# CCA - 102 : Data Communications

## Assigenment - 2

1. What are the different types of networks?

Answer - Below are the different types of networks :-

- LAN (local area network)
- WAN (Wide Area Network)
- PAN (Personal Area Network)
- MAN (Metropolitan Area Network)

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

Answer - • STP is also the type of twisted pair which stands for Shielded twisted pair. In STP grounding cable is required and STP much more maintenance is needed therefore it is costlier than UTP.

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

3. What is difference between baseband and broadband transmission?

Answer - Below are the difference between baseband and broadband transmission.

| S.No. | Baseband transmission | Broadband transmission |
|---|---|---|
| 1. | Transmit digital singnals | Transmission anlong signals. |
| 2. | The transmission data is bi-directional. | The transmission data is unidirectional. |
| 3. | A short-distance signal traveling. | Signal traveling distance is long. |
| 4. | Frequency division multiplexing is not possible. | Frequency division multiplexing is possible |

| S.No. | Baseband transmission | Broadband transmission |
|---|---|---|
| 5. | It works well with bus topology. | It is used with a bus as well as tree topology. |
| 6. | It is best for wired networks. | It is best for non-wired networks. |
| 7. | Example:- Ethernet is using Basebands for LAN. | Example: Used to transmit cable TV to premises. |

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

Answer -

Hub - • Hub is a physical layer devices that falls under layer 1 of the OSI model.
• A Hub operates using broadcasting.

Modem - • A modem is a networking device that converts digital signals into analog signals for transmission over phone line or other types of communication channels.
• Modems are typically used to connect devices to the internet or other wide-area networks.

Switch - • Swith is a data comection layer device since it is a member of layer 2 of the OSI model.
• Switches operate based on MAC addresses.

Router - • A router is a network layer devices because its a member of layer 3 of the OSI model.
• Routers operate based on IP addresses.

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

Answer- When troubleshooting computer network problems, it's important to consider both software and hardware-related issues. Here are some common hardware-related problems that can occur in a computer network:

* Faulty Cables or Connectors
* Network Interface Card (NIC)
* Switch or Router Problems.
* Power Supply Failures
* Wireless Access Point Issues.

6. When you move the NIC cards from on PC to another PC, does the MAC address gets transfered as well?

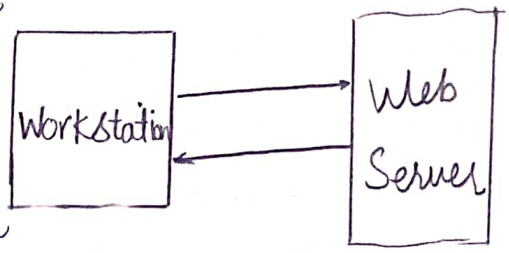
Answer- Yes, that's because MAC addresses are hard-wired into the NIC circuitry, not the PC. This also means that a PC can have a different MAC address when the NIC card was replace by another one.

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

Answer- In a network that contains two servers and twenty workstations, the best place to install an Anti-virus is on the server. This is because the server is the main port for all the network traffic, and so it is more important to ensure that the server is free of and virus other security risks.

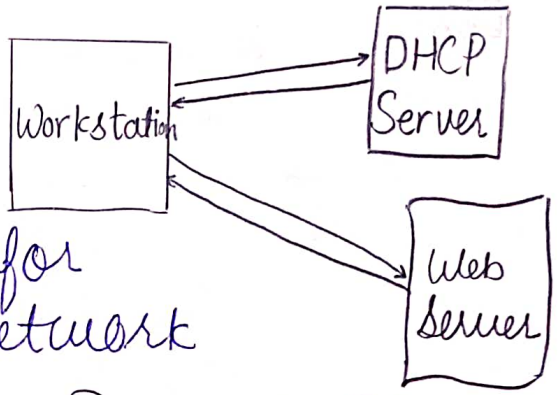
8. Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

Answer- Static IP addresses :- A computer on the Internet can have a static IP address, which means it stays the same over time, or a dynamic IP address, which means the address can change over time.



Static IP Address

Dynamic IP addresses:- A Dynamic IP address is a temporary address for devices connected to a network that continually changes over time.



Dynamic IP Address

*difference between IPV4 and IPV6 :-

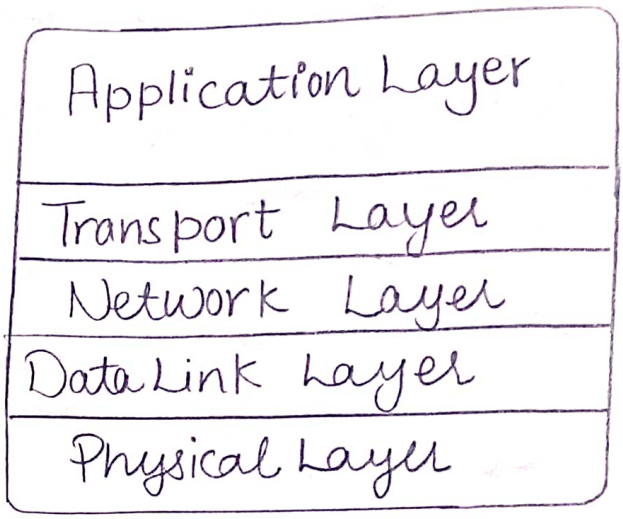
| Benchmark | IPv4 | IPv6 |
|---|---|---|
| Address Space | 32-bit (approx. 4.3 billion addresses) | 128-bit (approx. $3.4 \times 10^{38}$ addresses) |
| Security | Lacks built-in security features; IPsec is an optional addition | Built-in support for IPsec, providing end-to-end encryption and authentication. |
| Packet Header | Complex header structure | Simpler packet header format for efficient processing and routing |
| Auto-Configuration | Relies on manual configuration or DHCP servers | Supports stateless auto-configuration based on network prefix |

9. Discuss TCP/IP model in detail.

Answer- The main work of TCP/IP is to transfer the data of a computer from one device to another.

Layers of TCP/IP Model

1. Application Layer
2. Transport Layer
3. Network layer
4. Data Link Layer (MCA)
5. Physical Layer




10. What is the web browser? Give some examples of web browser.

Answer- A web browser is a type of software that allows you to find and view websites on the Internet. There are many web browsers, but some of the most common ones include Google Chrome, Safari, Mozilla Firefox etc.

11. What is search engine? Give example.

Answer - A search engine is a platform on which a user search the internet content. Google, Yahoo, Bing, Google Chrome etc.

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

Answer - Internet :- The internet is a global network of billions of computers and other electronic devices

WWW :- WWW stands for World wide web.

The World wide Web, or simply web, is a way of accessing information over the medium of the internet. It is the universe of network-accessible information.

Importance of Internet in our daily life:-

* Uses of the Internet in Education
* Internet Use to Speed Up daily Tasks
* Use of the Internet for Shopping
* Internet for Research & Development.
* It is use for daily Communications.

13. What is an Internet Service Provider? Give some example of ~~our de~~ ISP in india.

Answer- An Internet service provider (ISP) is an organization that provides services for accessing, using, or participating in the Internet. ISPs can provide this access through multiple means, including dial-up, DSL, Cable, wireless and fiber-optic connections.

14. Discuss the difference b/w MAC address, IP address and Port address.

Answer- difference b/w MAC address, IP address and Port address:-

MAC address:- A MAC address, which stands for Media Access Contral Address, is a physical address that work at the Data Link layer. In this article, we will discuss addressing a DLL, which is the

MAC address.

IP address :- All the computers of the world on the Internet network communicate with each other with ungrund or underwater cables or wirelessly. In technical terms, that address is called IP Address or Internet Protocol Address.

Port address:- A Port in computer networking is how a computer can use a single physical network connection to handle many incoming and outgoing requests by assigning a port number to each. The numbers go from 0 to 65535, which is a 16-bit number.

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

Answer- 1) On your Android phone or tablet, open the Chrome app.

2) At the top right, tap More :> History.

- If your address bar is at the bottom, swipe up on the address bar. Tap History.

3) To visit a site, tap the entry.

- To open the site in a new tab, touch and hold the entry. At the top right, tap More :> Open new tab.