ASSIGNMENT-1

1.What is a bandwidth?

Ans: Bandwidth is measured as the amount of data that can be transferred from one point to another within a network in a specific amount of time. Typically, bandwidth is expressed as a bitrate and measured in bits per second(bps). The term bandwidth refers to the transmission capacity of a connection and is an important factor when determining the quality and speed of a network or the internet connection.

2.Differentiate between signal and data.

Ans: Data is entity, which conveys some meaning. On the other hand, the signal is a representation of data in some electric, electromagnetic or optical form. So, whenever data needs to be sent, it has to be converted into signal of some form for transmission over a suitable medium.

3.What is the frequency range of microwave transmission?

Ans: Frequency range of microwave transmission is between 10^9 Hz(1 GHz) to 1000 GHz with respective wavelengths of 30 to 0.03 cm.

4.Draw the diagram of multiplexing.

Ans:

Concept of Multiplexing
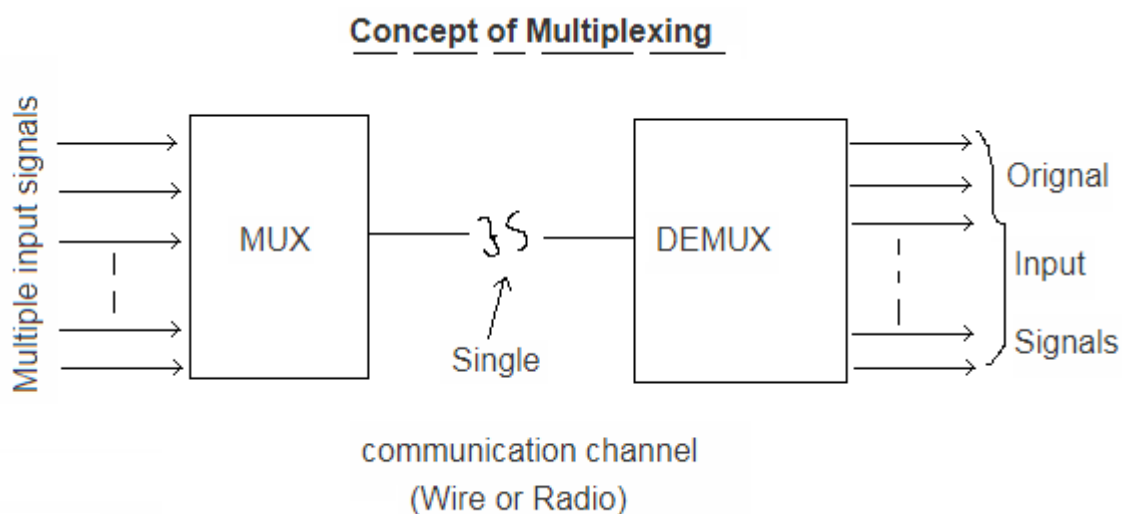
5.What is the principle used in multiplexing?

Ans. Multiplexing is the process of combining multiple signals into one signal, over a shared medium. The device which does multiplexing is called MUX. The reverse process, i.e., extracting the number of channels from one, which is done at the receiver is called as demultiplexing. The device which does demultiplexing is called as DEMUX.

6. What are the important multiplexing schemes?

Ans: The different multiplexing schemes are as follows:

- Frequency Division Multiplexing (FDM)

- Time Division Multiplexing (TDM)

- Wavelength Division Multiplexing(WDM)

7. Give example for mobile and wireless device.

Ans: Examples of mobile and wireless device are : Smartphones, Smartwatch, Bluetooth headset, Tablet computer etc.

8. What are the three types of switching methods?

Ans: Types of switching methods-

1. Circuit switching-
   Here the network connection allows the electrical current and the associated voice with it to flow in between the two respective users. Example - the end to end communication was established during the duration of call. In circuit switching the routing decision is made when the path is set up across the given network. After the link has been sets in between the sender and the receiver, then the information is forwarded continuously over the provided link which is maintained for the entire duration of conversation.

2. Packet switching-
   In Packet Switching, messages are broken up into packets and each of which includes a header with source, destination and intermediate node address information. Individual Packets in packet switching technique

take different routes to reach their respective destination. For a certain link in the network, if the link goes down during transmission the remaining packet can be sent through another route.

3. Message switching-
   In case of Message Switching it is not necessary to establish a dedicated path in between any two communication devices. Here each message is treated as an independent unit and includes its own destination source address by its own. Each complete message is then transmitted from one device to another through internetwork. Each intermediate device receive the message and store it until the nest device is ready to receive it and then this message is forwarded to the next device. For this reason a message switching network is sometimes called as Store and Forward Switching. The storing and Forwarding introduces the concept of delay. For this reasons this switching is not recommended for real time applications like voice and video.

9. What is the use of SS7?

Ans: SS7(signaling system no. 7) is a set of protocols allowing phone networks to exchange the information needed for passing calls and text messages between each other and to ensure correct billing. It also allows users on one network to roam on another, such as when travelling in a foreign country.

10. List few functions of Bluetooth.

Ans: In a world of cell phone technology, a Bluetooth headset allows phone users to communicate hands-free.

- Bluetooth enabled keyboards and mice also make input on some personal computers possible without a separate wireless transmitter.

- It allows drivers to use hands-free communication devices within the car, and many cars now include snap-in cradles for Bluetooth-enabled phones. Some GPS tracking and roadside assistance services also use Bluetooth technology for communicating with drivers that need help.

11. What is Bluetooth?

Ans: Bluetooth wireless technology features low-bandwidth, short-range connection between two devices enabled to receive data. The structure behind

this technology is complicated behind this technology is complicated, and the extent of operation is implementation specific. Using Bluetooth is not difficult and allows many features that enhance today's technology.

12. List two applications of WLAN.
Ans:
1. Many retail stores use wireless networks to interconnect handheld bar-code scanners and printers to databases that have current price information. This enables the printing of the correct price on the items, satisfying both the customer and the business owner.
2. Auto racing.

13. Differentiate between Bluetooth and Wi-Fi technologies with respect to number of devices connectivity.

Ans: Bluetooth is less flexible means in this limited users are supported whereas Wi-Fi supports large amount of users.

14. What are the industrial applications of Wi-Fi technologies?

Ans: Internet Of Things (IOT).

15. What are the main requirements of WLAN?

Ans:

- Maximum throughput.

- Should support hundreds of nodes across multiple cells.

- Coverage area with diameter 100 to 300m.

- Have a long battery life when used with wireless adapters.

- Should permit dynamic and automated addition, deletion, and relocation of end systems without disruption to other users.

- The MAC protocol used in the wireless LAN should enable mobile stations to move from one cell to another.

- Users would prefer to buy and operate wireless LAN products without having to secure a license for the frequency band used by the LAN.