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Question#1

(i) which Layers in the internet model are the network Support layer ?

ANSWER:-

Transport layer has the Network support layer and the user support layer. the Transport layer is the layer in the open system interconnection (OSI) model responsible for end-to-end Communication over a network. Transport layer has the network support layer and the user support layer.

ii) Name three types of Transmission impairement?

↳ **ANSWER**

There are three Types of transmission impairement.

⇒ **Attenuation:-**

The impairement is caused by the strength of signals that degrades with distance over a Transmission link. Three factors are Related to attenuation.

⇒ **Delay distortion:-**

The velocity of propagation of a signal through a guided medium varies with frequencies. it is fast at the center of the frequency, but it falls off at the two edges of frequencies. Equalization Techniques

Can be used to smooth out the delay distortion.

⇒ **Noise:-**

impairement occurs when an unwanted signal is inserted Between transmission and reception. There are four types of noise.

- → Thermal noise.
- → intermodulation noise.
- → cross talk.

(iii) What does the Shannon Capacity have to do with communication?

ANSWER

In Communication channels the information capacity is the maximum ammount of information that can pass through a channel without error. i.e. it is a measure of channel

goodness the actual ammount of information depends on the code how information is represented. in Communication channels the information capacity is the maximum ammount of information. Specified the maximum data rate for noiseless condition where as the Shannon theorom specified the max data rate.

iv) Compare and Contrast Flow Control and Error Control?

ANSWER

⇒ **Flow control:-**

Flow control is meant for the proper transmission of the data from Sender to reciver. Feed-Back flow control

and rate-Based Flow control are the approaches to achieve the proper flow control.

⇒ **Error Control:-**

Error control meant for delivering the error-free data to the Receiver.

parity checking, cyclic Redancy code and checksum are the approaches to detect the error in data.

Explination:-

Flow control and error control mechinism at data link layer and transport layer. whenever the sends data to the Reciver these two mechnisms helps in proper delivering of the reliable data to the Reciver.

(v) Define piggybacking and its useful?

ANSWER

Piggybacking is used to improve the efficiency of Bidirectional transmission. when a frame is carraying data from A to B, it can also carry control information about frames from B. when a frame is carraying data from B to A, it can also carray control information about from A.

⇒ **Uses:-**

improve the efficiency, Better use of available channels Bindwith.

The reciver can jam the service if it has nothing to send. this can be solved by enabling a Counter. when a data frame is recived.

vi) HDL w.r.t station types, transfer modes, frame types supported and Flag field purpose ?

ANSWER::

↳ High-Level Data link Control (HDLC) is a group of communication protocols of the data link layer for transmitting data Between network points or nodes.

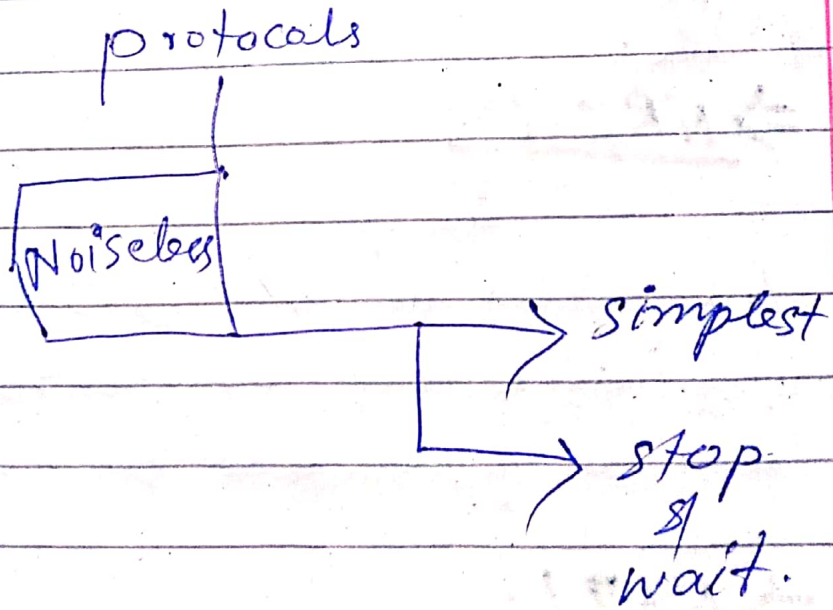
it is a data link protocols, data is organised into frames. A frame is transmitted via the network to the destination that verifies its successful arrival. its a Bit-oriented protocols that is Applicable for Both point-to-point and multiple point Communication.

(vii) Names the protocols for noiseless channel?

ANSWER:-

Noiseless and noise channel protocols:

- → Taxonomy of protocols.
- → simplest protocols.
- → noise sequance protocols.
- → Stop and wait ARQ protocols etc.



These are the above noiseless protocoles channels.

(viii) What is differential Encoding ? also Explain the Difference B/w NRZ-L and NRZL ---- ?

ANSWER

A. Encoding is the process of using various patterns of voltage or current level to Represent 1s and 0s of the digital Signals on the transmission Link.

⇒ NRZ-L :-

the process of convert the data or a given Sequance of characters, symbols into a specified format.

⇒ NRZL :-

The modulation Techniques such as Amplitude modulation, frequancy modulation and phase of analog Signals fall under the catogory.

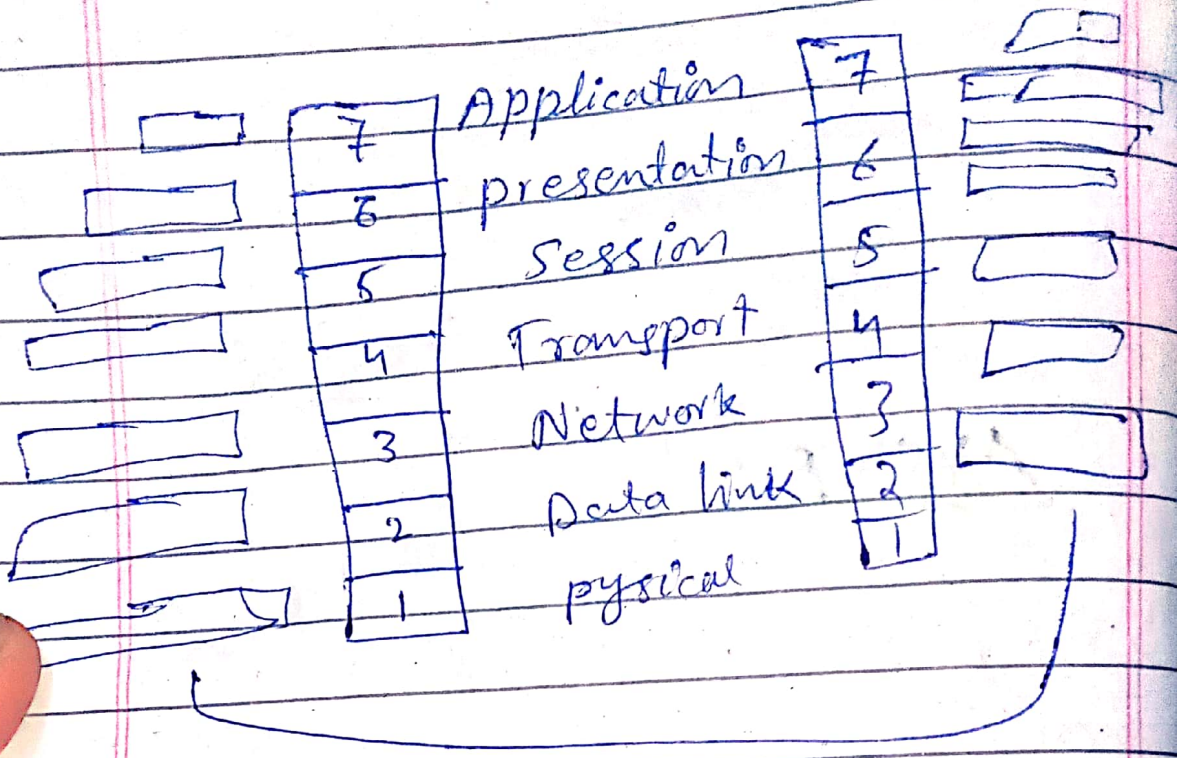
Question # 8

(a) There are several networks layer models proposed in the OSI model. Find all of them. Explain the Difference Between them?

ANSWER

The OSI model is a standard of the International organisation for Standarization (ISO). it is Seven layer approach to data transmission divides the many operations up into specified related groups of actions at each layer.

→ The data transmatting Computer Software gives the data to be transmitted to the Application layer, where its processed and pass from layer to layer down to the stack with each layers the data is then transmitted over the pysical layer of the network.

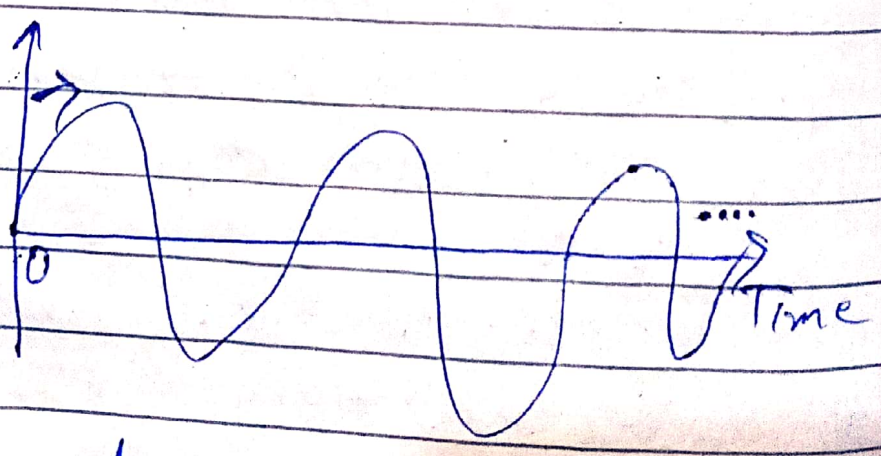


b) if a signal does not change at all, its frequency is zero.....?

ANSWER

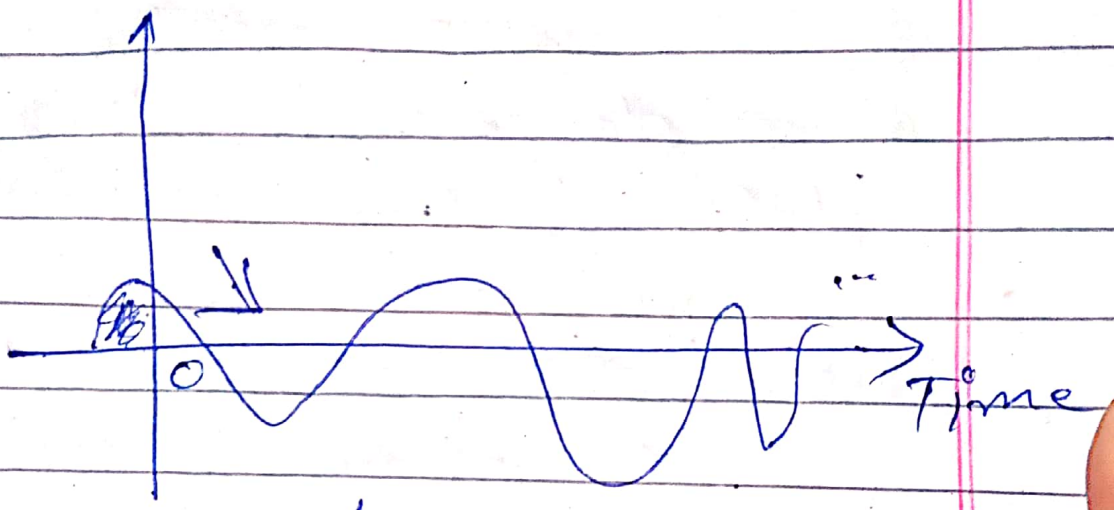
phase describes the position of the phase.

(a).



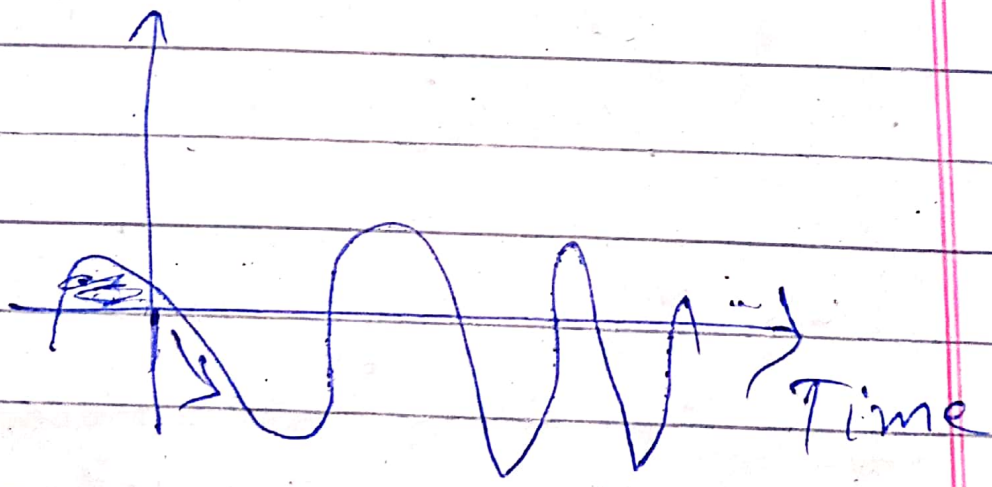
0 degree.

b)

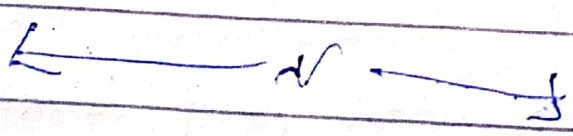


90 degree.

c)



180 degree.



Question #3

a) A device is sending out data at the rate of 100 Bps. How long does it take to send out a single character (8 Bits)?

ANSWER

→ How long it take to send out 100 Bits?

100/100 = 1 sec.

→ How long does it takes to send out a single character 8 Bits.

8/100 = 0.08 sec.

→ How long does it takes to send a file of 100000 characters.

Single character is of 8 Bits.

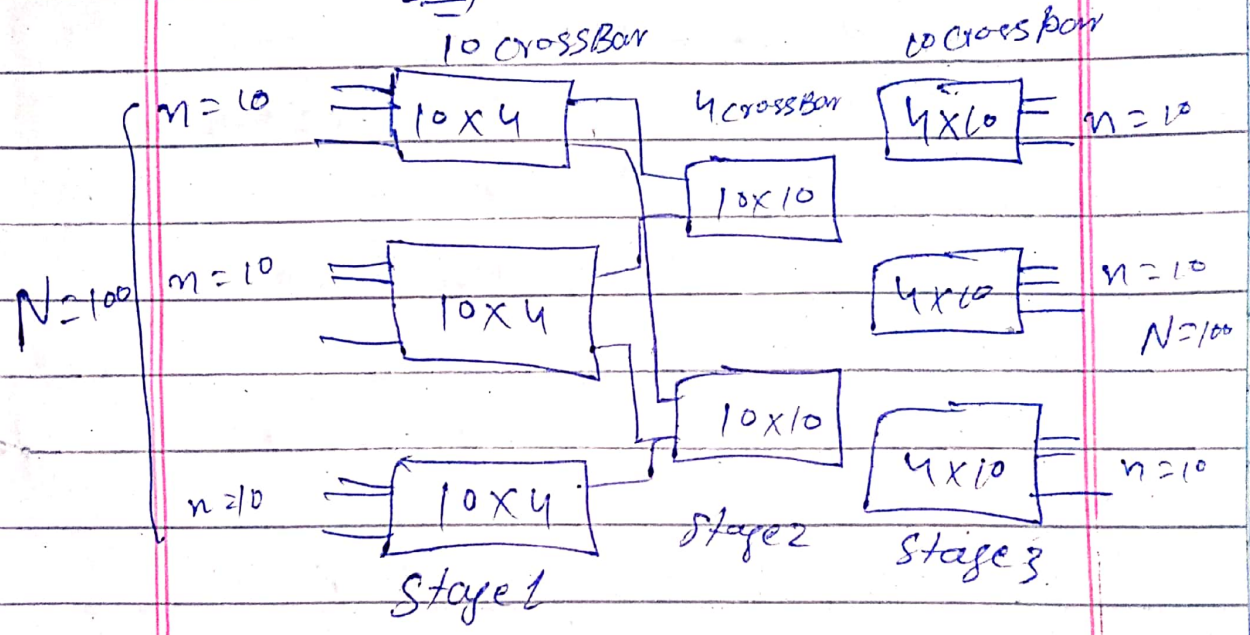
8 * 100000/2000 = 400 Sec.

(b) we need three-stages -space-devision switch with total input of 1000 ..... ?

ANSWER

⇒ Solution:-

a)



(b) The total number of cross points = 10(10x4) + 4(10x10) + 10(4x10) = 1200.

only four simultinous connections are possible for each crossbar at the first time. stage.

b) This mean that the total number of simultinous connections is $4 \times 10 = 4$.

c) only four simultinous connections are possible for each crossbar at the first stage. this means that the total number of simultinous connections $4 \times 10 = 40$.

d) if we use one crossbar. (100 x 100), all input lines can have a connection at the same time, which means 100 simultinous connections.

e) The Blocking factor is 40/100 or 40 percent.

←v→