CCA-102: Data Communications

ASSIGNMENT 2

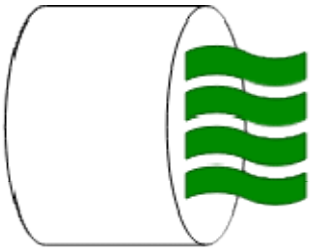
1 .What are the different types of network ?

The **Network** allows computers to connect and communicate with **different** computers via any medium. LAN, MAN and WAN are the three major **types** of the **network** designed to operate over the area they cover. There are some similarities and dissimilarities between them.

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

UTP:

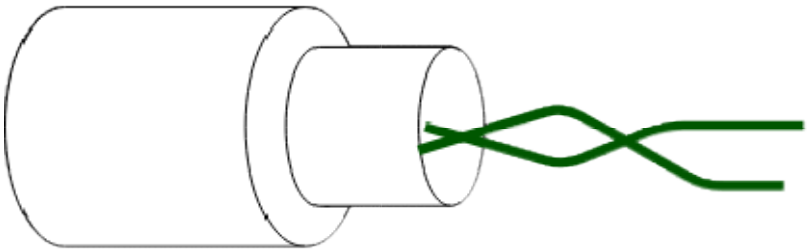
UTP is the type of twisted pair cable. It stands for Unshielded twisted pair. Both Data and voice both are transmitted through UTP because its frequency range is suitable. In UTP grounding cable is not necessary also in UTP much more maintenance are not needed therefore it is cost effective.



Unshielded Twisted Pair

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).



Shielded Twisted Pair

Difference between Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cables:

S.NO	UTP	STP
1.	UTP stands for Unshielded twisted pair.	STP stands for Shielded twisted pair.
2.	In UTP grounding cable is not necessary.	While in STP grounding cable is required.
3.	Data rate in UTP is slow compared to STP.	Data rate in STP is high.
4.	The cost of UTP is less.	While STP is costlier than UTP.
5.	In UTP much more maintenance are not needed.	While in STP much more maintenance are needed.
6.	In UTP noise is high compared to STP.	While in STP noise is less.
7.	In UTP the generation of crosstalk is also high compared to STP.	While in STP generation of crosstalk is also less.
8.	In UTP, attenuation is high in comparison to STP.	While in STP attenuation is low.

3 .What is difference between baseband and broadband transmission?

Broadband system use modulation techniques to reduce the effect of noise in the environment. Broadband transmission employs multiple channel unidirectional transmission using combination of phase and amplitude modulation.

Baseband is a digital signal is transmitted on the medium using one of the signal codes like NRZ, RZ Manchester bisphase -M code etc. is called baseband transmission.

These are following differences between Broadband and Baseband transmission.

Baseband transmission –

1. Digital signalling.
2. Frequency division multiplexing is not pssible.

3. Baseband is bi-directional transmission.
4. Short distance signal travelling.
5. Entire bandwidth is for single signal transmission.
6. Example: Ethernet is using Basebands for LAN

Broadband transmission –

1. Analog signalling.
2. Transmission of data is unidirectional.
3. Signal travelling distance is long.
4. Frequency division multiplexing possible.
5. Simultaneous transmission of multiple signals over different frequencies.
6. Example : Used to transmit cable TV to premises.

S.No	Broadband Transmission	Baseband Transmission
1.	In broadband transmission, the type of signalling used is digital.	In baseband transmission, the type of signalling used is analog.
2.	Baseband Transmission is bidirectional in nature.	Baseband Transmission is unidirectional in nature.
3.	Signals can only travel over short distances.	Signals can be travelled over long distances without being attenuated.
4.	It works well with bus topology.	It is used with a bus as well as tree topology.
5.	In broadband transmission, Manchester and Differential Manchester encoding are used.	Only PSK encoding is used.

4. what is the difference between a hub, modem, router and a switch?

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.

Modem:

A modem – a portmanteau of "modulator-demodulator" – is a hardware device that converts data from a digital format, intended for communication directly between devices with specialized wiring, into one suitable for a transmission medium such as telephone lines or radio.

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.

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

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

Yes, 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.

6.When troubleshooting computer network problems, what common hardware-related problems 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 start ups.

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

The best solution is to install anti-virus on all the computers in the network.

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

The distinction between Static and Dynamic IP address lies inside the length of allotted scientific discipline address. The static scientific discipline address is fastened scientific discipline address that is manually allotted to a tool for a protracted amount of your time. On the opposite hand, the Dynamic scientific discipline address of to changes whenever user boots his/her machine, and it's mechanically allotted.

IPV4 and IPV6:

IPv4 is 32-Bit IP address whereas **IPv6** is a 128-Bit IP address. **IPv4** is a numeric addressing method whereas **IPv6** is an alphanumeric addressing method. **IPv4** binary bits are separated by a dot (.) whereas **IPv6** binary bits are separated by a colon (:).

9. Discuss TCP/IP model in detail.

- TCP refers to Transmission Control Protocol.
- TCP/IP has 4 layers.
- TCP/IP is more reliable.

- TCP/IP does not have very strict boundaries.
- TCP/IP follow a horizontal approach.
- TCP/IP uses both session and presentation layer in the application layer itself.
- TCP/IP developed protocols then model.
- Transport layer in TCP/IP does not provide assurance delivery of packets.
- TCP/IP model network layer only provides connection less services.

Protocols cannot be replaced easily in TCP/IP model.

10. What is a Web Browser (Browser)? Give some example of browsers.

A web browser, or simply "browser," is an application used to access and view websites.
EXAMPLE:

- Microsoft Internet Explorer,
- Google Chrome,
- Mozilla Firefox and
- Apple Safari.

11. What is a search engine? Give example.

A search engine is software accessed on the Internet that searches a database of information according to the user's query. The engine provides a list of results that best match what the user is trying to find. Today, there are many different search engines available on the Internet, each with its own abilities and features.

Example:

Currently, the most popular and well-known search engine is Google. Other popular search engines include AOL, Ask.com, Baidu, Bing, DuckDuckGo, and Yahoo.

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

The Internet is a global network of networks while the Web, also referred formally as World Wide Web (www) is collection of information which is accessed via the Internet. Another way to look at this difference is; the Internet is infrastructure while the Web is service on top of that infrastructure.

Uses of internet in our daily life:

- Electronic mail
- Research
- Downloading files
- Discussions groups
- Interactive games
- Education and self improvement
- Electronic newspapers and magazines
- Job-hunting and shopping.

13.What is an Internet Service Provider? Give some example of ISP in India.?

An **Internet service provider** (**ISP**) is an organization that provides services for accessing, using, or participating in the Internet. An ISP typically serves as the access point or the gateway that provides a user, access to everything available on the Internet.

Example of ISP:

- BSNL
- Tata tele services,
- Verizon,
- Reliance Jio
- ACT Fibernet

14.Discuss the difference between MAC address, IP address and Port address.?

MAC address:

A media access control address (MAC address) is a unique identifier assigned to a network interface controller (NIC) for use as a network address in communications within a network segment. This use is common in most IEEE 802 networking technologies, including Ethernet, Wi-Fi, and Bluetooth. Within the Open Systems Interconnection (OSI) network model, MAC addresses are used in the medium access control protocol sub layer of the data link layer. As typically represented, MAC addresses are recognizable as six groups of two hexadecimal digits, separated by hyphens, colons, or without a separator.

IP address:

IP address stands for internet protocol address; it is an identifying number that is associated with a specific computer or computer network. When connected to the internet, the IP address allows the computers to send and receive information.

Port address:

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.

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

To view the web history in Google Chrome, click to open the menu at the top-right of its window and select History, then click History a second time. Or press Ctrl+H on your keyboard. This shows the web history as a list of pages, organised by time and date, in the current tab.