

# ASSIGNMENT

## #COMPUTER HARD WARE

KAN/IT/2022/P/0062

KANDY ATI



## SMPS(POWER SUPPLY UNIT)

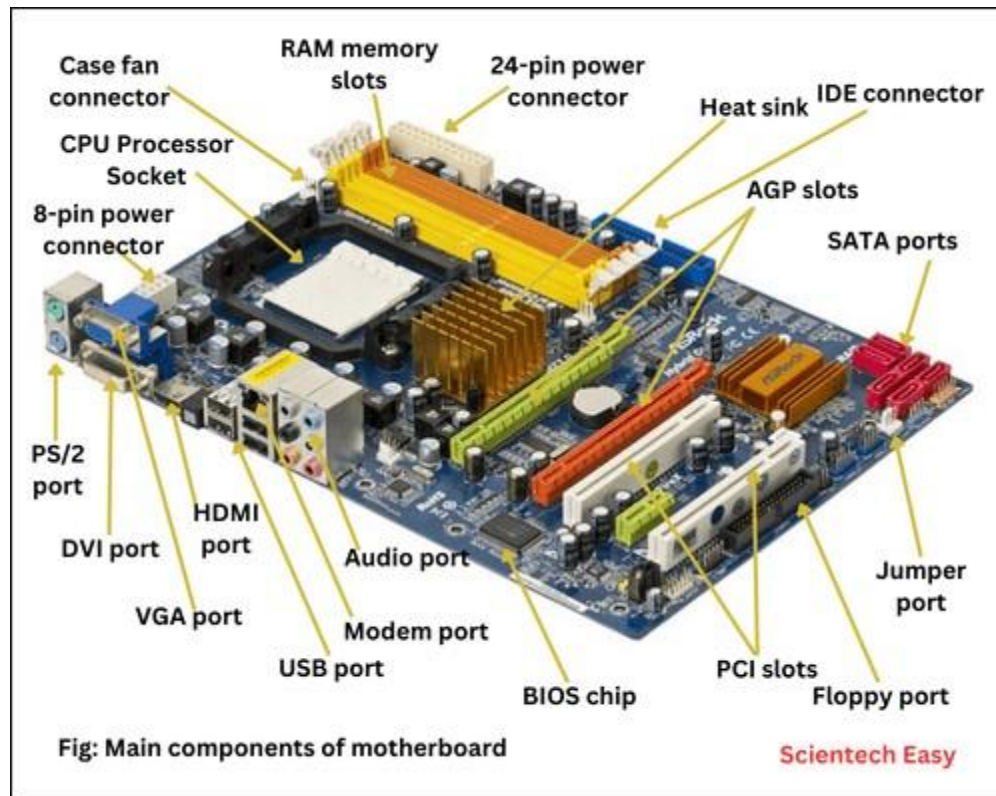


SMPS (Switched-Mode Power Supply) cables come in various types and serve different functions depending on their use in electronic devices and power supply systems. Here are some common SMPS cable varieties and their functions:



1. CPU 4+4 Pin = The CPU 4+4 pin cable in a power supply unit provides dedicated power to the CPU on the motherboard, ensuring stable and efficient performance, especially for high-power processors.
2. Mother board 20+4 pin (ATX) = The 24-pin ATX cable in a power supply unit provides essential power to the motherboard, delivering voltages for various components. It includes lines for the CPU, RAM, motherboard, and peripherals, ensuring stable and reliable operation of the entire system.
3. SATA Cable = SATA cables in a power supply unit (SMPS) connect to SATA devices such as hard drives and SSDs, delivering power and facilitating data transfer, enabling storage functionality in the system.
4. Floppy4 Pin = The floppy 4-pin cable in a power supply unit (SMPS) provides power to floppy disk drives, although it has become less common due to the decline of floppy drives in modern systems.
5. PCI-e 6 Pin and PCI-e 6+2 Pin = PCI-E 6-pin and PCI-E 6+2-pin cables in a power supply unit provide power to graphics cards. The 6+2-pin connector offers flexibility for GPUs with either 6-pin or 8-pin power requirements.
6. Peripheral 4 Pin = The peripheral 4-pin cable in a power supply unit (SMPS) connects to various peripherals like optical drives and fans, providing power for their operation within the computer system.

# MOTHER BOARD PARTS AND FUNCTION



Sure, let's break down the functions of each part on a motherboard:

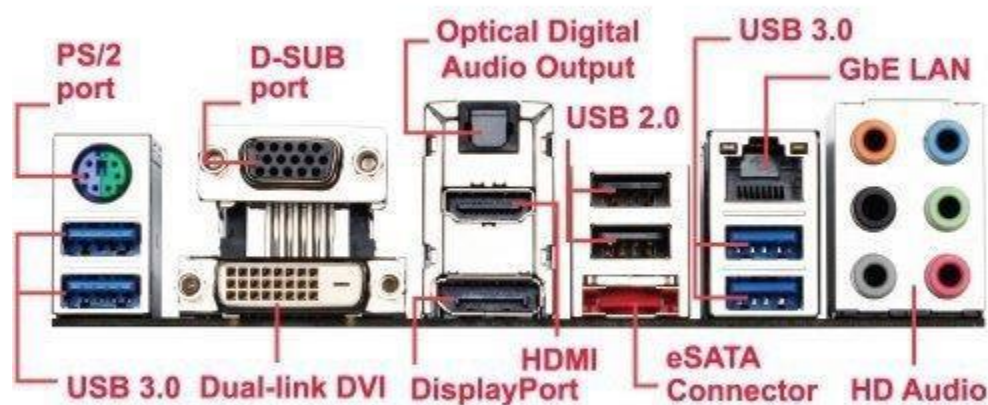
1. CPU Processor Socket = It holds the Central Processing Unit (CPU), which is the brain of the computer. The CPU performs calculations and executes instructions
2. 8 Pin Power Connector = The motherboard 8-pin power connector supplies additional power to the CPU, ensuring stable and efficient operation. It's crucial for high-performance systems and overclocking scenarios.
3. BIOS Chip = The motherboard BIOS (Basic Input/Output System) chip is a non-volatile memory that stores firmware. It contains essential instructions for the system's startup,

hardware initialization, and settings. The BIOS ensures compatibility between the operating system and hardware components, facilitating stable and secure system operation.

4. PCI Slots = Motherboard PCI slots allow expansion cards to be connected, enhancing a computer's capabilities. These slots support various peripherals like graphics cards, sound cards, and network cards. PCI slots enable customization and upgrading, accommodating evolving technologies and meeting specific user requirements for enhanced functionality.
5. Floppy Port = The motherboard floppy connector supports floppy disk drives, facilitating data transfer and storage using obsolete floppy disks in older systems.
6. Jumper Port = Motherboard jumper ports are used to configure hardware settings by shorting or opening circuits with jumper blocks, allowing users to set parameters such as voltage, frequency, or clear CMOS.
7. SATA Ports = Motherboard's 4 SATA connections link to SATA devices (e.g., hard drives, SSDs), enabling data transfer, storage, and system functionality.
8. AGP Slots = Motherboard AGP (Accelerated Graphics Port) slots are designed for connecting graphics cards, providing a dedicated high-speed interface for improved video performance in older computer systems.
9. IDE Connector = The motherboard IDE connector links to IDE (Integrated Drive Electronics) devices like hard drives and CD/DVD drives for data transfer and storage.
10. Heat Sink = The motherboard heatsink dissipates heat from critical components, such as the CPU or voltage regulators, ensuring stable and efficient operation.
11. 24- Pin ATX Power Connector = The 24-pin ATX power connector on the motherboard provides power from the PSU (SMPS), delivering essential voltage for components. It includes main power lines for motherboard, CPU, and peripherals.
12. RAM Memory Slots = Motherboard memory slots are used to install and connect RAM (Random Access Memory) modules. RAM is crucial for temporary data storage, enabling faster access by the CPU for improved system performance. Memory slots allow for the expansion or upgrade of a computer's memory capacity.

13. Case Fan Connector = The case fan connector on the motherboard is used to power and control the cooling fans attached to the computer case, helping dissipate heat for optimal system temperature management.

## REAR PANEL / INPUT OUTPUT PANEL



1. USB 3.0 = "USB 3.0 ports on the rear panel facilitate high-speed data transfer for peripherals like external drives, cameras, and devices."
2. PS/2 Port = The PS/2 port on the rear panel of a motherboard connects peripherals like keyboards and mice, utilizing a round mini-DIN connector.
3. D-SUB Port = The D-sub port on the rear panel of a motherboard is a video connector for analog displays, commonly used for VGA connections.
4. Dual-link DVI = "Dual-link DVI ports on the rear panel transmit high-quality digital video signals, often used for connecting monitors with higher resolutions."

5. Optical Digital Audio Output = The optical digital audio output port on the rear panel allows for the transmission of high-quality audio signals in digital format to external audio devices, such as soundbars or AV receivers, via optical cables.
6. HDMI DisplayPort = HDMI and DisplayPort on the rear panel transmit high-definition audio and video signals, facilitating the connection of monitors, TVs, or projectors to display content from the computer or other devices.
7. USM 2.0 = USB 2.0 ports on the rear panel support moderate-speed data transfer, commonly used for connecting various peripherals such as keyboards, mice, and printers.
8. eSATA Connector = The eSATA port on the rear panel allows external SATA devices, such as hard drives, to connect for high-speed data transfer and storage expansion.
9. GbE LAN = The GbE LAN port on the rear panel supports Gigabit Ethernet for high-speed wired networking. It facilitates fast data transfer and internet connectivity, essential for reliable and high-performance network communication in computers.
10. HD Audio = The HD Audio port on the rear panel allows for high-definition audio output and input. It is commonly used for connecting speakers, headphones, microphones, and other audio devices to the computer.



## HARD DISK



The hard disk in a PC, also known as a hard drive or HDD (Hard Disk Drive), is a non-volatile storage device that stores and retrieves digital data. Unlike RAM (Random Access Memory), which is volatile and loses its data when the power is turned off, the hard disk retains data even when the computer is powered down.

The primary functions of a hard disk in a PC include:

1. **Permanent Storage :** Hard disks provide long-term, non-volatile storage for the operating system, applications, files, and user data. When you install software or save a document, it is typically stored on the hard disk.
2. **Boot Drive:** The operating system is usually installed on the hard disk, and during the computer's startup, the BIOS/UEFI firmware loads the OS from the hard disk into RAM.
3. **File System Management:** The hard disk organizes data using a file system (such as NTFS or FAT32 on Windows systems). It manages the structure and location of files, making them accessible to the operating system and applications.



4.     **Virtual Memory:** In conjunction with RAM, the hard disk may be used for virtual memory, a space where the operating system temporarily stores data that doesn't fit in RAM. This helps prevent system slowdowns when RAM is fully utilized.
  
5.     **Data Retrieval:** When you access a file or launch an application, the hard disk reads and retrieves the required data. The read/write heads on the spinning disks or the memory cells in a Solid State Drive (SSD) handle these operations.
  
6.     **Backup and Recovery:** Users often back up important data on the hard disk to prevent data loss. Additionally, system recovery and backup tools may create system images or backups on the hard disk.

Hard disks can be traditional mechanical HDDs with spinning platters and moving read/write heads or modern SSDs (Solid State Drives) that use flash memory for storage, offering faster access times and increased durability. Regardless of the type, the hard disk plays a critical role in data storage and retrieval within a PC.



## RAM (RANDOM ACCESS MEMORY)



RAM (Random Access Memory) in a PC is volatile memory that serves as temporary storage for data and program code that the computer is actively using or processing. Unlike the non-volatile memory of storage devices (like hard drives or SSDs) that retains data even when the power is off, RAM loses its contents

when the power is turned off.

The primary functions of RAM in a PC include:

1. **Quick Data Access:** RAM allows the CPU to rapidly access and retrieve data that is needed for currently running applications and processes. It is much faster than accessing data from nonvolatile storage.
2. **Program Execution:** When you run a program, the operating system loads parts of it into RAM for faster execution. This includes the operating system itself and applications you open.
3. **Multitasking Support:** RAM enables the computer to handle multiple tasks simultaneously. Each open application and its associated data are kept in RAM for quick access.
4. **Temporary Storage:** Any data that the CPU needs to access quickly, but doesn't need to be permanently stored, is kept in RAM. This includes variables, caches, and other temporary information.

In summary, RAM is a critical component for the smooth and efficient operation of a computer, providing fast and temporary storage for the data and programs actively in use.



## ROM(READ ONLY MEMORY)



BIOS (Basic Input/Output System) or UEFI (Unified Extensible Firmware Interface), which are crucial for the computer's initialization process.

The BIOS/UEFI firmware is responsible for initializing hardware components, performing a Power-On Self-Test (POST), and facilitating the booting of the operating system. It is stored in ROM to ensure that these fundamental instructions are retained even when the computer is powered off. The term "ROM" implies that the stored data is read-only and typically cannot be easily modified by regular user operations, providing a stable and secure foundation for the system.