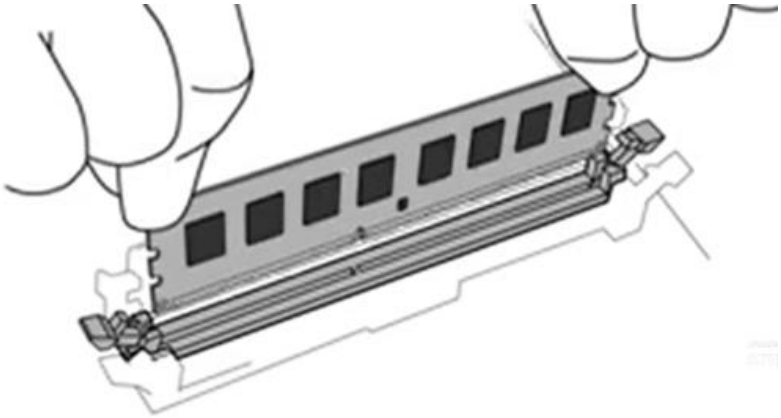

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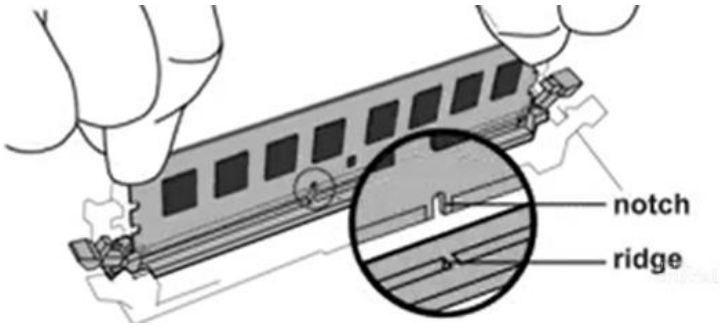

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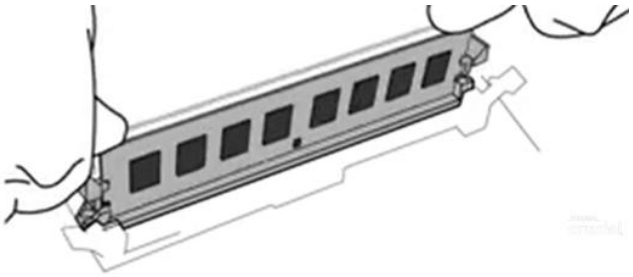

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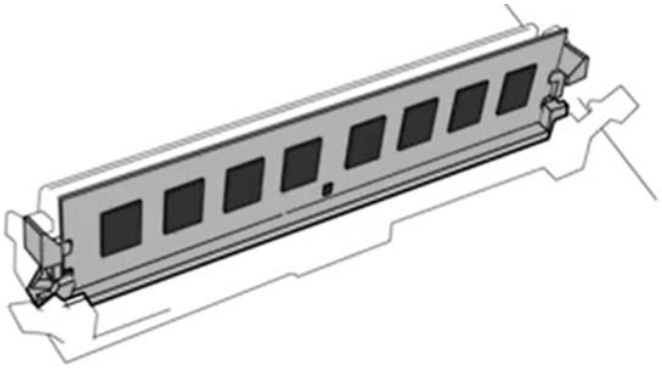

Step 5

Section 5 : Essay

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

Ans :- Proper cooling is very important for a computer because all computer parts produce heat while working.

If this heat is not removed, the computer can become slow, damaged, or even stop working.

Cooling System - Cooling is the process of removing heat from a computer system to keep its parts at a safe temperature so they can work properly without damage.

Cooling Methods and Their Effectiveness

1. Air Cooling (Fans)
    - Uses fans to blow hot air out and bring cool air in.
    - Found in almost all computers.
    - Effectiveness: Good for normal home and office use. Cheap and easy to maintain.
2. Heat Sink
    - A metal block attached to the CPU or GPU.
    - Absorbs heat and spreads it so the fan can remove it.
    - Effectiveness: Very effective when used with a fan.
3. Thermal Paste
    - Applied between the CPU and heat sink.
    - Helps transfer heat properly.
    - Effectiveness: Very important for good cooling; without it, cooling is poor.

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

Ans :- Bus width is the number of bits that can travel together on a bus in one step.

Examples:

- 8-bit bus --> sends 8 bits at a time
- 16-bit bus --> sends 16 bits at a time
- 32-bit bus --> sends 32 bits at a time
- 64-bit bus --> sends 64 bits at a time

The bigger the bus width, the more data moves at once.

Types of Bus Width

1. Data Bus Width
   - Carries actual data
   - Example: 64-bit data bus sends 64 bits at once
2. Address Bus Width
   - Carries memory address
   - Decides how much memory CPU can access

Example:

- 32-bit address bus --> can access ~4 GB RAM
- 64-bit address bus --> can access much more RAM

Bus Width significance in computer architecture

1. Faster Performance

More data moves at once---less time --- faster computer

2. More Memory Access

Wider address bus ----- more RAM support

3. Better Multitasking

CPU can handle more instructions together

4. Affects System Capability

That’s why:

- 32-bit systems are limited
- 64-bit systems are more powerful