Q1. Discuss the concept of Networking, advantages, disadvantages and applications.

Q2. Discuss the peer-to-peer connections and multipoint connection.

Q3. Discuss the components required to make a computer network.

Q4. Discuss the types of networks as LAN, WAN and MAN.

Q5. Differentiate between physical and logical topologies.

Q6. List the different types of networks from surroundings as client-server network, distributed networks,

peer-to-peer networks and cloud based networks.

Q7. Discuss the concept of Network Topologies.

Q8. Protocols and their usage e.g. TCP/IP, http, https, ftp. answer these

1. Networking:
   * Concept: The process of connecting devices such as computers, laptops, smartphones, and other devices to enable communication and sharing of resources.
   * Advantages:
     + Improved collaboration and communication, allowing users to access and share information and resources with others in real-time.
     + Increased efficiency and cost savings on hardware and software expenses through the sharing of resources.
     + Enhanced accessibility, enabling users to access data and applications from anywhere with an internet connection.
   * Disadvantages:
     + Increased risk of security breaches and unauthorized access, potentially exposing sensitive information.
     + Technical difficulties such as network downtime, slow performance, and compatibility issues.
     + Over-dependence on technology, making users vulnerable to disruptions in the event of network failure.
   * Applications:
     + File sharing, allowing users to store and access files from multiple devices.
     + Remote access to resources, enabling users to access data and applications from remote locations.
     + Teleconferencing, allowing users to participate in virtual meetings and presentations.
     + Email, providing a convenient and fast way to communicate with others.
     + Online gaming, providing a platform for multiplayer games.
2. Peer-to-Peer (P2P) and Multipoint Connections:
   * Peer-to-Peer Connections:
     + Devices communicate directly with each other, bypassing the need for a centralized server.
     + Used for file sharing and gaming.
   * Multipoint Connections:
     + Devices communicate with each other through a central server.
     + Used in larger organizations for more efficient communication and resource sharing.
3. Components of a Computer Network:
   * Hardware Components:
     + Network interface cards: Physical components that enable devices to connect to the network.
     + Switches and routers: Devices that control the flow of data within a network.
     + Hubs: Devices that allow multiple devices to connect to the network.
     + Cables: Used to connect devices to the network.
   * Software Components:
     + Network operating systems: Operating systems designed specifically for networking, such as Windows Server.
     + Communication protocols: Rules and procedures for transmitting data between devices.
     + Security solutions: Software and hardware solutions designed to protect the network and data.
4. Types of Networks:
   * Local Area Network (LAN):
     + Connects devices within a small geographic area, such as a home or office.
     + Uses high-speed communication technologies for fast and reliable communication.
   * Metropolitan Area Network (MAN):
     + Connects devices within a city.
     + Often used to provide communication and resource sharing to larger organizations.
   * Wide Area Network (WAN):
     + Connects devices over a large geographic area, such as multiple cities or countries.
     + Often uses slower communication technologies such as satellite or dial-up.
5. Physical vs Logical Topology:
   * Physical Topology:
     + Refers to the physical layout or arrangement of devices and cables in a network.
     + Common physical topologies include star, bus, ring, and mesh.
   * Logical Topology:
     + Refers to the communication patterns and flow of data between devices in the network.
     + Logical topology is not limited by the physical topology and can be changed without affecting the physical layout of the network.
6. Different types of networks:

* Client-server network: In this type of network, there is a central server that provides resources and services to clients.
* Distributed network: This type of network distributes resources and services across multiple computers, reducing dependence on a single central server.
* Peer-to-peer network: In this type of network, each computer acts as both a client and a server, allowing for direct communication between nodes.
* Cloud-based network: In this type of network, resources and services are provided over the internet from remote servers, rather than being stored locally on each user's device.

1. Network Topologies: A network topology refers to the physical or logical arrangement of devices in a network. Some common network topologies are:

* Star topology: In this topology, devices are connected to a central hub, which acts as a centralized point of control.
* Bus topology: In this topology, devices are connected to a single central cable or bus, with data being transmitted along the cable to reach its destination.
* Ring topology: In this topology, devices are connected to form a circular loop, with data being transmitted from one device to the next until it reaches its destination.
* Mesh topology: In this topology, each device is connected to every other device in the network, allowing for multiple paths for data to travel.
* Tree topology: In this topology, a central device is connected to multiple other devices, which are connected to still more devices, forming a branching structure.

1. Protocols and their usage:

* TCP/IP: The Transmission Control Protocol/Internet Protocol (TCP/IP) is the standard communication protocol for the internet and most other computer networks. It provides a set of rules for transmitting data over the internet.
* HTTP: The HyperText Transfer Protocol (HTTP) is the standard protocol for transmitting web pages over the internet. It defines the format of requests and responses between a client and a server.
* HTTPS: The HyperText Transfer Protocol Secure (HTTPS) is a secure version of HTTP that encrypts data to protect against eavesdropping and tampering.
* FTP: The File Transfer Protocol (FTP) is a standard protocol for transferring files over the internet. It provides a mechanism for transferring files between computers and servers.