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No1

⇒ (a) Briefly describe the layer model are the network support layers?

Ans: Physical, data link & network layers are network support layers & Session, Presentation and application layers. The transport layer links these layers by segmenting & rearranging the data.

⇒ (b) Describe three types of transmission impairment?

1- Attenuation:-

The impairment is caused by the strength of signals that degrades with distance over a transmission link.

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(2) Delay distortion:

The velocity of propagation of a signal through a guided medium varies with frequencies. it is fast the center of the frequency.

(3) Noise:

Impairment occurs when an unwanted signals is inserted between transmission and reception.

(c) What does the shanon capacity have to do. with Communication?

Ans Shanon information capacity C has long been used as a measure of the goodness of electronic communication channels. it specifies the maximum rate at which

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data can be transmitted without error if an appropriate code is used (it took nearly a half-century to find code that approached the shanon capacity).

7 (b) Compare & Contrast flow control & error control?

Ans: The main differences b/w the flow and error control is that the flow control observe the proper flow of the data from sender to receiver, on the other hand, the error control observes that the data delivered to the receiver is error free & reliable.

(4)

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(E) Explain Piggbacking & its usefulness. In which layer of osi is it used & why?

Ans: Piggbacking means to ride over something.
A similar concept is very common in computer network called piggbacking.
In Piggbacking, the Sender sends a data packet along with the acknowledgment of any acknowledgement needs to send at the time of transmission of the data packet.

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⇒(f) Brife HDLC w.r.t station types, - - - - ?

Ans High- level data link Control is a bit oriented protocol for communication over point- to- point & multipoint links.

'types of modes'

Transfer Modes: HDLC Provides two common transfer modes that can be used in different configuration. normal response mode (NRM) & asynchronous balanced mode.

Normal Response Mode: In normal response mode (NRM), the station configuration is unbalanced we have one primary station & multiple secondary station.

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Asynchronous Balanced Mode:

In asynchronous balanced mode (ABM), the configuration is balanced. The link is point-to-point & each station can function as a primary & a secondary (acting as peers).

Types of frames:

To provide the flexibility necessary to support all the options possible in the modes & configuration.

Frame format: Each frame in HDLC may contain up to six fields, a beginning flag field, an address field, a control field, an information field, a frame check sequence field, and ending flag field.

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⇒(g) Brief the protocols for noiseless channel?

Ans Let us first assume we have an ideal channel in which no frames are lost duplicated, or corrupted.

(1) Simplest Protocol: It has no flow or error control. It is a unidirectional protocol in which which data frames are traveling in only one direction - from the Sender to receiver. The data link layers of the receiver immediately removes the header from the from and hands the data packet to its network layer, which can also accept the packet immediately.

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(2) Stop-&-wait Protocol:

If data frames arrive at the receiver site faster than they can be processed, the frames must be stored until their use.

In stop-&-wait Protocol the sender sends one frame, stops until it receives confirmation from the receiver (okay to go ahead) & then sends the next frame.

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(h) What is differential encoding? Also explain the difference b/w NRZ-L & NRZI. & name the coding schemes of multilevel binary & bi-phase?

In digital communication differential coding is a technique used to provide unambiguous signal reception when using some types of modulation. It makes data to be transmitted to depend not only on the current signal state, but also on the previous one.

NRZ-L & NRZI difference

The level of the voltage determines the value of the bit, typically binary 1 maps to logic level low, & for NRZ-L (NRZ-invert), two level

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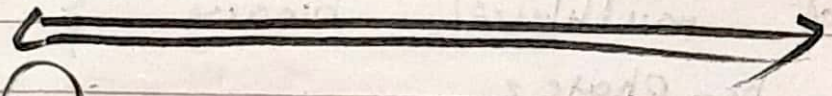
Signal has a transition at a boundary of the next bit that we are going to transmit is a logical 1,



= No 2

(j) A device is sending out data at rate of 1 Mbs. How long does it take to send out a signal character (8 bits)?

~~(10/100)s = 0.08s~~

(8/100)s = 0.008s

= 8ms Ans.

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(K) We have a channel with 4 kHz bandwidth. If we to send data at 100 kbps what is the minimum SNR_{dB}? what is SNR?

Solution

$$C = B \times \log_2 (1 + SNR)$$

$$100 \times 10^3 = 4 \times 10^3 \log_2 (1 + SNR)$$

$$\log_2 (1 + SNR) = 25$$

$$1 + SNR = 2^{25}$$

$$SNR = 2^{25} - 1 = 33,554,431$$

$$SNR_{dB} = 10 \log_{10} (33,554,431)$$

$$= 75 dB$$

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(i) Suppose a computer sends a packet at the network layer to another computer some where in the internet. The logical destination address of the ----?

Ans In general of there is a problem in a network bad enough to corrupt a packet at the transport layer 2 level, then the sender's address is also corrupt. This is because the way a CRC Checksum works. when a packet arrives malformed the checkum just tells the reciver the data is garbage, & the package gets tossed. There is no way for an intermediate router to figure out the sender address at this point because the carried packet with both the Sender's & Reciver address cannot be trusted.

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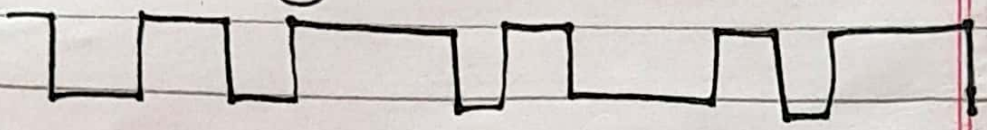
Q No. 3

(i) The waveform here belong to a manchester encode binary data ----?



Ans 1 1 1 1 0 0 1 1 0

The bit stream is :

111100110

(m) Assume that the primary HDLC station has sent six I-frames to a Secondary. The primary's N(s) Count ---?