CCA-102: Data Communications

Assignment

Q.1: What are the different types of networks?

Ans: -

1) **PAN (Personal Area Network)**
2) **LAN (Local Area Network)**
3) **MAN (Metropolitan Area Network)**
4) **WAN (Wide Area Network)**

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

Ans: -

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

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

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

Ans: -

Baseband	Broadband
Communication is bidirectional.	Communication is unidirectional.
Uses digital signals.	Uses analog signals.
Signals can be sent for short distances.	Signals can be sent for long distances.
Works with bus topology.	Work with tree and bus topology.
To improve the strength of signals, repeaters are utilized.	To improve the strength of signals, amplifiers are utilized.
Capacity of frequency is less than 100 kHz.	Bandwidth capacity is higher than 100 kHz.
Signals are sent and received on the same channel.	Two distinct channels are required to deliver and receive signals.
Best suited for wired networks.	Best suited for wireless networks.
Installation and maintenance are both simple.	Installation and maintenance are challenging.
Use in Ethernet.	Use in telephone networks.

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

Ans: -

Hub	Modem	Router	Switch
Connects devices in the same network.	Modem enables a network access to the internet.	Connects devices in the same network.	Connects devices from different networks.
Only one device can send data at a time.	This device might be power efficient to some extent.	Multiple devices can send data at the same time.	Multiple devices can send data at the same time.
Does not store any device information.	It actually limits your network potentials.	Stores and uses MAC addresses to transfer data.	Uses IP addresses to transfer data.

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

Ans: -

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.

Q.6: When troubleshooting computer network problems, what common hardware-related problems can occur?

Ans: -

Some network problems can arise from faulty hardware, Such as routers, switches, firewalls and even from unexpected usage patterns, like network bandwidth spikes, changes in app configuration or security breaches.

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

Ans: -

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.

Ans: -

Define Static IP and Dynamic IP

Static IP	Dynamic IP
Manually assigned by user or network administrator.	Automatically assigned by DHCP server.
You need to know your stuffs: like what's the usable IP address range, the gateway IP, DNS IP, etc.	DHCP server provides the host IP: while doing so, it also informs about the router IP and DNS IP.
When there are any network changes, you need to manually change the IP address.	DHCP automatically renew the IP lease/assign new IP when network changes.
Not scalable – need to key in IP multiple times hosts when network is large.	Scalable – DHCP server automatically assigns IP from the address pool.

Difference between IPV4 and IPV6

IPV4	IPV6
IPV4 uses 32 bits address space.	IPV6 uses 128 bits address space.
Must support DHCP or be configured manually.	Does not require DHCP or manual configuration, it support stateless auto configuration [1].
IPSec is not compulsory.	IPSec is compulsory.
Broadcasts sends traffic to all hosts on a subnet.	There are no broadcasts instead multicasts are used thereby reducing broadcast floods found in IPV4.
The IP header has a variable length of 20-60 bytes depending on the IP header options.	IP header has a fixed length of 40 bytes and there are no IP header options available.

Q.9: Discuss TCP/IP model in detail.

Ans: -

TCP/IP was designed and developed by the Department of Defence (DoD) in the 1960s and is based on standard protocols. It stands for Transmission Control Protocol/Internet Protocol. The TCP/IP model is a concise version of OSI model. It contains four layers, unlike the seven layers in the OSI model.

Q.10: What is a Web Browser (Browser)? Give some examples of browsers.

Ans: -

A Web Browser is a type of software that allows you to find and view websites on the internet. Even if you didn't know it, you're using a web browser right now to read this page! There are many different web browsers, but some of the most common ones include Google Chrome, Safari, and Mozilla Firefox.

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

Ans: -

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?

Ans: -

The internet is global network of networks, which is mostly available in electronic devices nowadays.

In today's technological era, it has become an essential part of our life. Many leading companies and organizations are conducting their operations on the internet.

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

Ans: -

An Internet Service Provider (ISP) is a company that uses fiber-optics, satellite, copper wire, and other forms to provide internet access to families, companies, and mobile users. Jio, Airtel, Vi and BSNL these are some examples of ISP in india.

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

Ans: -

MAC address	IP address	Port address
MAC stands for media access control.	IP stands for internet protocol.	Port number identifies an application or process on a user's computer.
It is a physical address.	It is a logical address	All the TCP port can be viewed by applying the command 'netstat'.
It is provided by comp. Manufacturer.	It is provided by ISP.	It's associated with the transport layer of the OSI model.
MAC address is fixed address for a particular device.	It can be changed by changing ISP.	Port number is facilitated by the OS.
The length of MAC address is 48 bits.	The length of IPV4 is 32 bits. The length of IPV6 is 128 bits.	Port number can be at most 16 bits.

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

Ans: -

If you are using Windows, Linux or MacOS a quick keyboard shortcut lets you view your history.

- Windows and Linux users: Ctrl + H
- Apple users: Command + Shift + H

When one of these keyboard shortcuts is pressed, a history section will appear.