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Program : BS,SE

Paper : Computer Communication & Networks

Q1:- CQNO: 01

A) Briefly describe the layers in the Internet model are the network support layers?

Ans:-

physical, date link and network layers are network support layers and session, presentation and application layers are user support layers. The transport layers links these layers by segmenting and rearranging the data.

B Describe three types of transmission impairment?

Ans

There are three types of transmission: attenuation, delay distortion, and noise.

① Attenuation:

The impairment is caused

by the strength of signals that degrades with distance over a transmission link. Three factors are related to the attenuation.

2 Delay distortion:-

The velocity of propogation of a single through a guided mechum varies with frequencies; it is fast at the center of the frequency but it falls off at the two edges of frequency

3 Noise:-

Impairment occurs when an unwated signal is insetecd between transmission and reception There are four types of noises.

. Intermoclutation noise
. Cross talk
. Impulse noise
. Thermal noise.

C Part

What does the Shannon capacity have to do with communications?

Ans:-

In information theory the Shannon-Hartley theorem tells the ~~maxim~~ maximum rate at which information can be transmitted over a communications channel of a bandwidth in the presence of noise.

Part D

compare and contrast flow control and error control?

Ans:- The main difference between the flow control and error control is that flow control observes the proper flow of the date

From sender to receiver, on the other hand, the error control observes that the data delivered to the receiver is error free and reliable.

E

Explain piggybacking and its usefulness. In white layers of OSI is it used why?

Ans:-

Piggybacking means to ride over something. ... A similar concept is very common in computer network called piggybaking. In piggybacking, the sender sends a data packet along with the acknowledgment, if any

acknowledgment needs to send at the time of transmission of the data packet.

In reliable communication, each packet has an acknowledgment from the receiver. SCTP protocol is one of the examples of a reliable transport layer protocol in the OSI model. Piggybacking in an optimization method for the utillization of underlying network capacity. A user message is piggybacked over an acknowledgment message. For example, in SCTP a signals message may have two chunks one is for DATA and the other is ACK. After Piggybacking there is a single message over the wire in place of two.

Part F)

Brief HDLC w.r.t station types, transfer modes, frame types supported and flag field purpose?

Ans

HDLC supports two types of transfer modes, normal respone mode and asynchronous balanced mode.

.NRM - Here, two types of stations are there, a primary station that send commands and secondary station that can respond to received commands.

.ABM - Here, the configuration is blanced, it is used for only

Point-to-point communications.

Frame types:-

There are three types of HDLC frames.

- Information transfer frame (I-Frames)
- Supervisory frame (S-Frames)
- Unnumbered frame (U-Frames)

Flag field:

The flag of an HDLC frame is an 8-bit sequence with the bit pattern 01111110 that identifies both the beginning and the end of a frame and serves as a synchronization pattern for the receiver.

Part G)

Brief the protocols for noiseless channels?

Ans:-

Noisy channels protocol

stop-and-wait Automatic Repeat Request. The stop-and wait Automatic Repeat Request (stop-and wait ARQ), adds a simple error control mechanism to the stop-and-wait protocol. ...

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part H)

What is differential encoding? Also explain the difference between NRZ-L and NRZI. And name the coding schemes of multilevel binary & bi-Phase.

Ans :-

Differential encoding:

Is a digital-encoding technique where by a binary value is denoted by a signal generator's default 4QAM I/Q modulation.

Difference b/w NRZL and NRZI:-

Non return-to-zero-level (NRZ-L) is a data encoding scheme in which a negative voltage is used to represent binary one and a positive voltage is used to represent binary zero. As with NRZ-L, NRZI maintains a constant voltage pulse for the duration of a bit time.

Multilevel binary:

- use more than two levels
- Bipolar - AMI
  - zero represented by no line signal
  - one represented by positive pulse or negative pules

Biphase:

- Manchester
  - Transition in middle of each bit period
- Differential Manchester
  - Midbit transition is clocking only.

QNO: 02

Part I :- Suppose a computer sends a packet at the network layer to another computer somewhere in the Internet. The logical destination address of packet is corrupted. What happens to the packet? How can the source computer be informed of the situation?

Ans :-

What happens:

In this types of situation Most protocols issue a special error ~~that~~ message that is sent back to the source in this case.

How to informed source computer:

Before using the destination

address in an intermediate or the destination node, the packet goes through error checking that may help the node find the corruption (with a high probability) and discard the packet. Normally the upper layer protocol will inform the source to resend the packet

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Part 1) A device is sending out data at the rate of 1 Mbps. How long does it take to send out a single character (8 bit)?

Ans: Soln- Given: Sending rate = 1mbps

At 8 bit = ?

$= (8/100)_3$

$= 0.008_3 \rightarrow = 8\,ms$

Part K):

We have a channel with 4KHz bandwidth. If we want to send data at 100 Kbps. what is the minimum SNRdB? what is SNR?

Ans:

We can use the approximate formula

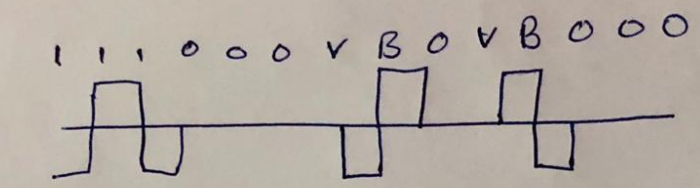
$C = B(SNRdB/3)$ or $SNRdB = (3C)/B$

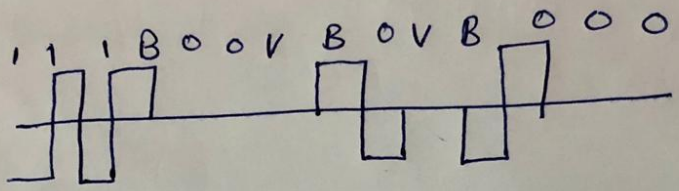
we can say that the minimum

$SNRdB = 3 \times 100\ Kbps / 4\ KHz = 75$ #

This means that the minimum

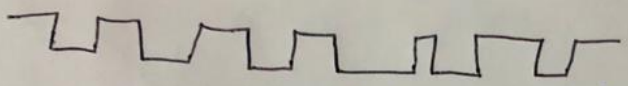
$SNR = 10^{SNRdB/10} = 10^{7.5} \approx 31,622,776$ #


1 1 1 0 0 0 V B 0 V B 0 0 0


1 1 1 B 0 0 V B 0 V B 0 0 0

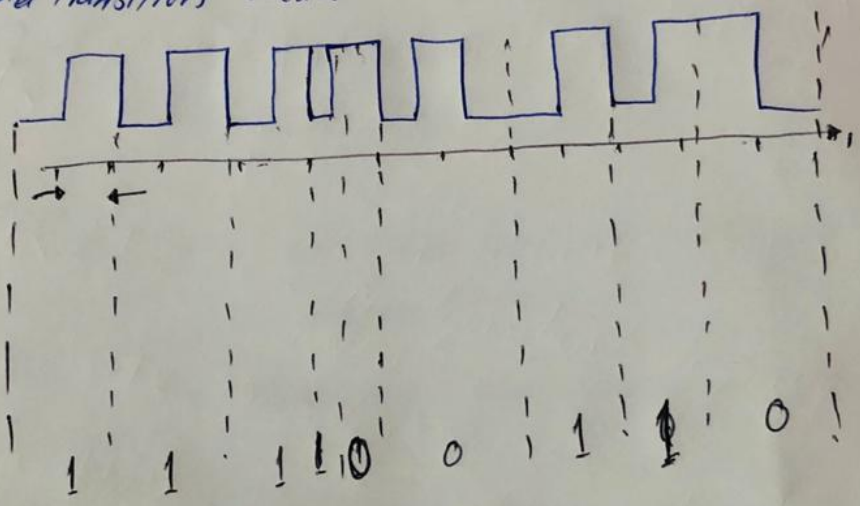
CONO: 03

Part 1 :- The waveform here belongs to a manchester encoded binary system.



In the manchester encoded binary ~~system~~ data stream a transition occurs in the middle of each bit period.

Sol :-



The bit stream is :- 111100110

Part m:- Assume that the primar HDLC station in NRM has sent six I-frames to a secondary.

Ans 5:- for the bit stream 01001110 sketch the waveforms for each of the table.

1) NRZ-L:- 0 = high level.
1 = low level.

NRZI:- 0 = no transition at begining of interval.
1 = transition are begining of interval.

Bipolar AMI:- 0 = no line signle.
1 = positive or negative level.

Pseudoternary:- 0 = positive or negative level.
1 = no line signle

Manchester:
0 = transition from high to low in middle interval.
1 = Transition from low to High

Differential manchester:
Always a transition in middle of interval.
0 = Transition at begining of interval
1 = Transition at begining of interval.

B8ZS:
Same as bipolar AMI.

HDB3:
Same as bipolar AMI