

Date: _____

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ID = 6988

Paper = DATA & Computer Communication

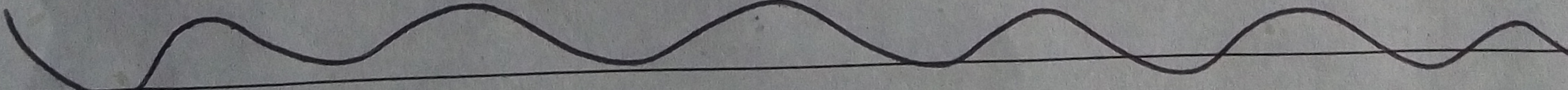
Exam = Final term.

Submitted to = Engr. Zubair Abbas

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Q No 1

How to calculate Bandwidth from given transmission time rate in bits per second?

Ans The required bandwidth is

related to bit rate and

the modulation order m .

\Rightarrow It is so that the double

Sided bandwidth $W = \text{Symbol rate} =$

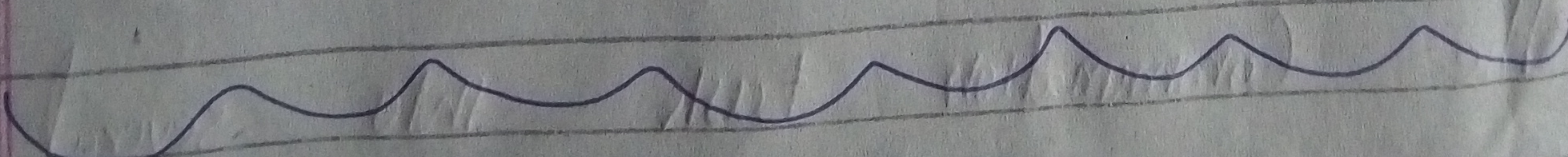
bit rate r_b / divide by the number

of bit per symbol n . The number

of bit per symbol is = Logam with

m is a QAM modulation order

So the bandwidth = ~~W~~ $W = r_b / \text{Logam}$



Q QNO = 1 PARI = 2

- Service / Protocol

The IS a (Computing)
a function that is provide by a one
program or machine for another
Protocol is (Computing) a set of
formal rules describing how to
transmit or exchange data ~~esp~~
especially across network.

=> Service and protocol discussion on
Computer Network

=> A Network is a set up with
protocol is hierarchy the divide
the communication tasks into several
layer. A protocol is a set
of rules for communication within

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Q1 Layer A Service is what
the Layer provides to the Layer
above it through an interface
Protocol at one Layer unaware
of issues at another Layer.

Q

Q No 2

Formal Analysis Techniques of Networks protocol.

To days internet is becoming increasingly complex and for precise current performance centric technique on network analysis and runtime verification have been involved in development of robust network.

→ This talks about working on recent formal analysis ~~test~~ techniques to aid in design implementation and of network protocol. There are four representative case studies to present

Classification and Taxonomy of

Techniques such as (multicast routing)

Alternative Formulation and

Alloy based Analysis

=> Formal method for protocol

Formal methods are a particular kind of mathematical based technique

That improve network software quality with guaranteed correctness

17 Addressing, Routing, forwarding

Addressing -7

Task is to prove

Target addressing schemes continue

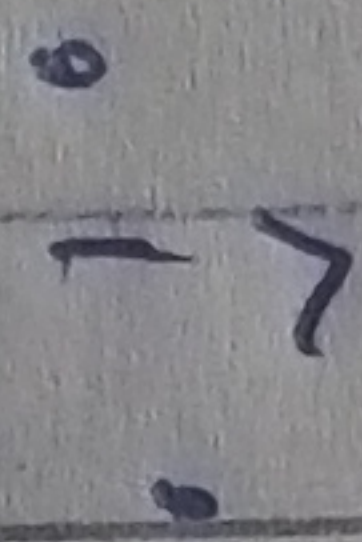
to provide valid nodes of

Network

Routing

To verify BGP can efficiently discover loop free routing paths

Forwarding

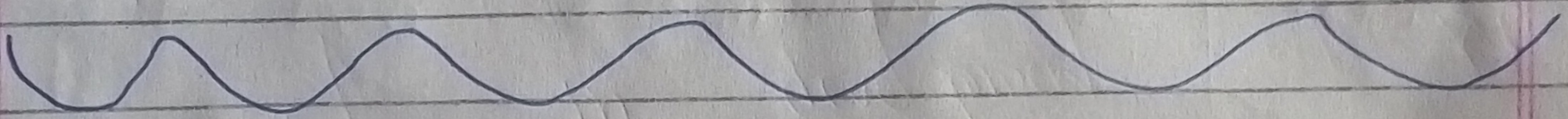
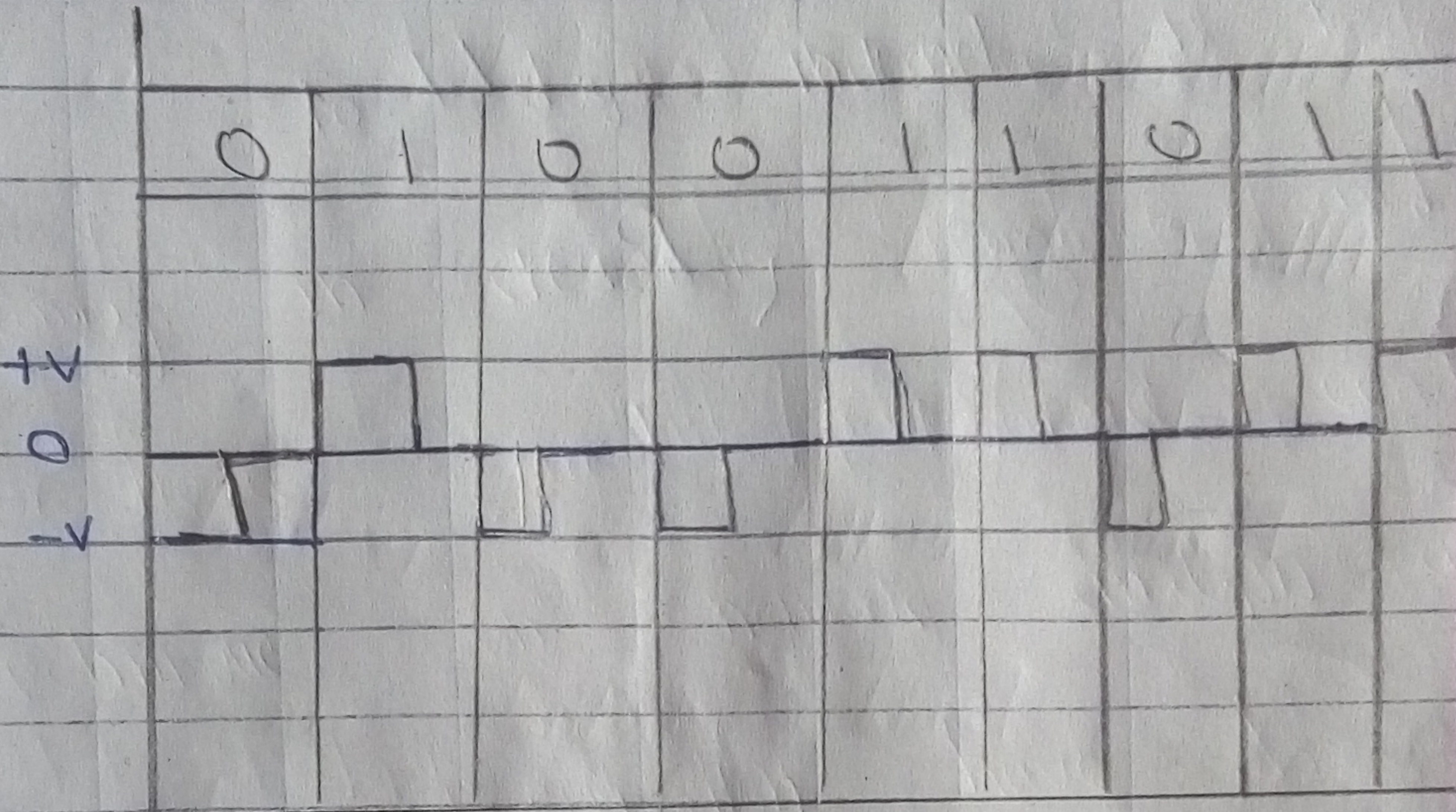


To address architectural

invariants of Forwarding operation

Q No 3 Part 1

⇒ 010011011 using Polar Manchester



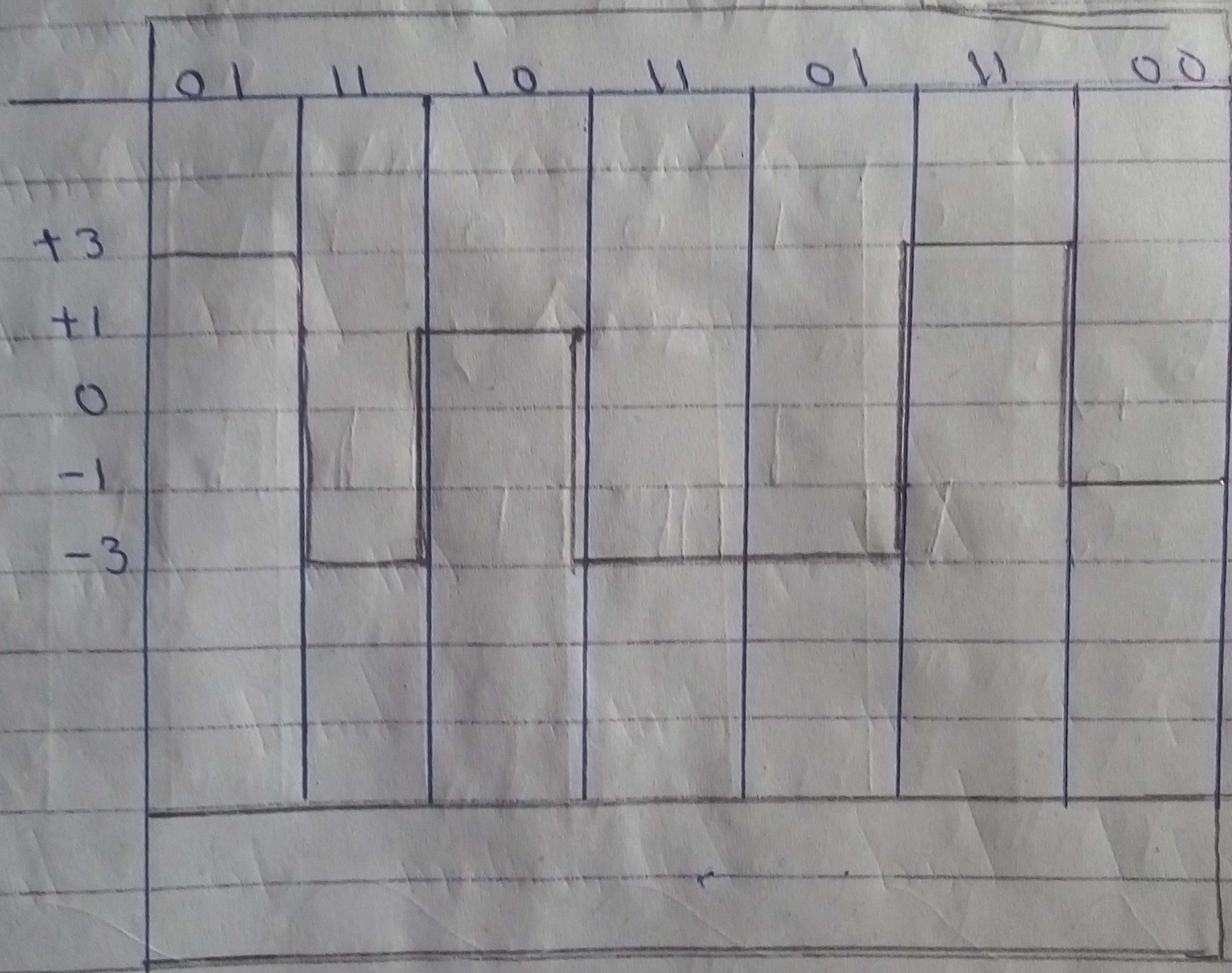
Part 2

0111101101100 using DBIQ

Bits	+V	-V
00	+1	-1
01	+3	-3
10	-1	+1
11	-3	+3

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⇒ Sequence = 01 11 10 11 01 11 00



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Q

No = 4 = PART 1

Given

$$S = 1000$$

$$N = 8000$$

and r and L are unknown. We first

find the value of r and then

value of L

Formulae.

$$S = N \times 1/r$$

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

$$r = \log_2 L = L = 2^r$$

$$2^8 = 256$$

Q Q No = 4 PART "2" = 1/2/17

Solution

A Normal speed when
the sender and receiver clocks
or same the sender would
send 1,000,000 bytes per second
But since the sender clock
is 0.3 percent faster than the
receiver clock the data rate
would be faster and the ~~send~~
~~sender~~ sender will be able to
send 1,003,000 bytes per second now

Q

Q No = 5

=> You have received a 7-bit

Hamming Code is 1011011

As 1 (which mean the error is

there) and if it even then the

value of parity bit is 0 (which

mean to detect whether there

are any errors in this receiver

Hamming Code

=> The receive data is 110101

$$2^b - 1 \geq m + 1, 2^3 - 1 \geq 4 + 3, 7 \geq 7$$

$$C_1 = 1011 \rightarrow \text{odd}$$

$$C_2 = 1001 \rightarrow \text{Even}$$

$$C_4 = 1101 \rightarrow \text{odd}$$

$$\text{Bit error} = 1 + 5 + 4 = 5$$

The Correct data = 1001011