Computer Basic Note

Modem

A **modem** (short for **modulator-demodulator**) is an electronic device that allows computers and other digital devices to connect to the internet or communicate over telephone lines, cable systems, or satellite signals.

Laser Printer

A **laser printer** is a high-speed printer that uses a laser beam and electrical charges to transfer toner (powdered ink) onto paper. It produces sharp and clear text or images and is widely used in offices due to its fast printing and low cost per page. Laser printers are ideal for bulk and professional-quality printing.

URL

A **URL** (Uniform Resource Locator) is the web address used to locate resources on the internet. It specifies the location of a webpage or file and how to retrieve it. A URL consists of components like the protocol (e.g., `https`), domain name (e.g., `www.example.com`), and sometimes a file path. It helps browsers access the correct website or resource

Types of Computers Based on Size

Computers can be classified into four main types based on their size:

1. **Microcomputer**: Also known as a personal computer (PC), used by individuals at home or office (e.g., desktops, laptops).
2. **Minicomputer**: Larger than microcomputers, used by small businesses or organizations for multi-user tasks.
3. **Mainframe Computer**: Powerful systems used by large organizations for processing large amounts of data.
4. **Supercomputer**: Extremely fast and powerful, used for complex scientific calculations and simulations.

Bytes

A **byte** is a basic unit of digital data storage in computers, typically made up of **8 bits**. It is used to represent a single character, such as a letter, number, or symbol. Data in computers is stored and measured in bytes and its multiples, such as **kilobyte (KB)**, **megabyte (MB)**, **gigabyte (GB)**, etc. Bytes help in measuring file sizes and storage capacity in digital devices.

Vacuum Tube Computer

Vacuum tube computers are **first-generation computers** used in the 1940s and 1950s. They used **vacuum tubes** to process data. These computers were **very big**, **slow**, and **used a lot of electricity**. They also got hot quickly. Examples include **ENIAC** and **UNIVAC**. They were the first step in the development of modern computers.

Expansion Card

An **expansion card** is a small circuit board that is inserted into a computer's motherboard to add new features or improve performance. It is used to expand the computer's capabilities, such as better graphics, sound, or network connection. Common types include **graphics cards**, **sound cards**, and **network cards**.

RAM, VRAM, DRAM

- **RAM** (Random Access Memory): It is the main memory of a computer that stores data temporarily while the computer is working. It helps run programs faster.
- **VRAM** (Video RAM): A special type of RAM used in graphics cards to store image and video data for display on the screen.
- **DRAM** (Dynamic RAM): A common type of RAM that stores each bit of data in a tiny capacitor and needs to be refreshed often to retain the data.

Apex Language Processor

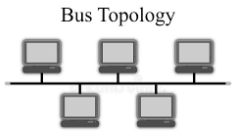
An **Apex Language Processor** is a tool used to understand and execute programming languages. It reads source code written in high-level language and translates it into machine language so that the computer can process it. It usually includes components like a **compiler**, **interpreter**, and **assembler**. These tools help in checking errors, converting code, and running programs efficiently.

Network Topology – 5 Mark Answer with Figures

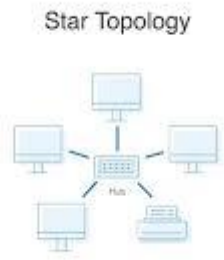
Network topology refers to the **arrangement or layout** of different computers (nodes) and devices in a network. It shows how devices are **connected and communicate** with each other.

🔄 Types of Network Topologies:

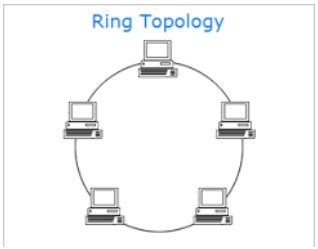
1. **Bus Topology**
   - All devices are connected to a single central cable (backbone).
   - Easy to install but difficult to troubleshoot.



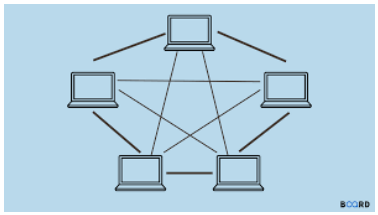
2. **Star Topology**
   - All devices are connected to a central hub or switch.
   - Easy to manage and add devices.



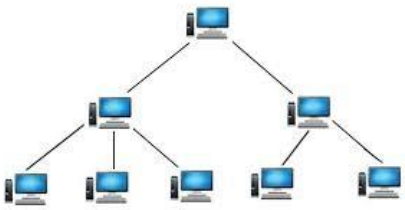
3. **Ring Topology**
   - Each device is connected to two other devices, forming a circular path.
   - Data travels in one direction.



4. **Mesh Topology**
    - Every device is connected to every other device.
    - High reliability but expensive.



5. **Tree Topology**
    - A combination of star and bus topologies.
    - Hierarchical and scalable.



LAN and Its Components – 5 Mark Answer

✔*What is LAN?*

LAN (Local Area Network) is a type of computer network that connects devices within a **limited area** such as a **home, school, office, or building**. It allows users to **share resources** like files, printers, and internet connections.

□ Main Components of LAN:

1. **Network Interface Card (NIC):**
   A hardware component installed in computers that allows them to connect to a network.
2. **Switch:**
   A device that connects multiple computers within a LAN and forwards data only to the intended device.
3. **Router:**
   Connects the LAN to the internet and manages data traffic between devices.
4. **Cables and Connectors:**
   Used to physically connect computers and devices (e.g., Ethernet cables).
5. **Access Point (for wireless LAN):**
   Allows wireless devices like laptops and phones to connect to the LAN using Wi-Fi.
6. **Server (optional):**
   Stores data and applications to be accessed by other computers on the network

Operating System and Its Functions – 5 Mark Answer

✓What is an Operating System?

An **Operating System (OS)** is a **system software** that acts as an **interface between the user and the computer hardware**. It manages hardware resources and provides services for computer programs.

Examples: **Windows, Linux, macOS, Android**

⚙ Functions of an Operating System:

1. **Process Management**
    - Manages the execution of programs (processes), including multitasking and scheduling.
2. **Memory Management**
    - Allocates and manages the computer's RAM among multiple programs.
3. **File Management**
    - Organizes, stores, retrieves, and manages data on storage devices.
4. **Device Management**
    - Controls and manages input/output devices using drivers.
5. **User Interface**
    - Provides a way (GUI or command line) for users to interact with the system.
6. **Security and Access Control**
    - Protects data and resources from unauthorized access.

Characteristics of a Computer – 5 Mark Answer

A computer is a powerful electronic device with the following key characteristics:

1. Speed

Computers can process data and perform calculations at extremely high speeds—millions of instructions per second.

2. Accuracy

Computers provide accurate results. Errors occur only if there is a human mistake in input or program.

3. Automation

Once a program is set, the computer performs tasks automatically without human intervention.

4. Storage

Computers can store large amounts of data and make it quickly available for future use.

5. Versatility

Computers can perform a wide variety of tasks—from calculations to playing music, editing videos, and more.

6. Diligence

Unlike humans, computers do not get tired or bored. They can work continuously without a break.

- **Software**: A set of instructions or programs that tell a computer what to do.
- **Server**: A computer that provides data or services to other computers over a network.
- **Browser**: A software application used to access and view websites (e.g., Chrome, Firefox).

- **HTTP Protocol**: (Hypertext Transfer Protocol) The rules used for transferring web pages on the internet.
- **CPU**: (Central Processing Unit) The brain of the computer that processes all instructions.
- **Program**: A set of coded instructions that a computer can run to perform a task.
- **NIC**: (Network Interface Card) A hardware component that connects a computer to a network.
- **Control Panel**: A part of the Windows operating system used to change system settings.
- **Hub**: A networking device that connects multiple computers in a LAN.
- **Refresh Rate**: The number of times a display updates per second, measured in hertz (Hz).
- **DOS**: (Disk Operating System) An early operating system used in computers before Windows.
- **UPS**: (Uninterruptible Power Supply) A backup device that provides power during a power cut.
- **Hypertext**: Text that contains links to other texts or resources, often used in web pages.
- **Workstation**: A powerful computer used for professional tasks like designing or programming.

HTML (HyperText Markup Language) is the standard language used to create and design web pages.

MAN (Metropolitan Area Network) is a network that covers a large area like a city, connecting multiple LANs.

Recycle Bin is a folder in Windows where deleted files are temporarily stored before permanent removal.