

Name

Amad Afridi

Class

BS - SE B

ID

13119

Subject

"CCN"

Date

24-8-2020

"MID" "TERM"

"EXAM"

Q11-

a) Briefly describe the layer in the internet model are the network support layer-

Ans- Physical data link and network layer are network support layer and session, presentation and application layer are user support layers -
The Transport layer link these layers by segmenting and rearranging the data - It uses protocols like TCP and UDP.

Q12-

b) Describe Three types of transmission impairment?

Ans- Transmission impairment:-

The signal received may differ from signal transmitted - The effect will degrade the signal quality for analog signals and introduce bit error for digital signals.

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

1- Attenuation:-

The impairment is caused by the strength of signals ~~transmitted~~.

the degrades with distance over a transmission link - Three factors are related to the attenuation.

- The received signals should have sufficient strength to be intelligently interpreted by a receiver.

- A signal should be maintained at a level higher than the noise so that error will not be generated.

- Attenuation is an increasing function frequency, with more attenuation at higher frequency than a lower frequency.

2. Delay distortion:-

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

3. Noise:-

Impairment occurs when an unwanted signal is inserted between transmission and reception - There are four types of Noise:-

i. Thermal noise -

ii. Intermodulation -

iii. Cross talk -

iv. Impulse Noise -

Q1-

C-

what does the Shannon capacity have to do with communication?

Ans.

Shannon capacity have to do with communication:-

Shannon Capacity

Formula:-

$$C = B \log_2 \left(1 + \frac{S}{N} \right)$$

C = channel capacity in bits per second.

B = Bandwidth of channel in hertz.

S = received signals power

N = total noise.

Q1-

d-

Compare and contrast flow control and error control.

Ans.

Flow control and error control both are also known as data link control.

- Flow control refers to the set of procedure used to restrict the amount of data that sender can send before waiting for the acknowledgement.

- Error control is the data link layer based on automatic repeat requests which is the retransmission of the data.

Q11. e. Explain Piggybacking and its usefulness in white layer of OSI. Is it used and why?

Ans. Piggy backing:- In reliable full duplex data transmission the technique of hooking up acknowledgments onto outgoing data frames is called piggy backing.

-> Usefulness:

Improve the efficiency of use of available channel bandwidth.

Q12. f. Brief HDLC w.r.t station types, transfer mode, frame types supported and flag field purpose?

Ans. Station types:-

Station type	Configuration	Response Mode
1- Primary	unbalanced	Normal response mode
2- Secondary	Symmetrical	Asynchronous balance mode.
3- Combined station	Balance Configuration	

Transfer mode:-

It is also defined in upper table.

The transfer mode is a telecommunication standard defined by ANSI and ITU for digital transmission of multiple types of traffic.

Three types of frames

1- U - Frame -

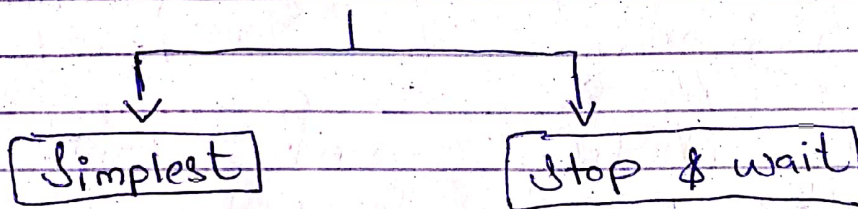
2- I - Frame -

3- S - Frame -

Q1.

Brief the protocols for noiseless channels.

Protocols



- Stop & wait
- flow control
- Sender send one frame - stops until to receive confirmation from receiver then send the next frame required if data frames arrives at the receiver site faster than they can be processed.

Simplest:-

No flow and error control sender assume that they receiver can immediately handle any

Frame not used practically.

Q11-
h- What is diff encoding?
also explain diff b/w NRZ-2
and NRZ-1 and name
the coding schemes of --
?

Ans. Differential encoding
It is a digital
encoding technique where by a
binary value is denoted
by a signal change rather
than a particular signal state.
Diff b/w NRZ-L and
NRZ-1.

\Rightarrow NRZ-L

Non Return to
zero level the level of
the voltage determine the
value of the bit.

\Rightarrow NRZ-1

Non return to
zero invert -

If the bit is zero (0)
there is no change -

If the bit is one
there is change -

\Rightarrow BI phase coding.

- i - BI - Phase Manchester.
- ii - Differential Manchester.

Q21

i - Suppose a computer send a packet at the network layer

Ans:

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 -

Q21

j) A device sending out the rate 1 Mbps. How long does it take to sent out a single character (8 bits),

$$\text{Sol: } (8/100) \text{ s}$$

$$= 0.008 \text{ s}$$

$$= 8 \text{ ms}$$

Q21

(c) We have a channel
4 kHz bandwidth - If we want
send data at 100 kbps
what is minimum SNR?
What is SNR?

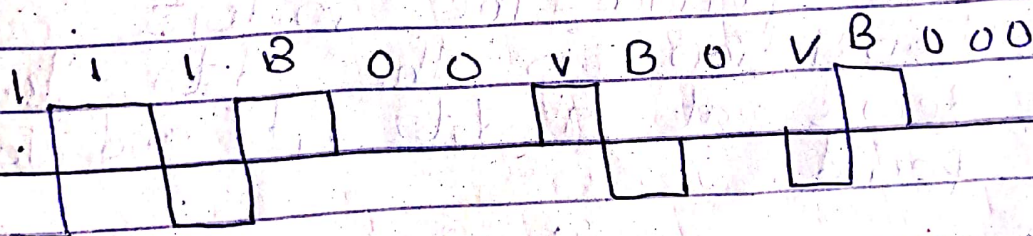
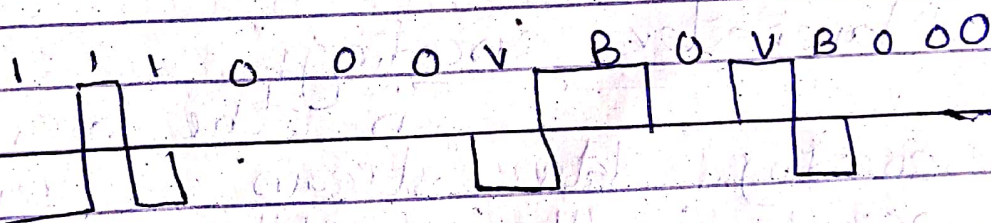
Ans.

We can use the
approximate formula:-

$$C = B (\text{SNR}_{\text{dB}} / 3) \text{ or } \text{SNR}_{\text{dB}} = (3C) / B$$

We can say that minimum
 $\text{SNR}_{\text{dB}} = 3 \times 100 \text{ kbps} / 4 \text{ kHz} = 75 \text{ dB}$

This mean that minimum
 $\text{SNR} = 10^{\text{SNR}_{\text{dB}} / 10} = 10^{7.5} \approx 3,162,2776 \text{ dB}$



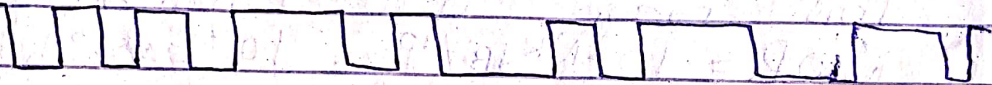
Q31

1) The waveform here belongs to a Manchester encoding with the data sequence.

Step to step solⁿ.

• Step 1:

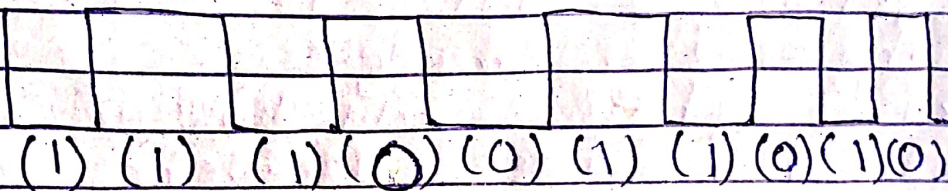
The given waveform is a Manchester encoded binary data stream.



Manchester encoding:

In the Manchester encoding data stream, a transition occurs in the middle of each bit period. The midbit transition in the data stream serves as a data bit and clock period.

• Step 2:



Q31-

M) Assume that the Primary HDLC Station - - - ? Assume error free operation.

Ans A primary maintained a separate logical link with each secondary station another link.

Combined station:-

Combined the feature of primary and secondary - A combined station may issue both commands and responses.

The line like configuration.
Unbalanced configuration:-

Consist of one primary and end or more secondary station and supports both full duplex and half duplex.

Balanced Configuration:-

Consist of two combine station and support both full duplex and half duplex.

NRML

used with an unbalanced carrying the primary may initiate data transfer for a secondary.

ABMI.

used with a carry.
 balanced either combined
 station may initiate
 transmission without
 receiving -

ARM₁-

used with s
 unbalanced carry - The
 secondary may initiate
 transmission without explicit
 pensis -

Handwritten scribbles and symbols, including a large stylized 'J' or 'L' shape and other markings.