

Set - 01.

What is Physical Layer?

Ans: Physical Layer:

Physical layer in the OSI model plays the role of interacting with actual hardware and signaling mechanism. This layer defines the hardware equipment cabling, wiring, pulses used to represent binary signals etc.

b)
Discuss about Digital and Analog Signals.

Ans: ~~of short time with two g~~

Digital signals:

Digital signals are discrete in nature and represent sequence of voltage pulses. Digital signals are used within the circuitry of a computer system.

Analog signals :-

Analog signals are in continuous wave form in nature and represented by continuous electromagnetic waves.

What is channel capacity?

Ans: channel capacity:

The speed of transmission of information

is said to be the channel capacity.

We count it as data rate in digital world. It depends on numerous factors such as:

- ① Bandwidth.
- ② Error-rate.
- ③ Encoding.

(d)

What is difference between Multiplexer and Demultiplexer?

Ans:

Multiplexer

- ① Multiplexer processes the digital information from various sources into a single source.

- ② It is known as Data Selector.

- ③ It is a digital switch.

- ④ It works on many to one operational principle.

Demultiplexer

- ① Demultiplexer receives digital information from a single source and converts it into several sources.

- ② It is known as Data Distributor.

- ③ It is a digital circuit.

- ④ It works on one + many operational principle.

Set - 02

(b)

Explain what switching is? (any 2)

(a)

What is switching?

Ans:

Switching is a mechanism by which data/information sent from source towards destination which are not directly connected.

(b)

Write down the switching category

Ans: Switching can be categorized as

switching

Circuit switching

Message switching

Packet switching

(@)

Discuss about Transmission Media.

Ans:

The media over which the information is sent between two computer systems is called transmission media. Transmission media comes in two forms.

Guided Media:

All communication wires/cables are guided media such as UTP, coaxial cables, and fiber optics. In this media, the sender and receiver are directly connected.

Unguided Media:

Wireless or open air space is said to be unguided media, because there is no connectivity between the sender and receiver.

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(a)

What is Multiplexing?

Ans:

Multiplexing is a technique to mix multiple data streams and send multiple data streams over a single medium. This techniques requires system hardware called (MUX) for multiplexing the streams and sending them on a medium, and (DMUX) which takes information from the medium and distributes to different destination.

(b)

Discuss about Transmission Impairment

When signals travel through the medium they tend to deteriorate. This may have many reasons as given:

① Attenuation: It is difficult for the receiver to interpret the data accurately, the signal must be sufficiently strong.

② Dispersion:

As signal travels through the media, it tends to spread and overlap.

③ Crosstalk:

This sort of noise happens when a foreign signal enters into the media.

①

②

Ques. Discuss about Transmission Modes.

Ans: The transmission mode is decided how data is transmitted between two computers. The binary data in the form of 1s and 0s can be sent in two different modes: parallel and serial.

Set-04

(Q)

What is Parallel and serial transmission?

Ans:

Parallel transmission:

The binary bits are organized into groups of fixed length. Both sender and receiver are connected in parallel with the equal number of data lines. Both computers distinguish between high order and low order data lines. The sender sends all the bits at once on all lines.

Serial transmission:

In serial transmission, bits are sent one after another in a queue manner. Serial transmission requires only one communication channel.

(b)

PO-FO

Comparison between Serial and parallel transmission

Transmission:

Ans:

Serial Transmission

Parallel Transmission

① Data flows in two directions, bit by bit.	① Data flow in multiple directions, 8 bits at a time
② Cost is economical.	② Cost is expensive.
③ Speed is slower.	③ Speed is faster.
④ Computer to computer.	④ Computer to printer
⑤ Used for long distance communication.	⑤ Used for short distance communication.
⑥ Number of bits transferred per clock pulse is 1 bit.	⑥ Number of bits transferred per clock pulse is 8 bits.

①

Distinguish between Synchronous & Asynchronous

Ans:

Synchronous Transmission

- ① Transmits data in the form of chunks or frames or blocks.
- ② Transmission speed is faster.
- ③ Time interval is constant.
- ④ There are gaps between the data.

⑤ Used in Chat rooms, Telephonic Conversations.

Asynchronous Transmission

- ① Transmits 1 byte or character at a time.
- ② Transmission speed is slower.
- ③ Time interval is random.
- ④ There are no gaps between the data.

⑤ Used in Email, Forums, Letters.

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(a)

Q. Answer the question & write down the advantages and disadvantages of Asynchronous Transmission.

Ans: Advantages of Asynchronous Transmission:

Advantages of Asynchronous Transmission:

- ① It is convenient while transmitting a little amount of data.
- ② Cost is very low to implement this method.
- ③ The sender does not require any primary storage device.
- ④ No synchronization is required between the transmitter and receiver devices. So can directly transmit data and the receiver receive that data.

Disadvantages:

- (a) ① Efficiency is comparatively less.
- ② Data transmission speed is very low.

(b)

Write down the uses of Asynchronous Transmission.

Ans:

- Uses of Asynchronous transmission:
- ① Computer to printer.
 - ② card reader to computer.
 - ③ Computer to card reader.
 - ④ keyboard to computer.

① Write down the advantages and disadvantages of synchronous transmission.

Ans:

Advantages:

- ① Efficiency is comparatively very high.
- ② Speed of data transmission is very high.
- ③ No need to transmit start and stop bits.
- ④ In case of transmitting a lot of data, this method is suitable.

Disadvantages:

- ① Primary storage device is required.
- ② Comparatively expensive.
- ③ Synchronisation between the source and target is required.

Advantages of synchronous transmission:

Uses of synchronous transmission:

- ① Computer to computer data transmission.
- ② Used in chat rooms.
- ③ Used in telephonic conversations.
- ④ Used in video conferencing.

Discuss two cases of Data formatting:

Ans.

① Bandpass:

The filters are used to filter and pass frequencies of interest. A bandpass is a

band of frequencies which can pass

the filter.

② Low-pass:

Low-pass is a filter that passes low frequencies signals.

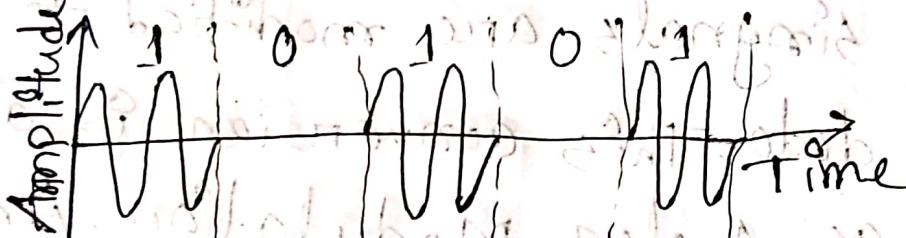
Discuss about Digital-to-Analog Conversion

Ans:

An analog signal is characterized by its amplitude, frequency, and phase. There are three kinds of digital-to-analog conversion

① Amplitude shift keying

In this conversion technique, the amplitude of analog carrier signal is modified to reflect binary data.



② Frequency Shift keying

In this conversion technique, the frequency of the analog carrier signal is modified to reflect binary data.

③ Phase Shift keying

In this conversion scheme, the phase of the original carrier signal is altered to reflect the binary data.

Ques. ① (a) Ques. ② (b) (any one)

Discuss about Analog-to-Analog conversion.

Ans: ~~state general condition of transmission~~

Analog signals are modified to represent analog data. This conversion is also known as Analog Modulation. Analog Modulation is required when bandpass is used. Analog to analog conversion can be done in three ways.

Analog Modulation

Amplitude Modulation

Frequency Modulation

Phase Modulation

Set-07

a

What is wireless transmission? Is it a form of unguided

Ans:

Wireless transmission is a form of unguided media. Wireless communication involves no physical link established between two or more devices, communicating wirelessly. Wireless signals are spread over in the air and are received and interpreted by appropriate antennas.

(b)

Write down the difference between Radio and Microwave transmission.

Ans:

Ques.

<u>Basis</u>	<u>Radio wave</u>	<u>Microwave</u>
① Direction	These are omni-directional in nature.	These are unidirectional in nature.
② Frequency range	3 KHz to 1 GHz.	1 GHz to 300 GHz.
③ Security	These offers poor security.	Medium security
④ Attenuation	Attenuation is high.	Attenuation is variable.
⑤ Usage Cost	Setup and usage cost is moderate	Setup and usage cost is high

~~Differ~~ Characteristics of Infaredwave transmission.

Ans: ~~Characteristics of Infaredwave transmission.~~

- ① These are unidirectional in nature.
- ② They cannot penetrate through any solid object and walls.
- ③ Frequency range : 300GHz to 400GHz.
- ④ These offers high security.
- ⑤ Attenuation is low.
- ⑥ Usage cost is very less.
- ⑦ There is no need of government license to use these waves.

Sed-08

(a)

What is switching?

Ans:

Switching is process to forward packets coming in from one port to a port leading towards the destination. When data comes on a port it is called ingress, and when data leaves a port or goes out it is called egress.

(b)

Category of switching.

Ans:

Switching can be divided into two major categories.

① Connectionless:

The data is forwarded on behalf of forwarding tables. No previous handshaking is required and acknowledgments are optional.

② Connect oriented

Before switching data to be forwarded to destination, there is a need to pre-establish circuit along the path between both endpoints.

Q.

Write down the difference between Circuit and Packet switching.

Ans:

Ans.:

Comparison of (i)

Circuit switching

Packet switching

- ① Transmission of the data is done by the source.

- ① Transmission of the data is done not only by the source, but also by the intermediate routers.

- ② Recording of packet is never possible in circuit switching.

- ② While recording of packet is possible in packet switching.

- ③ It's not a store and forward technique.

- ③ It's a store and forward technique.