

CCA-102: DATA COMMUNICATIONS

ASSIGNMENT

1. What are the different types of Network?

Ans Types of Network:

1. PAN (Personal Area Network)
2. LAN (Local Area Network)
3. MAN (Metropolitan Area Network)
4. WAN (Wide Area Network)
5. WLAN (Wireless LAN)
6. SAN (Storage Area Network)
7. VPN (Virtual Private Network)

2. S.T-P VS UTP

Ans 1. Shielded Twisted Pair (STP)

- ★ Has a metallic shield to reduce interference
- ★ More expensive, thicker and used in high-interference areas.

2. Unshielded Twisted Pair (UTP)

- ★ No shielding, relies on twisted pairs to reduce interference
- ★ Cheaper, lighter and commonly used in LANs and home

3. Baseband v.s Broadband Transmission.

1. Baseband Transmission

- ★ Uses a single signal over the entire channel
- ★ Digital signals, short-distance

2. Broad Transmission

- ★ Uses multiple signals over different frequencies.
- ★ Analog or digital, long distance

4. Hub vs Modem vs Router vs Switch

1. Hub

- ★ Simple device that broadcasts data to all connected devices
- ★ No data filtering, work at the physical layer

2. Modem

- ★ Converts digital signals to analog for internet access
- ★ Connects to an ISP.

3. Router

- ★ Directs data between different networks
- ★ Provides wi-fi and security features like firewalls

4. Switch

- ★ Connect multiple devices within a network and intelligently direct data

5. Yes, the MAC address is tied to the NIC (Network Interface Card) hardware, so when you move a NIC from one PC to another, its MAC address remains the same.

6. Common hardware-related network problems include:-

1. Faulty Cables:-
2. Defective Network Interface Card
3. Router / Switch failure
4. Loose or improper connections
5. Power issues
6. Interference
7. Over loaded network hardware

7. The best place to install an antivirus program is on both servers and all twenty workstations to ensure complete network protection against malware and threats.

8 Static IP:-

A manually assigned IP address that remains constant and does not change over time

Dynamic IP:-

An IP address assigned automatically by a DHCP server that may change periodically

Difference Between IPV4 and IPV6

- IPV4: Uses a 32-bit address format, supporting about 4.3 billion addresses, Example: 192.168.1.1
- IPV6: Uses a 128-bit address format, supporting a enormous number of addresses. Exam: 2001:db8::1
- IPV6 offers better security, auto-configuration, and improved performance over IPV4

9. TCP/IP Model Overview:-

The TCP/IP Model is a four-layer framework used for network communication.

Layers of TCP/IP Model:-

1. Network Access Layer: Handles physical transmission
2. Internet Layer: Manages IP addressing and routing
3. Transport Layer: Ensures reliable or fast data transfer
4. Application Layer: Supports user applications

Key Features

- ★ Used for internet communication
- ★ More practical than the OSI Model
- ★ Ensure data transfer and connectivity across network

10. A web browser is a software application used to access and display websites on the internet. It retrieves web pages using protocols like HTTP and HTTPS.

Examples:

- ★ Google Chrome
- ★ Firefox
- ★ M.S. Edge
- ★ Opera

11. A search engine is an online tool that helps users find information on the internet by indexing and retrieving relevant web pages based on key words:-

Examples of Search Engines:-

- ★ Google
- ★ Bing
- ★ Yahoo
- ★ Baidu

12. Internet:-

The internet is a global network of interconnected computers that allows communication, data sharing and access to online services

www.

The www (world wide web) is a collection of web pages and resources accessed through web browser using the Internet

Daily uses:-

A. Communication, Education, Entertainment
E-commerce, work & business

13. An internet Service Provider (ISP) is a company that provides internet access to users:-

Examples of ISPs in india:-

- * Reliance Jio
- * Airtel Bstream fibre
- * BSNL
- * ACT Fibernet

14. Difference Between MAC Address, IP address and Port Address.

1. MAC Address:-

- * A unique physical address assigned to a device's network interface card
- * Used for communication within a local network

2. IP Address

- * A logical address assigned to a device on a network for identification and communication
- * Used for data transfer across networks

3. Port Address

- * A numerical identifier for specific processes or application on a device

5 To view your internet browser history:-

1. Google Chrome : Go to menu $\rightarrow$ History, Ctrl + H
2. Fire Fox : Ctrl + H