



American International University- Bangladesh (AIUB)
Faculty of Engineering

Course Name: Data Communication
Semester: Spring 2022-23
Total Marks: 30

Course Code: COE 3201
Term: Mid
Submission Date: 4-03-2023

Course Outcome Mapping with Questions

Item	COs	POIs	K	P	A	Marks	Obtained Marks
Q1	CO4	P.a.1.C3	K5	P1		15	
Q2	CO4	P.a.1.C3	K5	P2		15	
Total:						30	

Student Information:

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Student ID: 20-42044-1

Section: J

Department: CSE

1. Your ID = AB-CDEFG-H. Convert the letter G into 8-bit ASCII code, where the 8-th bit can be considered as a zero. Illustrate the graph of the digital bit stream for the following scheme:

- Unipolar NRZ and Unipolar RZ
- Polar RZ, Polar NRZ-L, Polar NRZ-I
- Bipolar Manchester ('0' is low to high & '1' is high to low) and Bipolar Differential Manchester
- Bipolar AMI and Bipolar Pseudoternary
- Multiline Transmission (MLT-3), given that the last voltage level is zero and last non-zero level is positive

2. Compute the 8-bit data stream for each case depicted in figure 1. Assume, that the last signal level was negative.

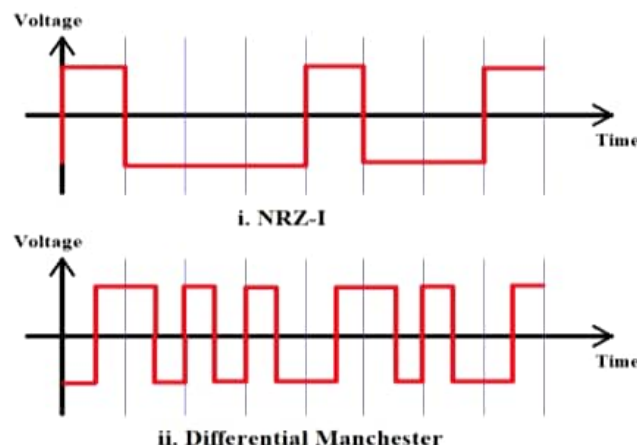


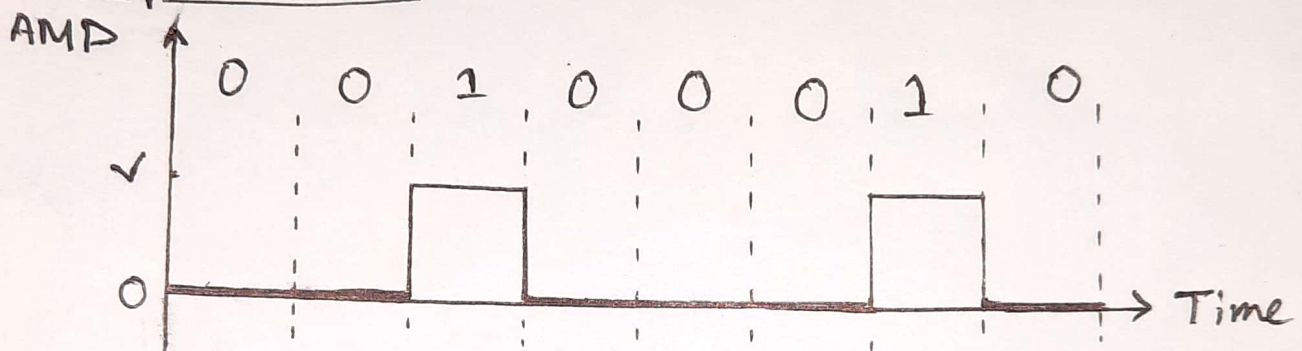
Figure: 1

Ans to the qus no: 01

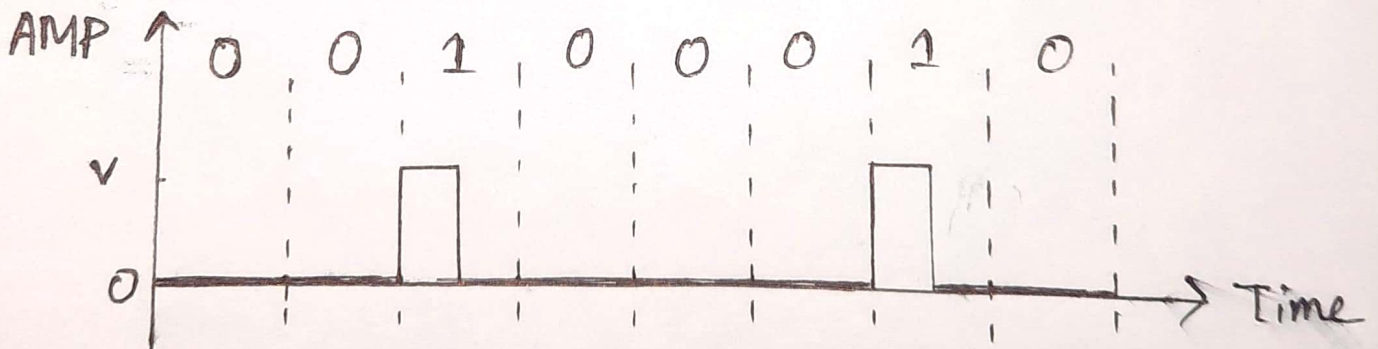
My ID: 20-42044-1

So, $G = 4$ (In decimal) [ASCII character]
= 34 (Hexadecimal)
= 00100010 (binary)

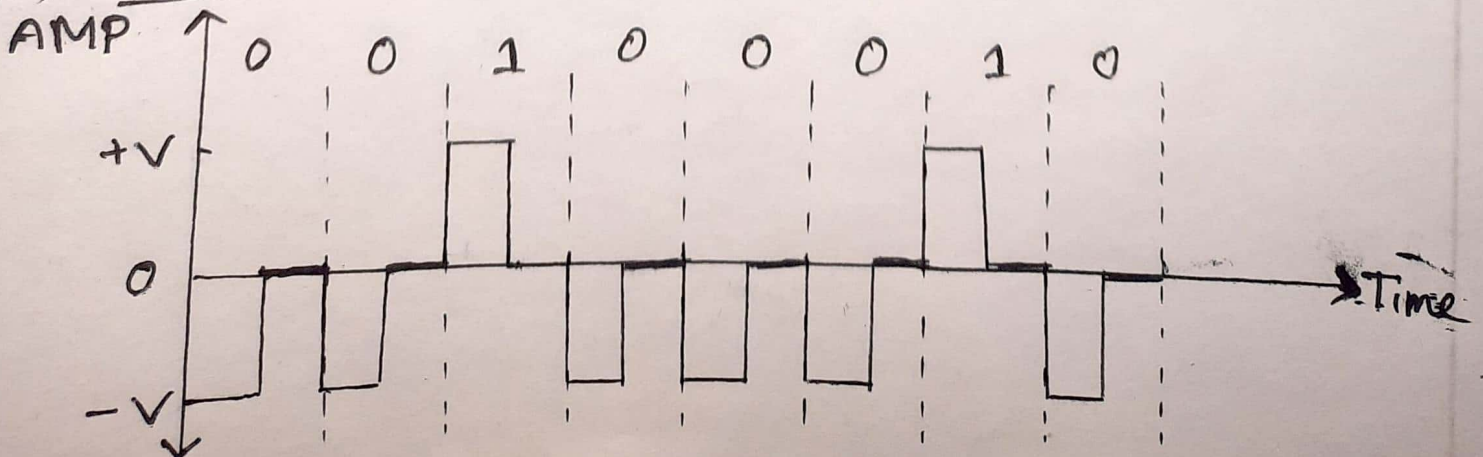
(I) Unipolar NRZ:



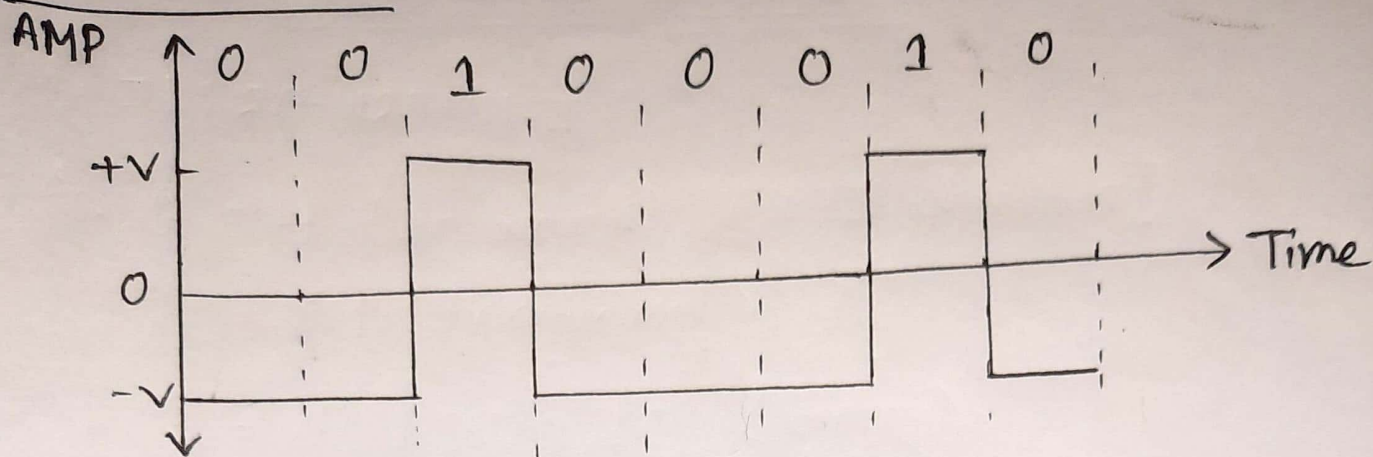
Unipolar RZ:



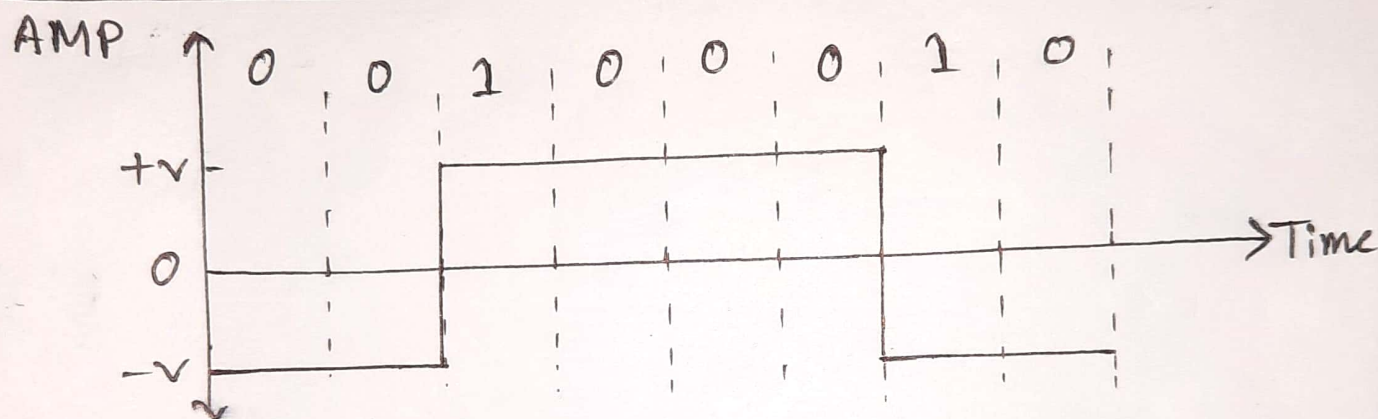
(II) Polar RZ:



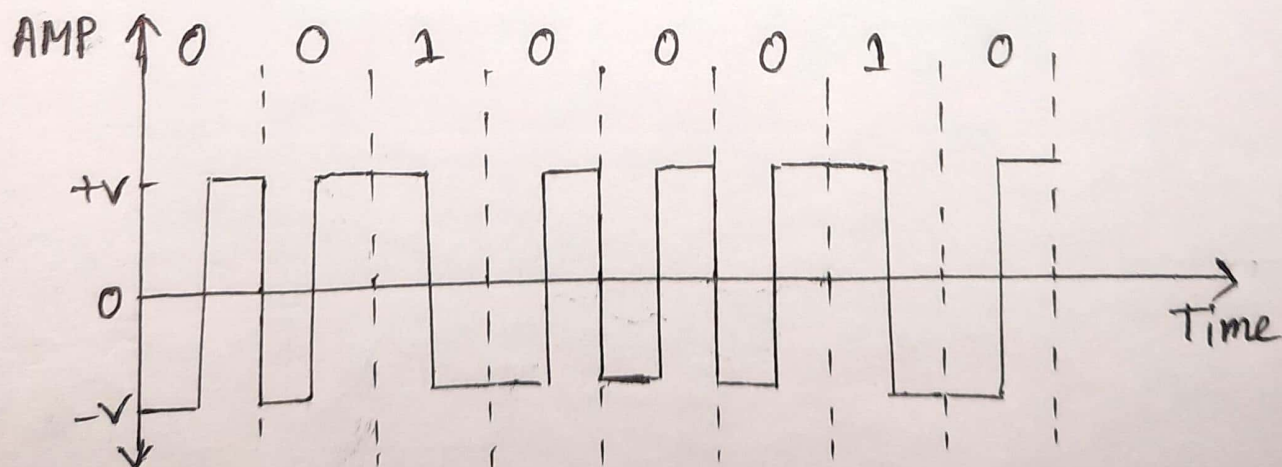
Polar NRZ-L:



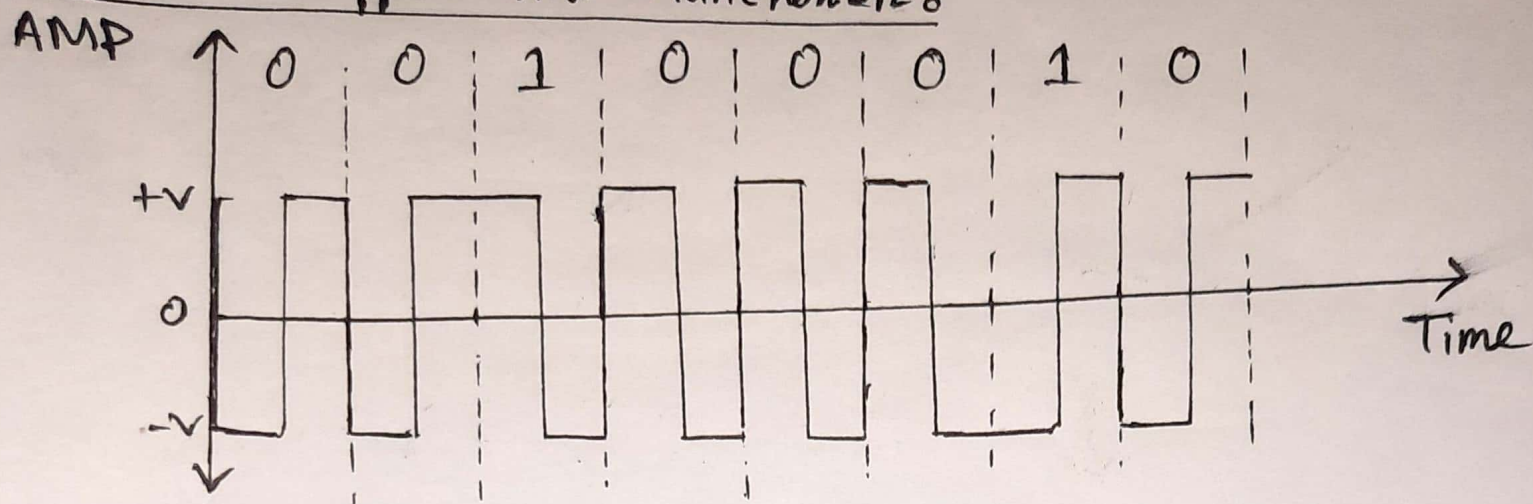
Polar NRZ-I:



(III) Bipolar Manchester: 0 is low to high = \lceil
1 is high to low = \rfloor

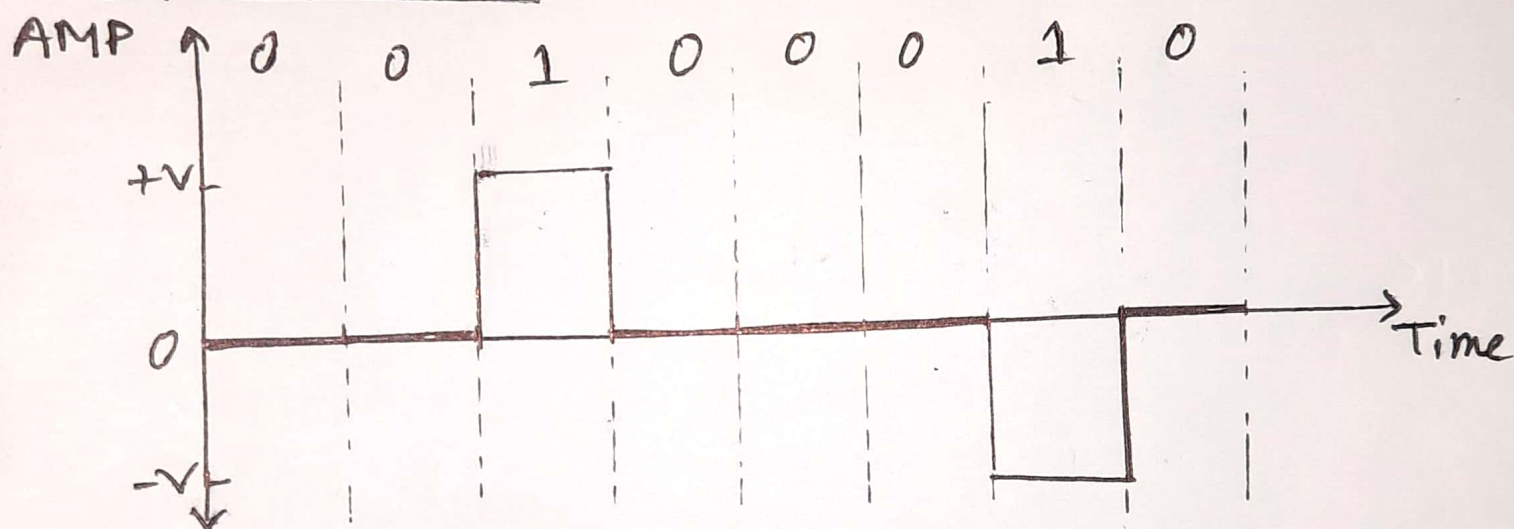


Bipolar Differential Manchester:

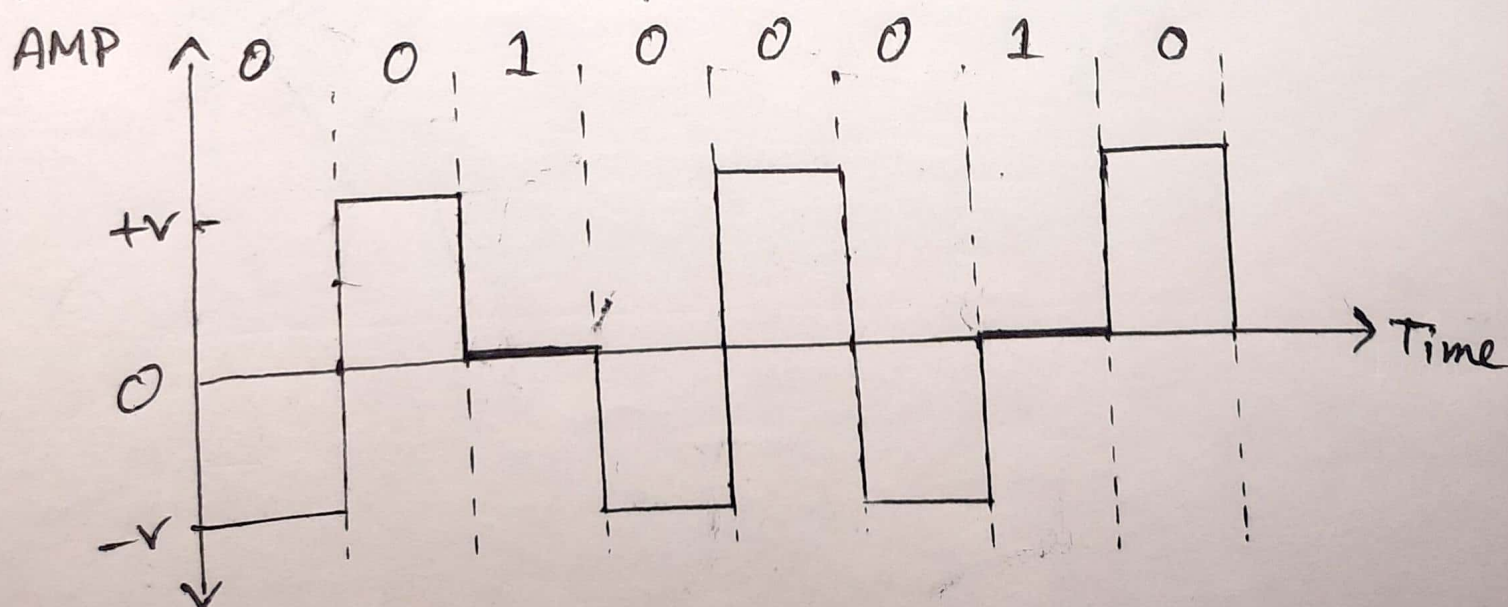


(iv)

Bipolar AMI:



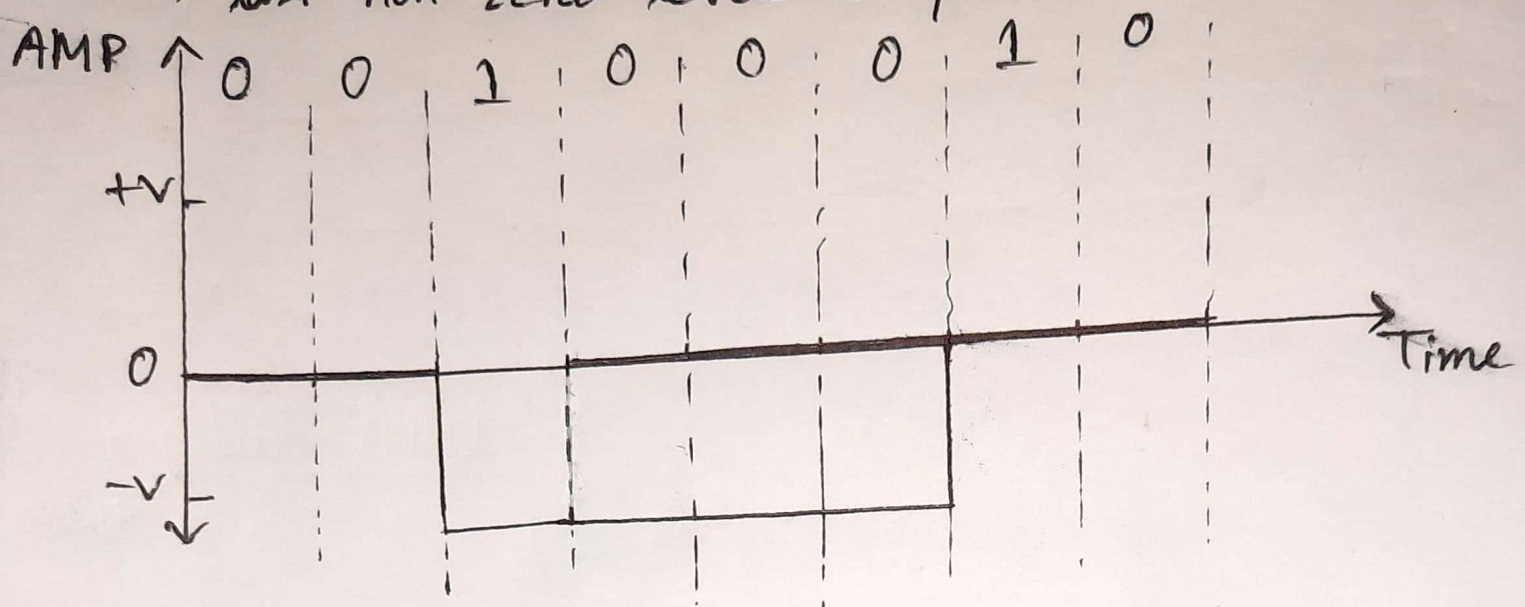
Bipolar Pseudoternary:



(v) Multiline Transmission (MLT-3):

→ last voltage level is zero

→ last non-zero level is positive



Ans to the qus no: 02

The 8-bit data stream is given below.

As mentioned, last signal level was negative

∴ data stream of NRZ-I : 1 1 0 0 1 1 0 1

∴ data stream of,

Differential Manchester : 1 1 0 0 1 1 0 1