

CCA - 102 : Data Communications

Assignment

1. What are the different types of networks?

→ A group of computers which are connected to each other and follow similar usage protocols for their purpose of sharing information and having communication is provided by the networking nodes is called a computer network.

Types of computer networks.

There are five main types of computer networks:

1. LAN (Local Area Network)
2. PAN (Personal Area Network)
- System
3. MAN (Metropolitan Area Network)
4. WAN (Wide Area Network)
5. VPN (Virtual Private Network)

Q.2 Explain the shielded twisted pair (STP) and Unshielded twisted pair (UTP).

→ STP and UTP cables

Shielded twisted pair cable (STP) has the individual pairs of wires wrapped in foil which are then wrapped again for double protection.

Unshielded twisted pair cable (UTP) has each pair of wires twisted together. These wires are then wrapped in tubing without any other protection.

Q.3 What is difference between baseband and broadband transmission?

Baseband	Broadband
• Communication is bidirectional. • Uses digital signals. • Signals can be sent for short distances. • Works with bus topology. • Use in Ethernet.	• Communication is unidirectional. • Uses analog signals. • Signals can be sent for long distance. • Works with star and bus topology. • Use in telephone network.

Q4. what is the difference between a hub, modem, router and a switch?

→ Difference between Hub, Switch and Router.

HUB	Switch	Router
• work in Half Duplex mode. • Sends data in form of bits. • Broadcast Device. • Works in physical layer of OSI model. • used to connect devices to the same network. • Does not store any MAC addresses of nodes in the network. • Types are - Active Hub, passive Hub and intelligent Hub.	• Full Duplex • Sender Data in form of frames • Multicast device. • work in Data link/Network layer of OSI Model. • used to connect device to the Net. • Store MAC addresses and IP addresses of nodes in the Network. • Type are Layer 2 and 3 Switch	• Full Duplex • Sender Data in form of packets. • Routing device • works in Network layer of OSI Model • used to connect two Network. • stores all MAC addresses and IP addresses in the Network. • Type are Broadband router, wireless, Edge, Core routers

Q: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 the NIC card was replaced by another one.

Q:6 When trouble shooting computer network problems, what common hardware-related problem can occur?

→ Most common hardware related problems are PoBx, LAN card, WLAN card and Wi-Fi if it is wireless, cables, switches, Router and wireless controller. Most problems are hardware related, a faulty power cable or power supply unit. Sometimes RAM needs to be upgraded or VGA cable is not properly connected.

Q.7 In a network that contains two servers and twenty workstations to install an Anti-virus program.

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

Q.8 Define Static IP and Dynamic IP?
Discuss the difference between IPv4 and IPv6.

→ Static IP	Dynamic IP
- Manually assigned by user or network administrator. - You need to know your stuffs: IP, what's the usable host IP, what's the IP address range, the gateway IP, DNS IP etc. - When there is any network changes, you need to manually change the IP address.	- Automatically assigned by DHCP server. - DHCP server provides the IP while doing so. It also informs about the router IP and DNS IP. - DHCP automatically renews the IP lease / assign new IP when network changes.

IPv4

IPv6

Deployed 1981

Deployed 1998

32 bit IP address

128 bit IP address

4.3 billion addresses
Addresses must be reused
and leased

7.9×10^{21} addresses
Every device can have
a unique address

Numeric dot-decimal notation

Alphanumeric
hexadecimal notation

DHCP or manual configuration

Supports autoconfiguration

Q.2 Discuss TCP/IP model in detail

→ TCP/IP allows computers on the same network to identify and communicate with each other. TCP/IP is a two-layer protocol, with the Transport layer (TCP) responsible for reliable end-to-end communication and the Internet layer (IP) accountable for stitching packets from the host to the host.

Q-10 What is a web browser (browser)?
Give some example of browser.

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

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

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

→ 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.

Q-12 What is the Internet & WWW? What are the uses of Internet in our daily life?

→ The Internet helps us with facts and figures. Information and knowledge for personal social and economic development.

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

→ An Internet Service provider (ISP) is a company such as AT&T, Verizon, Comcast, or Spectrum that provides Internet access to companies, families, and even mobile users. ISPs use fibres - optical, satellite, copper wire and other forms to provide Internet access to its customers.

Example - Jio, Airtel, VI, BSNL

Q.14 Discuss the difference between MAC address, IP address and port address.

→ A MAC address is responsible for local identification for local identification and an IP address for global identification.

Q.15 How do we view my internet browser history?

→ 1. Go to your Google account

2. On the left navigation panel, click Data & privacy

3. Under "History setting", click My activity.

4. To view your activity "Browse your activity".