CCA-102: Data Communications

Assignment

1. What are the different types of networks?

- 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)
- Virtual Private Network (VPN)

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

Shielded Twisted Pair (STP)

- Shielded twisted pair (STP) is twisted-pair cabling with additional shielding to reduce crosstalk and other forms of electromagnetic interference (EMI).
- The outer insulating jacket contains an inner braided copper mesh to cables, which themselves are wrapped in foil.
- Shielded twisted pair (STP) cable is more expensive than unshielded twisted pair (UTP) cabling.

Unshielded Twisted Pair (UTP)

- Unshielded twisted pair (UTP) is twisted-pair cabling with no internal shielding.
- The outer insulator jacket protects the cable from physical stress or damage but not shield the cable from electromagnetic interference (EMI).
- UTP is most common form of cabling for workstations because of low cost, flexibility, and good performance.

3. What is difference between baseband and broadband transmission?

S.No	**Baseband Transmission**	**Broadband Transmission**
1	The type of signaling is digital.	The type signaling 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	Differential Manchester encoding are used.	Only PSK encoding is used.

4. What is the difference between a Hub, Modem, Router, and a Switch?

Hub

- A Hub is a networking device that allows you to connect multiple PCs to a single network.
- Used in Local Area Network.
- It is operates on the physical layer and wired devices.

Modem

- Modems are used to connect to the internet.
- Modem is used as an interface between a digital and analog network.
- Some modems are wireless.

Router

- Router is a network connecting device.
- Router works at network layer and is responsible to find the shortest path for a devices in a network.
- It connects devices across multiple networks.

Switch

- A Switch connects various devices together on a single computer network.
- Switch operates on the data link layer.
- Switches are very common network devices, they are much less intertwined than a modem and a router.

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 another one replaced the NIC card.

6. 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.

7. 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.

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

Static IP

- ✓ Static IP address does not change any time, it means if a static IP address is provided then it can't be changed or modified.

Dynamic IP

- ✓ Dynamic IP addresses, which are assigned by the network when they connect and change over time.

Difference between IPV4 and IPV6

S.no	IPV4	IPV6
1	It is 32-Bit IP address.	It is a 128-Bit address.
2	IPV4 is numeric addressing method.	IPV6 is an alphanumeric addressing method.
3	Binary bits are separated by a dot (.)	Binary bits are separated by a colon (:)

9. Discuss TCP/IP model in detail.

- The TCP/IP model (Transmission Control Protocol/Internet Protocol) is a model with four layers with four layers which is for both modeling current Internet architecture, as well as providing a set a rules that govern all forms of transmission over a network.
- The TCP/IP model is sometimes called Internet model or less often the DoD model.
- The TCP/IP model consists of five layers: the application layer, transport layer, network layer, data link layer and physical layer.
- It is a hierarchical protocol made up of interactive modules, and each of them provides specific functionality.
- TCP/IP allows one computer to talk to another computer via the Internet through compiling packets of data and sending them to right location.
- TCP/IP is a communications architecture used for networking computers and to communicate across the Internet.

10. What is a Web Browser (Browser)? Give some examples of Browsers.

A web browser (commonly referred to as a browser) is a software application for accessing information on 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 and then displays the page on the user's device.

Examples

- Google Chrome.
- Apple Safari.
- Mozilla Firefox.
- QQ Browser.
- Microsoft Edge.
- Dolphin Browser.

11. What is a search Engine? Give example.

A search engine is a website through which users can search Internet content. To do this, users enter the desired search term into the search field. The search engine then looks through its index for relevant websites and displays them in the form of a list.

Examples

- Bing.
- Yandex.
- CC Search.
- Search Encrypt.
- Start page.
- Onesearch.

12. What is the Internet & WWW? What are the uses of Internet inW our daily life?

Internet

The Internet is a global wide area network that connects computer systems across the world. Through the Internet, people can share information and communicate from anywhere with an Internet connection.

WWW

The World Wide Web (WWW) is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs), interlinked by hypertext links, and can be accessed via the Internet.

<u>Uses of Internet in our daily life</u>

- Business promotion and digital marketing
- Online selling and Shopping
- Online Banking

- In Education
- Research and Development
- Quick and free Communication
- Digital Transactions
- Working remotely
- Money management
- Video conference and etc.

13. 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. ISPs can be organized in various forms, such as commercial, community owned, non-profit, or otherwise privately owned.

Examples of ISP in India

- Reliance Jio
- Airtel
- BSNL
- Vodafone Idea
- ACT Fibernet
- MTNL.

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

MAC address

- MAC address is used to ensure the physical address of computer.
- It uniquely **identifies** the **devices on a network.**

IP address

- IP address is address of the system in the network.
- It is used to **uniquely identify** the connection of network with that **device take part in a network.**

Port address

- Port address is address of the service within the system. So IP address and Port defines address of the particular system.
- Port number is used to **identify** an **application/services** which you want to on your system.

15. How do we view my Internet browser’s history?

To view the web history in Chrome, 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, organized by time and date, in the current tab.