CCA-102: DATA COMMUNICATIONS

ASSIGNMENT-2.

① What are different types of networks?.

Ans A Computer network is a group of Computers linked to each other that enables the Computer to Communicate with another Computer and share their resources, data, and application.

- A Computer network is mainly of four types.
  - ① LAN (Local Area Network)
  - ② PAN (Personal Area Network)
  - ③ MAN (Metropoletan Area Network)
  - ④ WAN (Wide Area Network).

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

Ans Shielded twisted pair (STP)

A shielded twisted pair (STP) is a type of twisted pair cable that contains an extra wrapping foil or Copper braid jacket to protect

[Pg ①]

the cable from defects like cuts, losing bandwidth, noise, and signal to the interference. It is a cable that is usually used underground, and therefore it is costly. It supports the higher data transmission rates across the long distance.

Unshielded twisted pair (UTP)

Unshielded twisted pair (UTP) is an unshielded twisted pair cable used in computer & telecommunication mediums. Its frequency range is suitable for transmitting both data & voice via a UTP cable. Therefore, it is widely used in the telephone, computers etc. It is a wire no additional shielding like aluminum foil, to protect its data from the exterior.

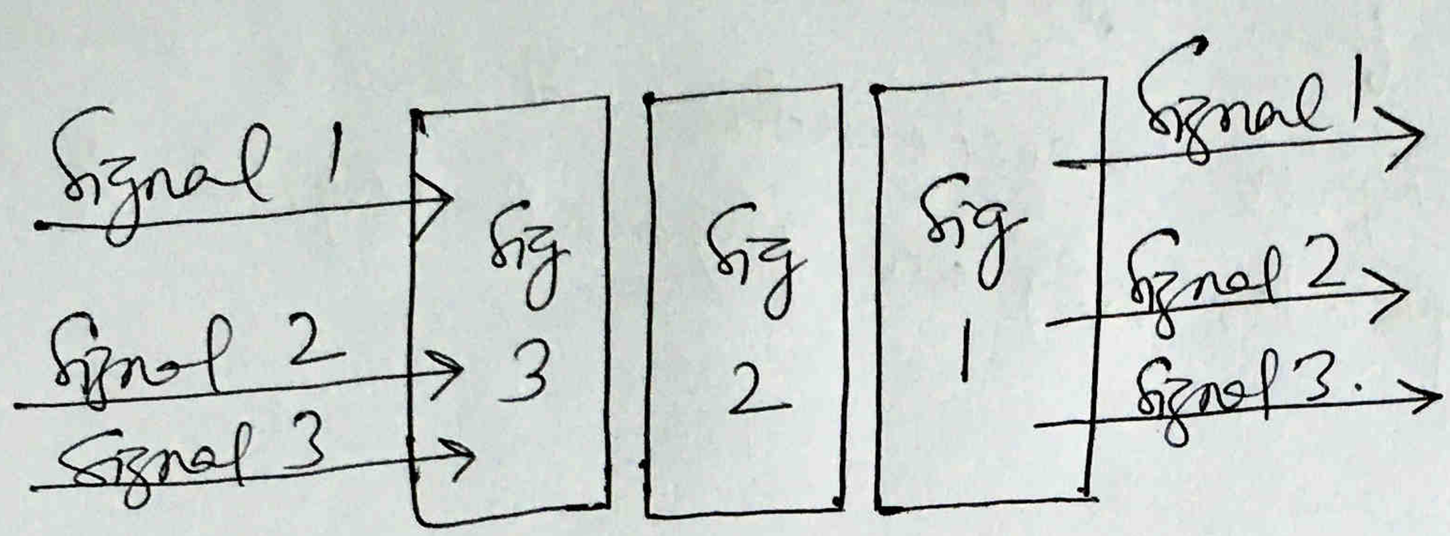
(3) What is the difference between baseband and broadband transmission?.

Ans The difference between baseband transmission and broadband transmission is that in the baseband transmission the whole bandwidth of the cable is utilized by a single signal. Conversely, in the broadband transmission, [fig ②]

multiple signals are sent on multiple frequencies simultaneously using a single channel.

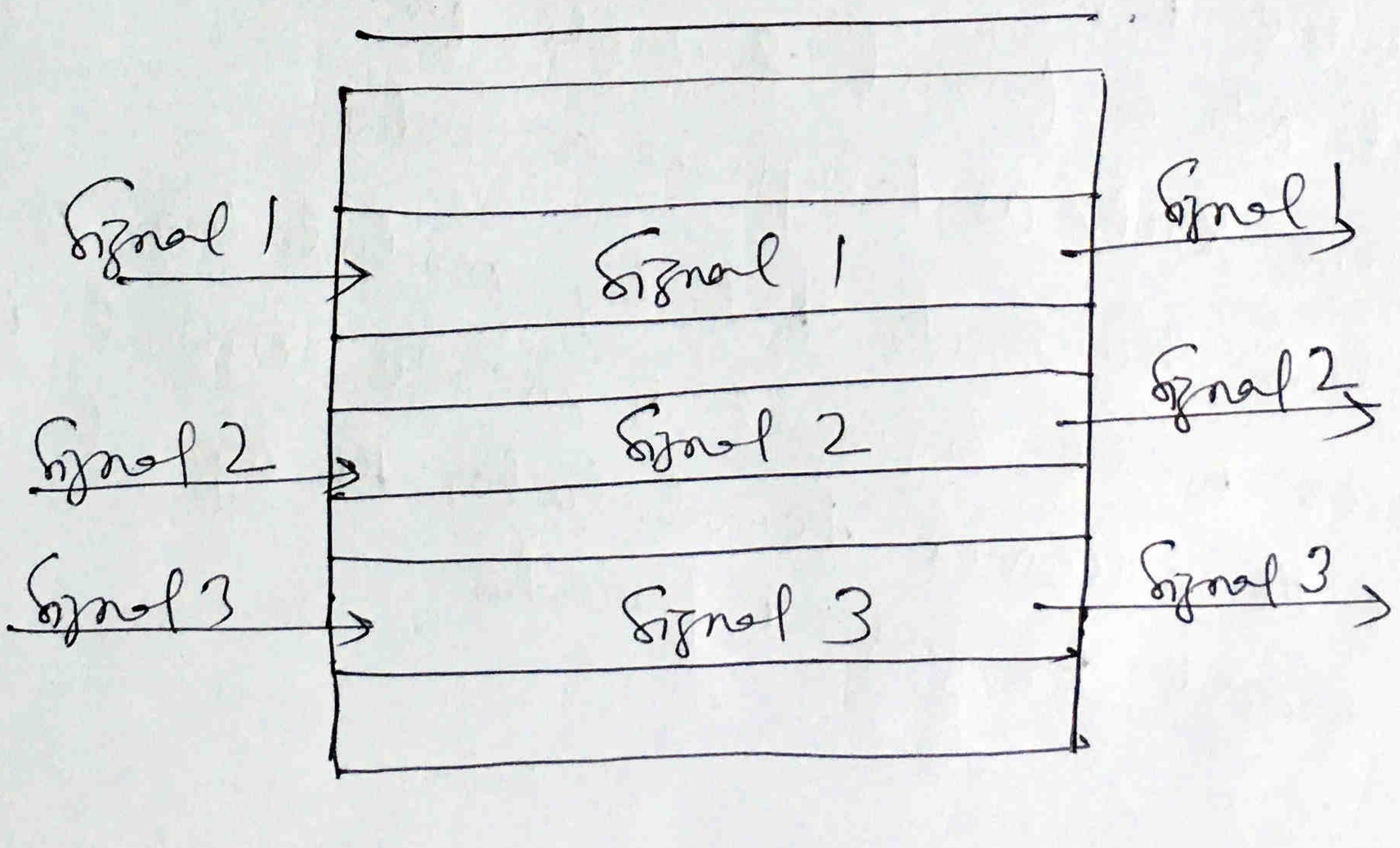
Baseband

Transmission



Broadband

Transmission



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

Ans

A hub

A Hub is just a connector that connects the wires coming from different sides. There is no signal processing or regeneration. It is an electronic device that operates only on physical layers of the OSI model.

Modem

- A modem or modulator - demodulator is a computer hardware device that converts data from a digital format into a format suitable for an analog transmission medium such as telephone or radio.
- A modem transmits data by modulating one or more carrier wave signals to encode digital information, while the receiver demodulates the signal to reproduce the original digital information.

Router

Routers are multiport devices and more sophisticated as compared to repeaters and bridges. It contains a routing table that enables it to make decision about the route to determine which of the several possible paths between the source and destination is the best for a particular transmission

A Switch

Switch is a point to point Communication device. It operates at the data link layer of OSI Model. It uses switching table to find out the correct destination.

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

Ans Yes, that is 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.

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

Ans 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 startup. Incorrect hardware configuration is also one of those culprits to look into.

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

Ans An anti-virus program must be installed on all servers and workstations to ensure Protection. That is because individual users can access any workstation and introduce a computer virus when plugging in these removable hard drives or flash drives.

(8) Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6?.

Ans ⇒ Static IP address does not change anytime, it means if a static IP address is provided. then it cannot be changed or modified. While Dynamic IP address change anytime.

→ Static IP address is less secure. While a Dynamic IP address, there is low amount

of risk than static IP address's risk.

- Static IP address is difficult to designate, while dynamic IP address is easy to designate.

- Static IP address is more stable than dynamic IP address. The cost to maintain the static IP address is higher than dynamic IP address.

- Static IP address is used where Computational data is less confidential, while it is used where data is more confidential and needs more security.

Difference between IPV4 and IPV6

The main difference between IPV4 and IPV6 is the address size of IP addresses. The IPV4 is a 32-bit address, whereas IPV6 is a 128-bit hexadecimal address.

- IPV6 provides a large address space, and it contains a simple header as compared to IPV4.

(9) Discuss TCP/IP model in detail ?.

Ans TCP/IP model is a four-layered suite of communication protocols. It was developed by DoD (Department of Defence) in the 1960s. It is named after the two main protocols that are used in the model, namely, TCP and IP. TCP stands for Transmission Control Protocol. and IP stands for Internet Protocol.

= The four layers in the TCP/IP model —

(1) Host-to-Network layer.

It is the lowest layer that is concerned with the physical transmission of data. TCP/IP does not specifically define any protocol here but supports all the standard protocols.

(2) Internet Layer

It defines the protocols for logical transmission of data over the network. The main protocol in this layer is Internet Protocol (IP) and it is supported by the protocols ICMP, IGMP, RARP and ARP.

③ Transport Layer

It is responsible for error-free end-to-end delivery of data. The protocols defined here are Transmission Control Protocol (TCP) and User Datagram Protocol (UDP)

④ Application Layer

This is the topmost layer and defines the interface of host programs with the transport layer services. This layer includes all high-level protocols like Telnet, DNS, HTTP, FTP, SMTP, etc.

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

Ans 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, Mozila Firefox and Apple Safari.

(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.

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

Ans Internet

A global computer network providing a variety of information & communication facility, consisting of interconnected networks using standardized communication protocols.

WWW

The World Wide Web or WWW refers to all the public websites or pages that users can access on their local computers and other devices through the internet.

→ 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 transfer, shopping order online etc.

(13) What is an Internet Service Provider? Give some example of ISP in India?.

Ans An ISP (Internet Service Provider) is a Company that provides individuals and organizations access to the internet and other related services.

- Examples of ISP in India are - Airtel, BSNL Reliance JIO etc.

(14) Discuss the difference between MAC address, IP address. and Post address?.

MAC address.

→ MAC address stands for Media Access Control Address.

→ MAC address ensure that physical address

of the Computer is unique.

→ MAC address is of six byte hexadecimal address.

→ MAC address can be retrieved using ARP protocol.

→ Chip maker manufacturer provides the MAC Address.

IP address

→ IP address stands for Internet Protocol Address.

→ IP address is a logical address of the Computer and is used to uniquely locate Computer connected via a network.

→ IP Address is of 4 bytes or of 16 bytes.

→ IP address can be retrieved using RARP protocol.

→ IP address is provided by Internet Source provider.

Port address.

→ Port address is used to identify an processes on servers on the system.

→ It is 16 bit numbers.

→ It is the address of the Layer - 4 Protocols.

→ Port addresses are logical interfaces used by Communication protocols.

(15) How do we view my Internet browser's history ?

Ans Today, all major browsers, including firefox, Safari, Edge and Chrome, have functionality that lets you quickly and easily view the search & destination history

- However, as different names. Contain browser history, there are multiple ways to view it as well.

For Desktop or Laptop Computer.

① Windows and Linux users : Ctrl + H

② Apple users : Command + Shift + H