Question 1: What is a bandwidth?

ASSIGNMENT 1

Answer 1: Network bandwidth is the capacity of a wired or wireless network communications link to transmit the maximum amount of data from one point to another rover a computer network or internet connection in a given amount of time. Bandwidth describes the data transfer rate.

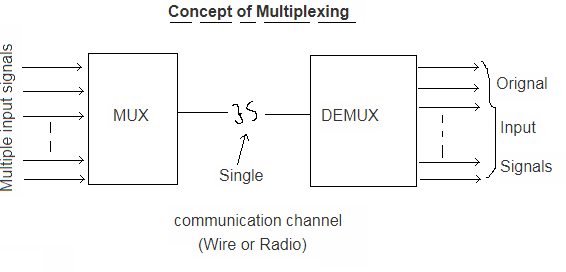
Question 2: Differentiate between signal and data.

Answer 2: A signal represents the way you communicate: say AM/FM radio, smoke, a hand gesture etc. Data denotes information conveyed in the signal. But data may also be stored. So a signal may convey information (data), but not all data is signalled.

Question 3: What is the frequency range of microwave transmission?

Answer 3: Frequency range of microwave transmission is between 10⁹ Hz( 1 GHz) to 1000 GHz with respective wavelengths of 30 to 0.03 cm.

Question 4: Draw the diagram of multiplexing. Answer 4:



Question 5: What is the principle used in multiplexing?

Answer 5: 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.

Question 6: What are the important multiplexing schemes?

Answer 6: Frequency Division Multiplexing (FDM), Time Division Multiplexing (TDM) and Wavelength Division Multiplexing (WDM)

Question 7: Give example for mobile and wireless device.

Answer 7: Smartphones, Smartwatch, Bluetooth headset, Tablet computer etc. Question 8: What are the three types of switching methods?

Answer 8: 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.

1. 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.

1. 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.

Question 9: What is the use of SS7?

Answer 9: 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.

Question 10: List few functions of Bluetooth.

Answer 10: In the 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.

Question 11: What is Bluetooth?

Answer 11: Bluetooth is a wireless technology that uses low-energy radio waves to send wireless data between Bluetooth-enabled devices within short range. It does not require additional network equipment such as routers or modems, making it a popular choice for sending data between mobile electronics over close ranges.

Question 12: List two applications of WLAN. Answer 12: Application of WLAN-

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.

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

Answer 13: Bluetooth is less flexible means in this limited users are supported whereas Wi-Fi supports large amount of users.

Question 14: What are the industrial applications of Wi-Fi technologies? Answer 14: Internet Of Things (IOT)

Question 15: What are the main requirements of WLAN? Answer 15:

* 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.