CCA-102 DATA COMMUNICATIONS

ASSIGNMENT

Q-1 What are the different type of networks?

Answer- The different type of networks are two. 1) Local Area Network 2) Wide Area Network

1) Local Area Network :

- A local area network (LAN) is usually privately owned and links the devices in a single office , building or campus.
- LANs are designed to allow resources to be shared between person computer or workstations.
- The most common LAN topologies are bus,ring and star.
- Earn LANs had data rates in the 4 to 16 megabits per second (Mbps) range.

2) Wide Area Network :

- A wide area network (WAN) provides long-distance transmission of data, image,audio and video imformation over large geographic areas that may comprise a country, a continent, or even the whole word.
- A WAN can be as complex as the backbones that connect the internet or as simple as a dial-up line that connects a home computer to the internet.
- The first as a switched WAN and to the second as a point-to-point WAN.

Q- 2 Explain the Shielded twisted pair (STP) and Unshielded twisted pair(UTP)

Answer-

The Shielded twisted pair (STP)

Shielded twisted pair cable (STP) has the individual pairs of wires wrapped in foil, which are then wrapped again for double protection. Shielded twisted pair (STP) cable was originally designed by IBM for token ring networks that include two individual wires covered with a foil shielding, which prevents electromagnetic interference, thereby transporting data faster.

The Unshielded twisted pair(UTP)

UTP stands for Unshielded Twisted Pair cable. UTP cable is a **100 ohm copper cable** that consists of 2 to 1800 unshielded twisted pairs surrounded by an outer jacket. They have no metallic shield. This makes the cable small in diameter but unprotected against electrical interference.

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

Answer-

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 biphase-M code etc. is called baseband transmission.

Baseband	Broadband
It refers to a communications channel in which information is carried in digital form.	The signals are modulated as radiofrequency analog waves that use different frequency ranges.
Communication is bi-directional which means the same channel is used to transmit and receive signals.	Communication is unidirectional meaning two different channels are needed in order to send and receive signals.
Every device on a baseband system shares the same channel.	Multiple independent channels can carry analog or digital information through FDM.
Baseband LANs are inexpensive and easier to install and maintain.	Broadband systems are generally more expensive because of the additional hardware involved.
Baseband LANs have a limited distance reach which is no more than a couple miles.	Broadband LANs span much longer distances than baseband (up to tens of kilometers).

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

Answer-

Device	What is does
Modem:	Stands for "modulating-demodulating": modems are hardware devices that allow a computer or another device, such as a router or switch, to connect to the Internet. They convert or "modulate" an analog signal from a telephone or cable wire to digital data (1s and 0s) that a computer can recognize. Simply send traffic from point A to piont B without further manipulation.
Routers:	Are responsible for sending data from one network to another. Work at Layer 3 (Network) of the OSI model, which deals with IP addresses. Typically, routers today will perform the functionality of both a router and a switch - that is, the router will have multiple ethernet ports that devices can plug into.
Switches:	They use the MAC address of a device to send data only to the port the destination device is plugged into. Work at Layer 2 (Data Link) of the OSI model, which deals with MAC addresses.
Hubs:	Unlike switches, hubs broadcast data to all ports, which is inefficient, so hubs are basically a multiport repeaters.

Q - 5 When you move the NIC cards from one PC to another PC, does the MAC adreess gets transferred 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 another one replaced the NIC card.

Q -6 When troubleshooting computer network problems, what common hardware-related problems as well?

Answer -

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.

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

Answer -

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

Q – 8 Define Stastic IP and Dynamic IP ? Discuss the difference between IPV4 and IPV6.

Answer -

Static IP addresses

An Internet Protocol (IP) address is **a unique number assigned to each computer on a network**. ... 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.

Dynamic IP addresses

A dynamic IP address is **an IP address that an ISP lets you use temporarily**. If a dynamic address is not in use, it can be automatically assigned to a different device. Dynamic IP addresses are assigned using either DHCP or PPPoE.

Basis for differences	IPv4	IPv6
Size of IP address	IPv4 is a 32-Bit IP Address.	IPv6 is 128 Bit IP Address.
Addressing method	IPv4 is a numeric address, and its binary bits are separated by a dot (.)	IPv6 is an alphanumeric address whose binary bits are separated by a colon (:). It also contains hexadecimal.
Number of header fields	12	8
Length of header filed	20	40
Checksum	Has checksum fields	Does not have checksum fields
Example	12.244.233.165	2001:0db8:0000:0000:0000:ff00:0042:7879
Type of Addresses	Unicast, broadcast, and multicast.	Unicast, multicast, and anycast.
Number of classes	IPv4 offers five different classes of IP Address. Class A to E.	lPv6 allows storing an unlimited number of IP Address.
Configuration	You have to configure a newly installed system before it can communicate with other systems.	In IPv6, the configuration is optional, depending upon on functions needed.

Q -9 Discuss TCP/IP model in detail.

Answer -

TCP/IP Reference Model is **a four-layered suite of communication protocols**. TCP stands for Transmission Control Protocol and IP stands for Internet Protocol. The four layers in the TCP/IP protocol suite are − Host-to- Network Layer −It is the lowest layer that is concerned with the physical transmission of data.

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

Answer -

A web browser (commonly referred to as a browser) is **application software for accessing the World Wide Web**. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server.

A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include **Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari**. ... For example, Ajax enables a browser to dynamically update information on a webpage without the need to reload the page.

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

Answer-

A search engine is a platform on which a user can search the internet content. **Google, Yahoo, Bing, Baidu**, and DuckDuckGo are popular search engines. Google is one of the most used search engines worldwide that is used with the Chrome browser.

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

Answer-

The world wide web, or web for short, are the pages you see when you're at a device and you're online. But the internet is the **network of connected computers** that the web works on, as well as what emails and files travel across. ... The world wide web contains the things you see on the roads like houses and

shops. Internet usage is expanding its boundaries every day, as the technological growth is huge. A few of the Internet's major uses are **e-commerce, e-learning, knowledge sharing, social connectivity, variety of media, file transfer, communication, etc**.

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

Answer -

The term Internet service provider (ISP) refers to a company that provides access to the Internet to both personal and business customers. ISPs make it possible for their customers to surf the web, shop online, conduct business, and connect with family and friends—all for a fee. ISPs may also provide other services including email services, domain registration, web hosting.

ISP stands for 'Internet Service Provider'. Examples are- **airtel, BSNL, etc**.

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

Answer

MAC	IP address	Port Number address
The MAC address stands for Media Access Control Address.	IP address stands for Internet Protocol Address.	Port number is used to identify an processes/services on your system
It consists of a 48-bit address.	It consists of a 32-bit address.	The Port number is 16 bits numbers.

MAC address works at the link layer of the OSI model.	IP address works at the network layer of OSI model.	Port number is the address of the layer-4 protocols.
It is referred to as a physical address.	It is referred to as a logical address.	The port address (service-point) identifies the application process on the station."
MAC address of 00:0d:83:b1:c0:8e.	192.168.0.2, 172.16.0.2 are some of IP address examples.	80 for HTTP, 123 for NTP, 67 and 68 for DHCP traffic, 22 for SSH etc.

Q -15 How do we view my Internet browse's history?

Answer

To view your browsing history in Chrome

In any Chrome window, use the **keyboard shortcut Ctrl+H**, or navigate to the URL chrome://history . Or, click the Menu button, which is located near the top-right side of the browser window, and choose History, then History again.