Q1. What are the different types of networks?

Ans: The different types of networks are:

1.LAN (Local Area Network):

• Local Area Network is a group of computers connected to each other in a small area such as building, office.

• LAN is used for connecting two or more personal computers through a communication medium such as twisted pair, coaxial cable, etc.

. • It is less costly as it is built with inexpensive hardware such as hubs, networks adapters, and ethernet cables. 2. PAN (Personal Area Network):

• PAN is a network arranged within an individual person, typically within a range of 10 meters.

• PAN is used for connecting the computer devices of personal use is known as Personal Area Network. • Personal computer devices that are used to develop the personal area network are the laptop, mobile phones, media player and play stations. 3.MAN (Metropolitan Area Network):

• A MAN is a network that covers a larger geographic area by interconnecting a different LAN to form a larger network.

• Government agencies use MAN to connect to the citizens and private industries.

• In MAN, various LANs are connected to each other through a telephone exchange line. 4.WAN (Wide Area Network):

• A WAN is a network that extends over a large geographical area such as states or countries.

• A WAN is quite bigger network than the LAN.

• A WAN is not limited to a single location, but it spans over a large geographical area through a telephone line, fiber optic cable or satellite links.

Q2. Explain the Shielded twisted pair (STP) and Unshielded twisted pair (UTP).

Ans: A shielded twisted pair is a type of twisted pair cable that contains an extra wrapping foil or copper braid jacket to protect the cable from defects like cuts, losing bandwidth, noise, and signal to the interference. It is a cable that is usually used underground, and therefore it is costly than UTP. It supports the higher data transmission rates across the long distance. We can say it is a cable with metal sheath or coating that surround each pair of the insulated conductor to protect the wire from external users and prevent electromagnetic noise from penetrating.

Features of STP cable are:

  1. Frequency: It has higher frequency data transmission as compared to the UTP.

  2. Thickness: It is a thick shielded twisted pair cable as it contains the wrapping of plastic material to the copper conductor.

3. Grounding practices: the uses of shielded twisted pair cable are underground for a longer distance.

4. Installation of the shielded wire is more difficult than the UTP (Unshielded twisted pair) cable. Advantages of the STP cable:

1. It has lower noise and attenuation than UTP.

2. It is shielded with a plastic cover that protects the STP cable from a harsh environment and increases the data transmission rate.

3. It reduces the chances of crosstalk and protects from external interference.

Disadvantages of the STP cable:

1. It is the most expensive wire from UTP cables.

2. It requires more maintenance to reduce the loss of data signals.

3. There is no segment improvement in length despite its thick and heavier connection.

UTP is an unshielded twisted pair cable used in computer and telecommunications mediums. Its frequency range is suitable for transmitting both data voice via a UTP cable. Therefore, it is widely used in the telephone, computers, etc. it is a pair of insulated copper wires twisted together to reduce noise generated by external interference. It is a wire with no additional shielding, like aluminum foil, to protect its data from exterior.

Advantages of the UTP:

1. It is a le3ss costly and less expensive unshielded wire from another network medium.

2. It is designed to reduce crosstalk, RPI, and EMI.

3. Its size is small, and hence the installation of the UTP is easier.

Disadvantages of the UTP:

1. It can only be used in length segment up to 100 meters.

2. It has limited bandwidth for transmitting the data.

3. It does not provide a secure connection for data transmitting over the network.

Q3. What is the difference between baseband and broadband transmission?

Ans:

Baseband transmission	Broadband transmission
1. In baseband transmission, the type of signaling used its digital. 2. Baseband transmission is bidirectional in nature. 3. Signals can only travel over short distances. 4. It works well with bus topology. 5. Baseband transmission is easy to install and maintain.	1. In broadband transmission, the types of signaling used is analog. 2. Broadband transmission is unidirectional in nature. 3. Signals can be travelled over long distances without being attenuated. 4. It is used with a bus as well as tree topology. 5. Broadband transmission is difficult to install and maintain.

Q4. What is the difference between a hub, modem, router and a switch?

Ans: 1. Hub:

A hub is a device that allows several network devices to connect together to exchange data on a single network however, they have no management component. Network hubs are also known as repeaters. They are less 'intelligent' than switches. Unlike switches, which forward data to the intended device, hubs merely sends the data packets to all its ports. So as the name repeaters suggests, it only repeats the data from an incoming port to all the other devices; this leads to frequent collisions between packets.

2. Modem:

A modem is short for a modulator-demodulator. Its function is to facilitate the transmission of data, by converting an analogue signal to cade and decoding digital information.
3.Router:

A network routers directs the packets along networks. A router has a minimum of two networks, usually LANs or WANs or a LAN and its ISP. However, unlike a modem, it cannot work single standing, however is able to connect to multiple nodes.

4. Switch:

A switch is a network that connect segments on a single network. It connects many devices together on the same network, sending data to a device that needs or requests it. A switch is able to improve the performance of a network by increasing network capacity.

Q5. When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well?

Ans:

Yes, that is because MAC addresses are hardwires into the NIC circuity, not the PC. This also means that a PC can have a different MAC address when another one replaced the NIC card.

Q6. When troubleshooting computer network problems, what common hardware-related problems can occur?

Ans: A large percentage of a network is made up of hardware. Problem is these areas can range from malfunctioning hard drives, broken NICs and even hardware startups.

Q7. In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program?

Ans: The best place is to install an Anti-virus program on all the computers in the network.

Q8. Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

Ans: Static IP: When a device is assigned a static IP address, the address does not change.

Dynamic IP: Most devices use dynamic IP addresses which are assigned by the network when they connect and change over time.

IPV4	IPV6
1. IPV4 has a 32-bit address length 2. It Supports Manual and DHCP address configuration 3. In IPV4 end to end, connection integrity is unachievable 4. The security feature is dependent on application 5. In IPV4 Encryption and Authentication facility not provided 6. IPV4 consist of 4 fields which are separated by dot (.)	1. IPV6 has a 128-bit address length 2. It supports auto and renumbering address configuration 3. In IPV6 end to end, connection integrity is achievable 4. IPSEC is an inbuilt security feature in the IPV6 protocol 5. In IPV6 encryption and authentication are provided 6. IPV6 consists of 8 fields, which are separated by colon (:)

Q9. Discuss TCP/IP model in detail.

Ans: TCP/IP Reference Model is a four- layered suite of communications protocols. It was developed by the DoD (Department of Defense) in the 1960s. Its is named after the two main protocols that are used in the model, namely, TCP and IP. TCP stands for Transmission Control Protocol and IPs stands for Internet Protocol.

Q10.What is a Web Browser? Give some example of browsers.

Ans: A web browser is an application used to access and view websites. Some examples of browser include Microsoft Edge, Google chrome, Mozilla Firefox, and Apple Safari.

Q11.What is a search engine? Give example.

Ans: A search engine is a web based tool that enables users to locate information on the world wide web (WWW). Example: Google, Yahoo!, and MSN Search.

Q12.What is the Internet &WWW? What are the uses of internet in our daily life?

Ans: Internet is a vast network that connects computers all over the world. Through the internet, people can share information and communicate from anywhere with an internet connection. World wide web (WWW) is an interconnected system of public webpages accessible through the internet.

Uses of internet in our daily life. The internet is very much useful in our daily routine task. For example, it helps us to see our notification and emails. A part from this, people can use the internet for money transfer, shopping, order online food, etc.

Q13. What is an Internet Service Provider? Give some examples of ISP of India.

Ans: An Internet Service Provider is an organization that provide services for accessing using or participation in the internet. Examples of ISP in India are: Airtel, BSNL etc.

Q14. Discuss the difference between MAC address, IP address and Port address.

Ans: Media Control (MAC) refers to the piece of hardware that controls how data is pushed out onto a network. In the OSI reference model for networking, the MAC is a layer 2 – or data link layerdevice, and the MAC address is a layer of 2 address.

A MAC address consists of 12 hexadecimal digits, usually grouped into six pairs separated by hyphens. MAC address are available from 00-00-00-00-00-00 through FF-FF-FF-FF-FF-FF. The first half of the number is typically used as a manufacturer ID, while the second half is a device identifier. Each MAC address is unique to the network card installed on a device, but the number of device- identifying bits is limited, which means manufacturers do reuse them.

IP Address: IP controls how devices on the internet communicate and defines the behavior of internet routers. It corresponds to Layer 3, the network layer, of the OSI reference model. The internet was initially built around IP version 4 (IPv4) and is in transition to IPv6. An IP address identifies a device on the global internet, acting as the device's logical address to identify that network connection. An IPv6 address consist of 32 bits, usually written as four decimal numbers, or a dotted quad.

The IP address combines network identification and device identification data. The network prefix is everywhere from eight to 31 bits and the remainder identify the device on the network. An address IPv6 consists of 128bits, with the first 64 reversed for identification and the second 64 dedicated to identifying a device on the network.

Port Address: A Port Address is the logical address of each application or process that uses a network or the internet to communicate. A port number uniquely identifies a network- based application on a computer. Each application /program is allocated a 16- bit integer port number.

A port number primarily aids in the transmission of data between a network and an application. Port numbers work in collaboration with networking protocols to achieve this. Port numbers are mainly used in TCP and UDP based networks, with an available range of 65,535 for assignment port numbers. Although an application can change its port number, some commonly used internet/network services are allocated with the global port numbers such as Port Number 80 for HTTP, 23 for Telnet and @ % for SMTP.

15.How do we view my Internet browser's history?

Ans.   In the lower-left corner of the browser window, tap and hold the back arrow. The page that opens contain your browser history.