DATA COMMUNICATIONS

1) Types of Networks :

* LAN
* WLAN
* WAN

LAN (Local Area Network)

* A Local Area Network is usually privately owned and links the devices in a single office, building or campus.

* Currently LAN size is limited to a few kms.

* LAN's are designed to allow resources to be shared between personal computer or workstations.

* The resources to be shared can include hardware, software or data.

* Software can be stored on this central server and used as needed by the whole group.

* The most common LAN topologies are bus, ring and star.

* Ethernet [IEEE 802.3] is one example of LAN.

WLAN (Wireless LAN)

* IEEE has defined the specifications for a wireless LAN. called IEEE 802.11 which cover the physical and data link layers.

* A BSS without an AP is called an ad hoc network. a BSS with an AP is called an infrastructure network.

WAN (Wide Area Network)

* A wide area network provides long distances transmission of data, image, audio and video information over large geographic areas that may comprise a country, a continent, or even the whole world.

* A WAN can be as complex as the backbones that connect the Internet or as simple as a dial up lines that conects a home computer to the Internet.

* The switched WAN connects the end systems, which usually comprises a router that connects to another LAN or WAN

2) Shielded Twisted pair (STP)

* shielded Twisted pair (STP) is a special kind of copper telephone and local area network (LAN) writing used in some business installations.

* Twisted pair is the ordinary copper wire that connects may computer networks.

* To reduce cross, talk or electromagetic indication between pairs of wires, two insulated copper wires are twisted around each other.

unshielded Twisted pair (UTP)

* UTP cables are mostly used for LAN networks.

* They can be used for voice, low-speed data, high-speed data, audio and paging statement systems, and building automation and control systems.

* UTP cable can be used in both the horizontal and backbone cabling subsystems.

* UTP is a ubiquitous types of copper cabling used in telephone wiring and LANs.

3) Base band and broad band Transmission :

Base band Transmission	Broad band Transmission
* Base band technology uses digital signals in data transmission	* Broad band technology uses analog signals in data transmission
* It sends binary values directly as pulses of different voltage levels	* It is was a special alog waves known as the carrier wave
* Base band supports bidirectional communication	* Broad band supports only undirectional communication
* Base band technology is mainly used in Ethernet works to exchange data between nodes	* Broad is typically used in an environment that transmits audio, video, and data simultaneously
* use coaxial, twisted pair, and fiber - optic cables	* use redio waves, coarial cables, and fiber optic cables.

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HUB	Modam	Router	Switch
The passive hub connects the wires coming from different branches	A modam modulates and demodulates electrical signals sent through phone lines, coaxial cables	Routers are conceptually similar to bridges, except that they are found in the network layer	when we use the term switch, we must be careful because a switch can mean two different thing.
Active hubs or a multiport repeates operate only at the physical layer.	A modam modulates one or more carrier waves signals to encode digital information	A router is a layer - 3 device that routes packets based on their logical addresses	A L2 switch is a bridge and performs up to data link layers
passive hubs redirects the traffic one the connected machines	modems can be used with almost any means of trans analog signal	The routing tables are normally dynamic and are updated using routing protocol	A L3 switch and router is synonyms and more sophisticated.

5) Move the NIC cards from one pc to another pc, does the MAC address gets transferred.

* yes, that's beacuse 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.

* NIC is short for Network Interface card.

* MAC stands for Media Access control.

6. when troubleshooting computer network problem, what common hardware - related problem can occur

* 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.

* Incorrect hardware configuration is also one of those culprits to look into.

7 where is the best place to install an Anti-Virus program?

* 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.

* you can plug in their removable hard drives or flash drives.

* An anti-virus program is installed in the best place.

8) Static ip:

* A static ip is an ip address that always stays the same.

* A static ip address is asually more expensive Then a dynamic ip address and some isps do not supply static ip address

Dynamic ip:

* A dynamic ip is an IP address that an ISP lets you are use temporexily.

Difference between IPV4 and IPV6

IPV4	IPV6
IPV4 is 32 bit binary number	IPV6 is 128 bit binary number
IPV4 address are separated by periods	IPV6 address are seperated by colons
unicast, broadcast and multicast is type of address	unicast, multicast and any cast is type of addresses.

9. TCP/IP model

* The Internet protocal suite commonly known as TCP/IP, is the set of communications protocols.

* The current foundational protocals in the suite are the transmission control protocal (TCP) and the Internet protocal.

Layers :

1) Application layer
2) network Interface Layer
3) Transport Layar
4) Internel Layar.

Application layer :

* The application layer includes the protocols used by most applications for providing user services or exchanging application data over the network connections established by the lower level protocols.

Transport Layer :

* The transport layer establishes basic data channels that applications uses for task specific data exchange.

Internet layer :

* The Internet layer provides an undeliverable datagram transmission facility.

Network Interface layer

* A network layer is a combination of the data line and defined in the article of OSI reference model.

10. web browser :

* A web browser is computer software application that functions at the applications layer of an open system interconnection model and allow user to access the internet.

* A web browser is application software for accessing the world wide web.

example :

* Google chrome
* Mozilla Firebox
* Apple safari
* Micro Edge
* Opera
* Internet explorer.

(11) search engine :

* a search engine is a software program that helps people find the information they are looking for online using keywords or phrases.

Example :

Google, Bing, yahoo, Baidu, AOL, DuckDuckGo and MSN search.

12 Internet :

* The Internet is a global networks of networks connecting millions of users world wide via many computer networks using a simple standard common addresing system and basic communications protocol called TCP/IP.

* Its evolution depands on rough consesus about technical proposals, and no running code.

WWW

* www stands for world wide web.

* The world wide web is the universe of networks accessible information.

* www can be defined as "all resources and users on the Internet that are using the HTTP.

Uses of Internet in daily life :

* Education
* Shopping
* Research and development
* Digital transcations
* Money management

13 Internet Service provider :-

* An Internet Service provider (ISP) is an organization that provider service for accessing, using, or participating in the Internet.

* Internet services typically provided by ISPs include internet access, Internet transit, Domain name registration, web hosting, and Usenet service.

Example :

BSNL, Airtel, Jio, and Vodafone

11 View my Internet browser's history :-

1. Open Google chrome.
2. Click : This option is in the top right corner
3. Select History.
4. Click History. It's at the top of the pop out menu
5. Review your browsing history.

15)

MAC address	IP address	port address
MAC stands for media Access control	IP stands for Internet protocol	ports are ranging from 0 to 65585
It consists of a 48 - bit address	It consists of a 32 - bit address	It consist of a from 16 - bit address
It is referred to as a physical address	It is referred of a logical address	Port is address of system
It works at the link layer of the OSI model	It works at the network layers of OSI model	port address of the particular servies on the particular system.
Classes are not used in MBC address	In IP, IPVA uses A, B, C, D and E classes	PORT address used for remote access.