Q.1:- What are the different of network?

1. **LAN (Local Area Network)**
2. **MAN (Metropolitan Area network)**
3. **WAN (Wide Area Network)**

LAN:-
A local area network is a network, which is designed to operate over a very small geographical or physical area such as an office, building, a group of buildings, etc.

Generally, it is used to connect two or more personal computers through a communication medium such as coaxial, twisted-pair cables, etc. A LAN can use either wired or wireless mode of communication. The LAN which entirely uses wireless media for communication can be termed as WLAN (Wireless local area network).

MAN :- (Metropolitan Area Network)
A Metropolitan Area Network is a bigger version of LAN that uses similar technology as LAN. It spans over a larger geographical area such as a town or an entire city.

It can be connected using an optical fiber as a communication medium. Two or more LAN's can also be connected using routers to create a MAN.When this type of network is created for a specific campus, than it is termed as CAN (Campus Area Network).

WAN (Wide Area Network)
A Wide Area Network is the largest spread network. It spans over very large-distances such as a country, continent or even the whole globe. Two widely separated computers can be connected very easily using WAN. For Example the Internet.

A WAN may include various Local and Metropolitan Area Network. The mode of communication in a WAN can either be wired or wireless. Telephone lines for wired and satellite links for wireless communication can be used in a wide area network.

Q.2:- Explain the Shielded twisted pair (STP) and Unshielded twisted pair (UTP)?

 STP: STP is also the type of twisted pair which stands for Shielded twisted pair. In STP grounding cable is required but in UTP grounding cable is not required. In Shielded Twisted Pair (STP) much more maintenance are needed therefore it is costlier than Unshielded Twisted Pair (UTP).

UTP:

UTP is the type of twisted pair cable. It stands for Unshielded twisted pair. Both Data and voice both are transmitted through UTP because its frequency range is suitable.

 Q.3:-what is difference between baseband and broadband transmission ?

 Ans:-

Basenand	Broadband
It referas to a communications chanal in which information is carried in digital from.	The signals are modulated as radiofrequency analog waves that use different frequency ranges.
Communication is bi-directional which means the same channel is used to transmit and receive signals.	Communication is unidirectional meaning two different channels are needed in order to send and receive signals.
Every device on a baseband system shares the same channel.	Multiple independent channels can carry analog or digital information through FDM.
Baseband LANS are inexpensive and easier to install and maintain.	Broadband systems are generally more expensive because of the additional hardware involved.

Q4. Ans:- Difference Between Hub and Modem router and switches.

Hub

A hub is to sent out a message from one port to other ports. For example, if there are three computers of A, B, C, the message sent by a hub for computer A will also come to the other computers. But only computer A will respond and the response will also go out to every other port on the hub. Therefore, all the computers can receive the message and computers themselves need to decide whether to accept the message.

Switch

A switch is able to handle the data and knows the specific addresses to send the message. It can decide which computer is the message intended for and send the message directly to the right computer. The efficiency of switch has been greatly improved, thus providing a faster network speed.

Router

Router is actually a small computer that can be programmed to handle and route the network traffic. It usually connects at least two networks together, such as two LANs, two WANs or a LAN and its ISP network. Routers can calculate the best route for sending data and communicate with each other by protocols.

Hub Vs. Switch

A hub works on the physical layer (Layer 1) of OSI model while Switch works on the data link layer (Layer 2). Switch is more efficient than the hub. A switch can join multiple computers within one LAN, and a hub just connects multiple Ethernet devices together as a single segment. Switch is smarter than hub to determine the target of the forwarding data. Since switch has a higher performance, its cost will also become more expensive.

Switch Vs. Router

In the OSI model, router is working on a higher level of network layer (Layer 3) than switch. Router is very different from the switch because it is for routing packet to other networks. It is also more intelligent and sophisticated to serve as an intermediate destination to connect multiple area networks together. A switch is only used for wired network, yet a router can also link with the wireless network. With much more functions, a router definitely costs higher than a switch.

Device	What is does
Modem:	Stands for "modulating-demodulating": modems are hardware devices that allow a computer or another device, such as a router or switch, to connect to the Internet. They convert or "modulate" an analog signal from a telephone or cable wire to digital data (1s and 0s) that a computer can recognize. Simply send traffic from point A to piont B without further manipulation.
Routers:	Are responsible for sending data from one network to another. Work at Layer 3 (Network) of the OSI model, which deals with IP addresses. Typically, routers today will perform the functionality of both a router and a switch - that is, the router will have multiple ethernet ports that devices can plug into.
Switches:	They use the MAC address of a device to send data only to the port the destination device is plugged into. Work at Layer 2 (Data Link) of the OSI model, which deals with MAC addresses.
Hubs:	Unlike switches, hubs broadcast data to all ports, which is inefficient, so hubs are basically a multiport repeaters.

Q.5- When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well?

ANS- that's because MAC addresses are hard-wired into the NIC circuitry, not the PC. This also means that a PC can have a different MAC address when another one replaced the NIC card.

Q.6-When troubleshooting computer network problems, what common hardware-related problems can occur?

ANS-A large percentage of a network is made up of hardware. Problems in these areas can range from malfunctioning hard drives, broken NICs, and even hardware startups .

Q.7:-In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program?

Ans:- An anti-virus program must be installed on all servers and workstations to ensure protection. That's because individual users can access any workstation and introduce a computer virus when plugging in their removable hard drives or flash drives.

Q.8:- Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

Ans:- Static IP :- An Internet Protocol address is a unique number assigned to each computer on a network. A computer on the Internet can have a static IP address, which means it stays the same over time.

Dynamic IP: - It is an IP address that an ISP lets you use temporarily. If a dynamic address is not in use, it can be automatically assigned to a different device.

IPv4 and IPv6 are internet protocol version 4 and internet protocol version 6, IP version 6 is the new version of Internet protocol, which is way better than IP version 4 in terms of complexity and efficiency.

Difference between IPV4 and IPV6 are as follows:-

| IPV4	IPV6
IPV4 has 32-bit address length	IPV6 has 128-bit address length.
It supports manual and DHCP address configuration.	It supports Auto and renumbering address configuration.
In IPV4 end to end connection integrity is Unachievable.	In IPV6 end to end connection integrity is Achievable.
IPV4 has header of 20-60 byte.	IPV6 has header of 40 byte.

Q9:-

TCP/IP model:-

CP stands for Transmission Control Protocol a communications standard that enables application programs and computing devices to exchange messages over a network. It is designed to send packets across the internet and ensure the successful delivery of data and messages over networks.

TCP is one of the basic standards that define the rules of the internet and is included within the standards defined by the Internet Engineering Task Force (IETF). It is one of the most commonly used protocols within digital network communications and ensures end-to-end data delivery.

TCP organizes data so that it can be transmitted between a server and a client. It guarantees the integrity of the data being communicated over a network. Before it transmits data, TCP establishes a connection between a source and its destination, which it ensures remains live until communication begins. It then breaks large amounts of data into smaller packets, while ensuring data integrity is in place throughout the process.

- The TCP/IP model was developed prior to the OSI model.

- The TCP/IP model is not exactly similar to the OSI model.

- The TCP/IP model consists of five layers: the application layer, transport layer, network layer, data link layer and physical layer.

- The first four layers provide physical standards, network interface, internetworking, and transport functions that correspond to the first four layers of the OSI model and these four layers are represented in TCP/IP model by a single layer called the application layer.

- TCP/IP is a hierarchical protocol made up of interactive modules, and each of them provides specific functionality.

What is TCP/IP?
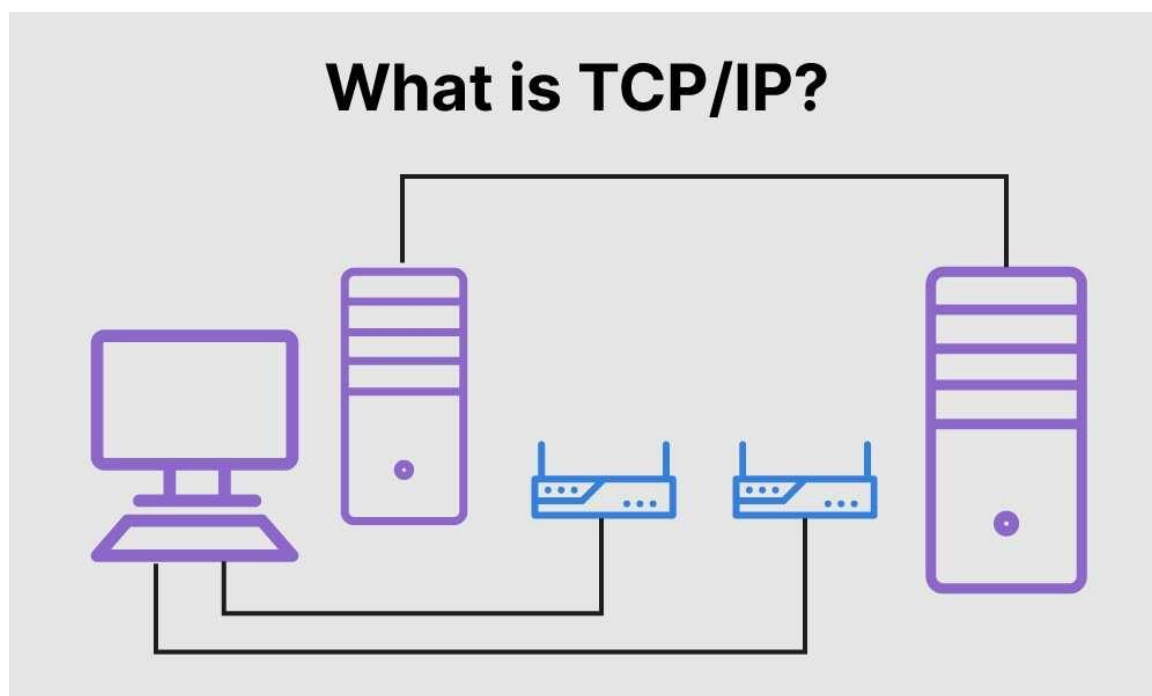
The TCP/IP model is the default method of data communication on the Internet. It was developed by the United States Department of Defense to enable the accurate and correct transmission of data between devices. It breaks messages into packets to avoid having to resend the entire message in case it encounters a problem during transmission. Packets are automatically reassembled once they reach their destination. Every packet can take a different route between the source and the destination computer, depending on whether the original route used becomes congested or unavailable.

TCP/IP divides communication tasks into layers that keep the process standardized, without hardware and software providers doing the management themselves. The data packets must pass through four layers before they are received by the destination device, then TCP/IP goes through the layers in reverse

order to put the message back into its original

Q.10 what is a web browser ? Give some example of browser ?

Ans. A web browser is a software application which enables a user to display and interact with text, image , videos , music , games and other information typically located on a web page at a website on the World Wide Web or a local area network.

TYPE OF WEB BROWSERS

1. INTERNET EXPLORER

Windows Internet Explorer commonly abbreviated to IE is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft windows line of operating systems starting in 1995.It has been the most widely used web browser since 1999, attaining a peak of about 95% usage share during 2002 and 2003 with IE5 and IE6 but steadily declining since, despite the introduction of IE7.

2. OPERA

Opera is a web browser and internet suit developed by the Opera software company. Opera handles common Internet – related tasks such as displaying web sites, sending and receiving e-mail message, managing contacts, IRC online chatting, downloading files via Bit Torrent, and reading web feeds.

3. MOZILLA

Mozilla was the official, public, original name of Mozilla Application suite by the Mozilla foundation, currently know as Sea Monkey suite. The name has been used in a number of ways and in combination with other phrases, though all of them have been related to the now – defunct Netscape Communications Corporation and its related application software.

4. FIREFOX

Mozilla Firefox is a free and open source web browser descended from the Mozilla application Suite, managed by the Mozilla Corporation. Firefox had 19.97% of the recorded usage share of web browsers as of October 2008, making it the second – most popular browser in current use worldwide, after Internet Explorer.

5. SAFARI

Safari is a proprietary Internet web browser developed by Apple Inc. First released as a public beta on January 7, 2003, on the company's Mac OS X operating system, it became its default browser beginning with Mac OS X v 10.3. It is also the current native browser on the Apple iPhone and iPod Touch.

Q.11- What is search engine? Give example.

ANS- A search engine is a web-based tool that enables users to locate information on the World Wide Web. Popular examples of search engines are Google, yahoo, and MSN Search.

Q12:- Internet and WWW

Internet :
The internet is a globally connected network system facilitating worldwide communication and access to data resources through a huge collection of personal, public, business, academic and government networks. it's governed by agencies just like Internet Assigned Numbers Authority (or IANA) that establish universal protocols.

World Wide Web (WWW) :
World Wide Web (WWW), byname Web, is leading information retrieval service of web (the worldwide computer network). Online gives users access to a huge array of documents that are connected to every other by means of hypertext or hypermedia links—i.e., hyperlinks, electronic connections that link related pieces of data so as to permit a user quick access to them. Hypertext allows the user to pick a word or phrase from text and thereby access other documents that contain additional information concerning that word or phrase.

Uses of internet in daily life:-

What are the most popular uses of the Internet?
While there is no doubt that Internet usage is exploding, have you ever stopped to wonder what the people are using it for?

And do they use it ethically and productively?

Here is a list of the most popular reasons people use the Internet today.

1. Search information
2. News
3. Communicate and collaboration
4. File and data transfer
5. Social networking
6. Entertainment – relax, watch video, listen to music
7. Gaming
8. Business promotion
9. Earn on the Internet
10. Shopping (E-commerce)
11. Education
12. Online services
13. Blogging
14. Dating
15. Remote work

Search information

We search for information every day, whether that be a product, news story, video or similar thing. To do that, we use search engines like Google Chrome, Mozilla, Safari or search for information on websites surfing on the web.

The search is done by typing a query or question for which we seek specific information or answers.

News

People want to know what is happening around the world immediately. They want fast information and stay updated on a daily basis.

They don't bother to wait for the morning newspaper or the news broadcast on their TV or radio. Therefore, people prefer news websites on the Internet and consume the top daily news there.

Communicate and collaborate

The first significant and most popular use of the Internet is Email. Email is still the first thing that most people check after they have logged on to the Internet.

Through time, people shared information and data files via this channel but communication is the priority purpose. Email has enabled easy, fast and efficient communication between people and businesses.

File and data transfer

Probably the second major use of the Internet in the early days is file and data transfer. This is done by the FTP – File Transfer Protocol that enables secured exchange between two participants over the Internet.

This Internet use was essential because the email services restrict the size of a file that can be shared and cannot guarantee the security of sensitive and confidential data.

Today there are many other ways of file and data sharing like cloud services and peer-to-peer network distribution, also know as **torrenting**.

Social networking

Social networking helps in connecting the world in a more humane approach. One of the most desired new things to do on the Internet is to express yourself and make new friends via popular social networks.

Q13 :-

What Is an Internet Service Provider (ISP)?

The term Internet service provider (ISP) refers to a company that provides access to the Internet to both personal and business customers. ISPs make it possible for their customers to surf the web, shop online, conduct business, and connect with family and friends—all for a fee. ISPs may also provide other services including email services, domain registration, web hosting, and browser packages. An ISP may also be referred to as an information service provider, a storage service provider, an Internet service provider (INSP), or any combination of these three based on the services the company offers.

- An Internet service provider (ISP) is a company that provides web access to both businesses and consumers.

- ISPs may also provide other services such as email services, domain registration, web hosting, and browser services.

- An ISP is considered to be an information service provider, storage service provider, Internet network service provider (INSP), or a mix of all of them.

- Internet use has evolved from only those with university or government accounts having access to nearly everyone having access, whether it's paid or free.

- Access has gone from dial-up connections to high-speed broadband technology.

Some major service providers in India :-

1. BSNL
With 53.15% of market share and 2.32 million subscribers to its credit, BSNL Broadband services are accessible on DSL technology on a national basis covering 198 cities. It is at par in context of infrastructure facilities compared to the advanced countries. The subscribers can access Video multicasting, Audio and Video conferencing, Distance learning, texting, etc through its Subscriber Service Selection System (SSSS) portal.

The major objectives of the service provider are to offer high speed Internet connectivity, Virtual Private Network (VPN) service, dial VPN service, Broadband Remote Access Server (BRAS) and both post and pre paid internet facilities to its customers. It also provides its clients with the alternative to choose the facilities via internet server.

2. MTNL
With 0.59 mn subscribers under its cover and 13.56% of market share, MTNL functions only in the profitable zones of Delhi, NCR and Mumbai. MTNL's TriBand is India's 'always-on' data connectivity that assists communication services entailing broadband access and has the competence of download rate of upto 2Mbps with guaranteed minimum rate of 256 kilo bits per second to residential telephone users. Its services include VoIP, broadcast apps, VPN, video phone, IPTV, etc. other major broadband benefits are zero call rates for broadband access, quality services, non-stop Help line and Technical assistance, simple registration, bill calculated on the basis of quantity of data downloaded with Multicast Video Services in store.

3. Bharti Airtel
Bharti Airtel has 0.58 mn subscribers under its network belt and enjoys a considerable market share of 13.25%. One of the Asia's foremost incorporated telecom firm with operations centered in India, Bangladesh and Sri Lanka. Since its incorporation, Bharti Airtel has been at the vanguard of expertise and has led the way for several modernizations in the Indian telecom sector. The Telemedia business unit of the firm offers IPTV, telephone facilities and broadband services in 89 cities of India. The firm has 0.58 mn subscribers to its credit with a significant market share of 13.25%.

4. Hathway Cable
Hathway Cable has more than 204,000 subscribers under its network coverage and offers several advantages to its users. Some of them are prompt network, instant access, no disconnections, Always-on mode, fixed monthly charges and enhances servers and routers. Its cable modems are structured to take benefit of the high bandwidth competences of the cable structure which allows a connection speed faster than the conventional dial-up. Hathway Cable Internet Service is dependant on DOCSIS (Data Over Cable Services Interface Specifications) set of rules. This protocol offers a standard of protection equivalent to or superior than the one offered by its competitors.

5. Tata Communications

The communication provider offers its quality services to over 193,000 Indian subscribers. The firm has an extensive set-up coverage and distributor base. The various broadband solutions offered by Tata Communications are VoIPLink™, VTS, VoIPLink Ready and VTS Prime. The plans are described as under:

7. Reliance Communications

With the customer base of 85,000, Reliance Communications aims at offering a unique broadband experience to its users. The firm constantly keeps on reinventing itself and its products and services by adding value to it.

8. Sify Broadband

Sify Broadband promises to offer various services to satisfy its client's diverse needs. It offers limitless downloads at night at a minimal cost along with night browsing. With a speed of 256 Kbps and consumer base of 54,000, Sify Broadband offers uninterrupted virtual presence.

9. Asianet Communications

Initiated in1993, Asianet Communications has has 43,000 clients under its coverage area. It is one of the ISPs in India that offers an extensive range of broadband services to both corporates and homes. Through its fully owned subsidiary Asianet Dataline, Asianet Communications offers other services such as Web Hosting, site expansion, VPN, Dialup broadband and VoIP. Other benefits of Asianet Dataline are its flexibility, datatransfer based schemes and competitive plans.

10. HFCL Infotel

HFCL Infotel's CONNECT offers the best internet services in Indian market and has 20,000 clients to its credit. It has one of the high-speed internet connectivity triggered by DSL (Digital Subscribers Line) which is a contemporary, protected and dependable technology. DSL technology makes the broadband extremely prompt and expedient that is upto 55 times high speed than the normal dial-ups. It offers unlimited downloads and is compatible with gaming, chatting, live streaming and movies downloads.

Q14:- difference between MAC address, IP address and Port address

Difference between MAC Address and IP Address

Both MAC and IP Address are used to uniquely define a device on the internet. NIC Card's Manufacturer provides the MAC Address, on the other hand Internet Service Provider provides IP Address.

The main difference between MAC and IP address is that, MAC Address is used to ensure the physical address of computer. It uniquely identifies the devices on a network. While IP address are used to uniquely identifies the connection of network with that device take part in a network.

Let's see the difference between MAC Address and IP Address:

S.NO	MAC Address	IP Address
1.	MAC Address stands for Media Access Control Address.	IP Address stands for Internet Protocol Address.

2.	MAC Address is a six byte hexadecimal address.	IP Address is either four byte (IPv4) or eight byte (IPv6) address.
3.	A device attached with MAC Address can retrieve by ARP protocol.	A device attached with IP Address can retrieve by RARP protocol.
4.	NIC Card's Manufacturer provides the MAC Address.	Internet Service Provider provides IP Address.
5.	MAC Address is used to ensure the physical address of computer.	IP Address is the logical address of the computer.
6.	MAC Address operates in the data link layer.	IP Address operates in the network layer.
7.	MAC Address helps in simply identifying the device.	IP Address identifies the connection of the device on the network.
8.	MAC Address of computer cannot be changed with time and environment.	IP Address modifies with the time and environment.
9.	MAC Address can't be found easily by third party.	IP Address can be found by third party.

Port Number :
Port number is the part of the addressing information used to identify the senders and receivers of messages in computer networking. Different port numbers are used to determine what protocol incoming traffic should be directed to. Port number identifies a specific process to which an Internet or other network message is to be forwarded when it arrives at a server. Ports are identified for each protocol and It is considered as a communication endpoint.

Ports are represented by 16-bit numbers. 0 to 1023 are restricted port numbers are as they are used by well-known protocol services. 1024 to 49151 are registered port numbers means it can be registered to specific protocols by software corporations and in last 49152 to 65536 are used as private ports means they can be used by anybody.

Q.15:-How do we view my internet browser's history ?

Ans:- As you browse the web , most web page data is cached locally on your computer to help pages load faster and reduces the amount of data you need to transfer over your internet connection.

To help keep yours browsing history private and to free up disk space on your computer , you can clear your local browsing history.