CCA-102: Data Communications

ASSIGNMENT

1. What are the different types of networks?

1. Personal Area Network (PAN)
2. Local Area Network (LAN)
3. Wide Area Network (WAN)

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

UTP:
UTP is the type of twisted pair cable. It stands for Unshielded twisted pair. Both Data and voice both are transmitted through UTP because its frequency range is suitable. In UTP grounding cable is not necessary also in UTP much more maintenance are not needed therefore it is cost effective.

STP is also the type of twisted pair which stands for Shielded twisted pair. In STP grounding cable is required but in UTP grounding cable is not required. in Shielded Twisted Pair (STP) much more maintenance are needed therefore it is costlier than Unshielded Twisted Pair (UTP).

3. What is difference between baseband and broadband 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.

4. What is the difference between a hub, modem, router and a switch?
5. **Hub** – A hub is basically a multiport repeater. A hub connects multiple wires coming from different branches, for example, the connector in star topology which connects different stations. Hubs cannot filter data, so data packets are sent to all connected devices. In other words, collision domain of all hosts connected through

Hub remains one. Also, they do not have the intelligence to find out best path for data packets which leads to inefficiencies and wastage.

6. **Switch** – A switch is a multiport bridge with a buffer and a design that can boost its efficiency(a large number of ports imply less traffic) and performance. A switch is a data link layer device. The switch can perform error checking before forwarding data, that makes it very efficient as it does not forward packets that have errors and forward good packets selectively to correct port only. In other words, switch divides collision domain of hosts, but broadcast domain remains same.
7. **Routers** – A router is a device like a switch that routes data packets based on their IP addresses. Router is mainly a Network Layer device. Routers normally connect LANs and WANs together and have a dynamically updating routing table based on which they make decisions on routing the data packets. Router divide broadcast domains of hosts connected through it.

8. 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.

9. 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.

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

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

11. Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

IP stands for **Internet Protocol**. The distinction between Static and Dynamic IP address lies inside the length of allotted scientific discipline address. The static scientific discipline address is fastened scientific discipline address that is manually allotted to a tool for a protracted amount of your time. On the opposite hand, the Dynamic scientific discipline address oft changes whenever user boots his/her machine, and it's mechanically allotted.

12. Discuss TCP/IP model in detail.

The TCP/IP model is a part of the Internet Protocol Suite. This model acts as a communication protocol for computer networks and connects hosts on the Internet. 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

13. What is a Web Browser (Browser)? Give some example of browsers.

A web browser is a software program that allows a user to locate, access, and display web pages. In common usage, a web browser is usually shortened to "browser."
Today the most popular web browsers that are used today are Mozilla Firefox, Google Chrome, Microsoft Internet Explorer, Apple Safari and the Opera browser***.***

14. 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**.

15. What is the Internet & WWW? What are the uses of internet in our daily life?

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

A few of the major **uses of Internet** are e-commerce, e-learning, knowledge sharing, social connectivity, variety of media, file transfer, communication, etc.

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Uses of internet in our daily life :

Electronic Mail (email)

FTP File Transfer Protocol

Search Engines

E-Commerce

Online Banking

Cashless Transactions

Education

The World Wide Web (WWW), commonly known as the Web, is an information system where documents and other web resources are identified by Uniform Resource Locators (URLs, such as https://example.com/), which may be interlinked by hypertext, and are accessible over the Internet. The resources of the Web are transferred via the Hypertext Transfer Protocol (HTTP), may be accessed by users by a software application called a *web browser*, and are published by a software application called a *web server.* The World Wide Web is not synonymous with the Internet, which pre-existed the Web in some form by over two decades and upon which technologies the Web is built.

Web resources may be any type of downloaded media, but *web pages* are hypertext documents formatted in Hypertext Markup Language (HTML).[1] Special HTML syntax displays embedded hyperlinks with URLs which permits users to navigate to other web resources. In addition to text, web pages may contain references to images, video, audio, and software components which are either displayed or

internally executed in the user's web browser to render pages or streams of multimedia content.

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

An Internet service provider (ISP) is an organization that provides services for accessing, using, or participating in the Internet. An ISP typically serves as the access point or the gateway that provides a user, access to everything available on the Internet.

17. Discuss the difference between MAC address, IP address and Port address.

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.

Port number is the part of the addressing information used to identify the senders and receivers of messages in computer networking. Different port numbers are used to determine what protocol incoming traffic should be directed to. Port number identifies a specific process to which an Internet or other network message is to be forwarded when it arrives at a server. Ports are identified for each protocol and It is considered as a communication endpoint.

Ports are represented by 16-bit numbers.

18. How do we view my Internet browser's history?

To **view** the web **history** in click to open the menu at the top-right of its window and select **History**, then click **History** a second time. Or press Ctrl+H on your keyboard. This shows the web **history** as a list of pages, organised by time and date, in the current tab.