

(11) How to calculate Bandwidth from given Transmission rate in bits Per Second?

Ans: The required bandwidth is related to bit rate and the modulation order M .

It is so that the double sided bandwidth

$w = \text{Symbol rate} = \text{bit rate} / \text{divide by the number of bit per symbol } n$. The number of bit per symbol is $= \log_2 M$

with m is $= \log_2 M$ modulation order so the bandwidth $= w = r_b / \log_2 M$

(b)
Q11) Give a definition of a service and a protocol. Use these definitions or any other discussion to illustrate the fundamental difference b/w a service and a protocol?

Ans: Service & Protocol :- This is a
" " " " (Computing)

Function that is provide
by one program or machine
for another.

Protocol \Rightarrow Protocol is a
"-"-"-" (Computing). a set of
formal rules describing how
to transmit or exchange
data especially across
network.

service and protocol discussion
on computer network

\Rightarrow Network is a set up
with protocol is hierarchy the
divide the communication task
into several layer. A
protocol is a set of
rules for communication
within a layer 'A' service
is what the layer provides
to the layer above it
through in interface protocol
at one layer unaware of
issues at another layer.

(Q2)

Ans 2) Formal Analysis Techniques of Network Protocols

=> To day's internet is becoming increasingly complex & fragile. Current performance centric techniques on network analysis & runtime verification have been inadequate in development of robust network

=> This talks surveys working on recent formal analysis techniques to aid in design, implementation & analysis of network protocols. There are four representative case studies to present classification and taxonomy of techniques such as (meta routing, Ycc, axiomatic formulation and Alloy based analysis.

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= Formal Method use for protocol.

=> Formal methods are a particular kind of mathematical based techniques that improve network software qualities with guranted correctness.

① Addressing (2) Routing (3) Forwarding

(1) Addressing =
"- - -" => Task is to prove target addressing schemes continuous to provide valid nodes of network

(2) Routing =
"- - -" => To verify BGP can efficiently discover loop free routing paths.

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(3) Forwarding =

" - " - " - " - "

$\Rightarrow \overline{10}$

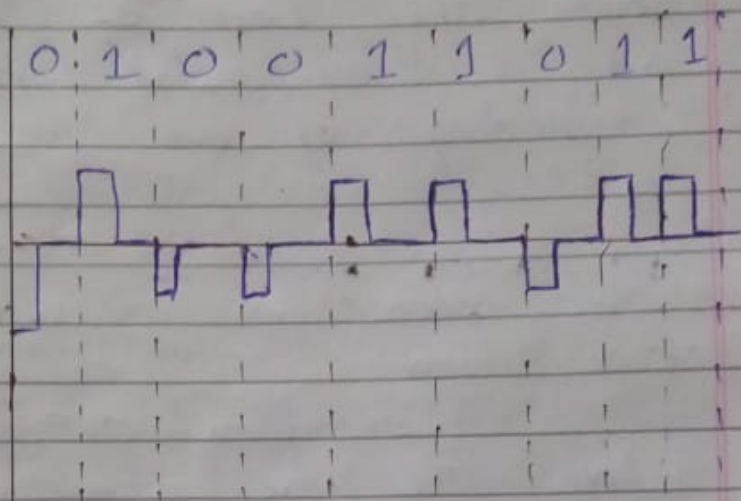
address various architectural
innovations of Forwarding operation

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Q(3) Draw The Line Code of Sequence 010011011 using polar manchester.

Sequence = 010011011

(a)
Ans



(b) Draw the Line of seq code of sequence 0111011100 using 2B1Q

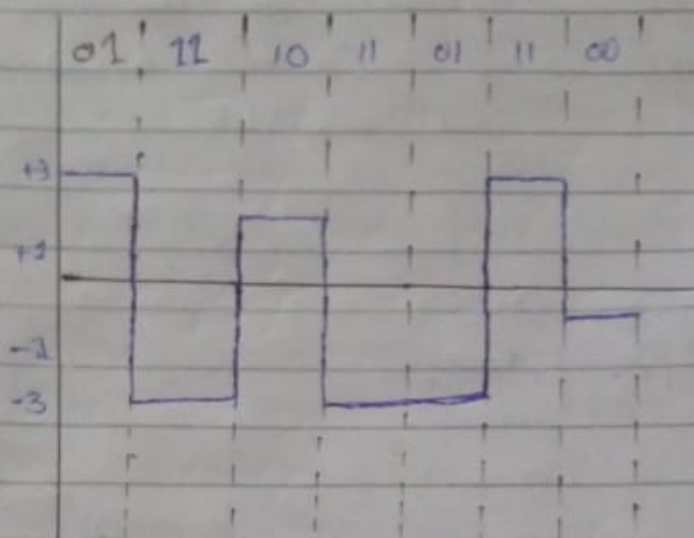
Ans.

Bits	Previous Level Positive	Previous Level negative
	Positive Level	Negative Level
00	+1	-1
01	+3	-3
10	-1	-1
11	-3	-3

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(a)
 (Q4) An analogue signal has a bit rate of 8000 bps and baud. How many data elements are carried by each signal element? How many signal elements do we need?

Ans -

Data

$$S = 1000$$

$$N = 8000$$

There is R and L are unknown. First of all we find the value of R and after that the value of L .

$$\text{Formula } \Rightarrow S = N \times \frac{1}{x}$$

$$x = \frac{N}{S} = \frac{8000}{1000} = 8 \text{ bit/ baud}$$

$$x = \log_2 L = L = 2^x$$

$$SO \Rightarrow \boxed{2^8 = 256}$$

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(b) (i) In digital Transmission The Receiver Clock is 0.3 Percent Faster Than The Sender Clock. How many extra bits per seconds does the receiver if the data rate is 1Mbs.

Solution \rightarrow A Normal speed when
11-11-11- The Sender and Receiver Clock are same. The ~~would~~ Sender would send 1,000,000 bites per second. But since the Sender Clock is 0.3 Percent faster than the Receiver Clock the data rate would be faster and the Sender will be able to send 1,003,000 bites per second.

Ques)

Ans) I have received an a 7 bit Hamming Code 1011011 . as (1) it's mean's The error is there and if it's even So the value of Parity bit is (0) . it's mean to detect whether there are any errors in this receiver hamming code.