Assignment- 2

CCA – 102: Data Communications

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

Answer:-

- ➢ **Personal Area Network (PAN) ...**
- ➢ **Local Area Network (LAN) ...**
- ➢ **Wireless Local Area Network (WLAN) ...**
- ➢ **Campus Area Network (CAN) ...**
- ➢ **Metropolitan Area Network (MAN) ...**
- ➢ **Wide Area Network (WAN) ...**
- ➢ **Storage-Area Network (SAN) ...**
- ➢ **System-Area Network (also known as SAN)**

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

Answer:-

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. Those wires are then wrapped in tubing without any other protection.

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

Answer:- Difference between Broadband and Baseband Transmission

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.

These are following differences between Broadband and Baseband transmission.

Baseband transmission –
1. Digital signalling.
2. Frequency division multiplexing is not possible.
3. Baseband is bi-directional transmission.
4. Short distance signal travelling.
5. Entire bandwidth is for single signal transmission.
6. Example: Ethernet is using Basebands for LAN.

Broadband transmission –
1. Analog signalling.
2. Transmission of data is unidirectional.
3. Signal travelling distance is long.
4. Frequency division multiplexing possible.
5. Simultaneous transmission of multiple signals over different frequencies.
6. Example : Used to transmit cable TV to premises.

S.No	Baseband Transmission	Broadband Transmission
1.	In baseband transmission, the type of signalling used is digital.	In broadband transmission, the type of signalling used is analog.
2.	Baseband Transmission is bidirectional in nature.	Broadband Transmission is unidirectional in nature.
3.	Signals can only travel over short distances.	Signals can be travelled over long distances without being attenuated.
4.	It works well with bus topology.	It is used with a bus as well as tree topology.
5.	In baseband transmission, Manchester and Differential Manchester encoding are used.	Only PSK encoding is used.

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

Answer:-

The Differences Between a Modem, a Router, a Switch and a Hub

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.

Note: it is also useful to know the following terms:

- Default gateway - a piece of software usually located on a router, a firewall, a server, etc, that enables traffic to flow in and out of the network. Gateways act as a junction between multiple networks.

- DHCP (Dynamic Host Configuration Protocol) - a protocol that automatically provides and assigns IP addresses, default gateways, DNS servers and other network parameters to client devices. Most routers/switches have the ability to provide DHCP server support.

  In case you have several devices on your network that support DHCP, you need to make sure that only one of them is configured with DHCP. Having several devices with DHCP enabled will lead to a DHCP Race Condition - also known as Conflicting DHCP Servers.
  Note: modern voice system will require your network to have a router in it. Despite the fact that some modems have integrated router features, they barely capable of maintaining voice systems functionality. You may want to have both modem and router in your network (modem will need to be launched in bridged mode).

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

Answer:- 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 another one replaced the NIC card

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

Answer:- When troubleshooting computer network problems, what common hardware-related problems can occur? **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

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

Answer:-

Where is the best place to install an anti virus program?

Putting **antivirus software** on an Internet border device, whether the device is an email server or firewall, is the next **best** option. In today's world of email worms, **Trojan** horses, and infected Web pages, placing **virus**-scanning **protection** at the border offers excellent benefits for the cost.

Antivirus is necessary only if "dumb" clients have execution/administrator rights on computers. So if your server admin is "dumb" then you DO need antivirus. If you have a REAL server admin - then he will never run any file on the server that does not come from trusted source.

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

Answer:- What is difference between static IP and dynamic IP?

What is the difference between a dynamic and static IP address? When a device is assigned a static IP address, **the address does not change**. Most devices use dynamic IP addresses, which are assigned by the network when they connect and change over time.

The main difference between IPv4 and IPv6 is the address size of IP addresses. The IP4 is a 128- bit hexadecimal address. IPv6 provides a large address space, and it contains a simple header as compared to IPv4

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

Answer:-

Hat is TCP IP model explain in detail?
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.

TCP/IP Model

- Difficulty Level : Medium
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Prerequisite – Layers of OSI Model
The **OSI Model** we just looked at is just a reference/logical model. It was designed to describe the functions of the communication system by dividing the communication procedure into smaller and simpler components.
But when we talk about the TCP/IP model, it was designed and developed by Department of Defense (DoD) in 1960s and is based on standard protocols. It stands for Transmission Control Protocol/Internet Protocol.
The **TCP/IP model** is a concise version of the OSI model. It contains four layers, unlike seven layers in the OSI model. The layers are:

1. Process/Application Layer
2. Host-to-Host/Transport Layer
3. Internet Layer
4. Network Access/Link Layer

The diagrammatic comparison of the TCP/IP and OSI model is as follows

TCP/IP MODEL
Application Layer
Transport Layer
Internet Layer
Network Access Layer

OSI MODEL
Application Layer
Presentation Layer
Session Layer
Transport Layer
Network Layer
Data Link Layer
Physical Layer

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

Answer:- "A web browser, or simply 'browser,' is an application used to access and view websites. Common web browsers include **Microsoft Edge, Internet Explorer, Google Chrome, Mozilla Firefox**, and Apple Safari.

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

Answer:- 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?

Answer:- The Internet is very much useful in our daily routine tasks. For example, it helps us **to see our notifications and emails**. Apart from this, people can use the internet for money transfers, shopping order online food, etc.

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

Answer:- The examples of some internet service providers are **Hathway, BSNL, Tata teleservices, Verizon, Reliance Jio, ACT Fibernet** and many more working in India as well as worldwide. Internet service providers or ISPs are responsible for providing services for using the Internet.

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

Answer:- The main difference between MAC and IP address is that, **MAC Address is used to ensure the physical address of computer**. It uniquely identifies the devices on a network. While IP address are used to uniquely identifies the connection of network with that device take part in a network

Q. 15. How do we view my Internet browser'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.