08/17/22

$\log_2(n)$; if $n = 26$ then,

$\log_2(26) = 4.7$ bits.

Pulse amplitude Modulation (PAM) Dimensionality:-

→ 4 D-PAM5 Signal, 4 wires, 5 Amplitudes.

How many possible combinations?

Ans) $5^4 = 625$ combinations.

How many bits of information is carried when we distinguish btw 625 different possibilities?

Ans) $\log_2(625) = 9.29$ bits of info carried in each symbol.

Measure of Transmission Speed: (when more than 1 symbol is transmitted than Baud Rate > Bit Rate)

Baud Rate :- no. of transmission symbols per second (Bd)

Bit Rate :- no. of bits per second (bps)

Bit Rate = Baud Rate × [The no. of useful bits carried per symbol].

→ When each symbol carried one bit, the bit Rate & Baud Rate are equal.

→ If each symbol carries 2-4 useful bits, the bit Rate is 2-4 times > than the baud Rate.

Encoding:-

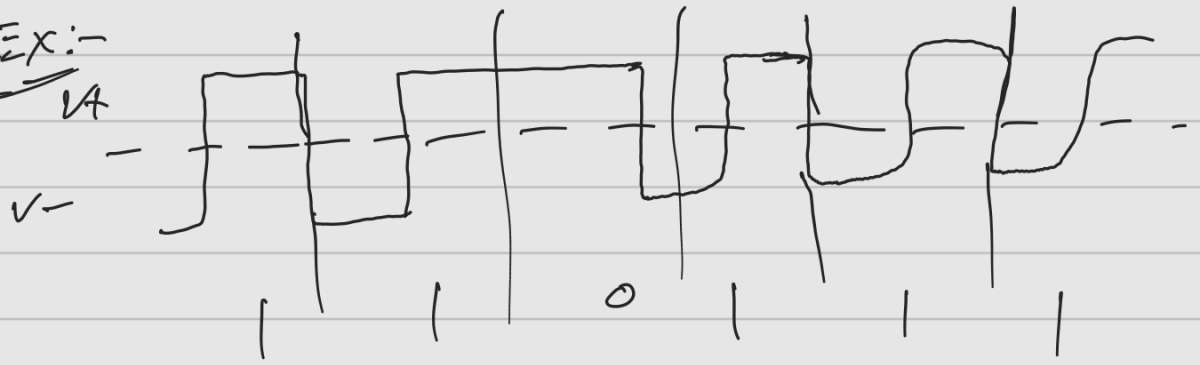
(i) Manchester Encoding :- Ethernet 10BaseT (is self clocking).

"+ve" to "-ve" voltage change = 0.

"-ve" to "+ve" voltage change = 1.

08/22/22.

Ex:-



ii. Multi-Level Transmit (MLT) for 100 Base Tx:

(It is self clocking)

Every transition is a '1'.

Every clock period without a transition is '0'.

4B5T:-

Example Rules:-

→ When you want to send "0000", actually send "11110".
→ When you see "11110", understand as "0000".

→ There are never more than three '0's in a row under the 4B5T rules.

Ex:- 1) What is the extra cost to do this? 4 bit becomes 5, so 25% extra cost.

Bit Rate : 100 MBPS . 0.8 bits per symbol. Baud Rate: ???

We know that, Bit rate = Baud Rate × (The no. of useful bits carried per Symbol).

$100 = BR \times 0.8 \Rightarrow BR = 125$ Mbd.

Cable Modem:-

DOCSIS - Data over Cable Service Interface Specification.

Multilayer Transition (MLT) Ex:-