SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution
Coimbatore-35

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECB301-ANALOG AND DIGITAL COMMUNICATION

III YEAR/ V SEMESTER

## UNIT 3 – DIGITAL COMMUNICATION

TOPIC – LINE CODES & PROPERTIES

LINE CODES

- A line code is the code used for data transmission of a digital signal over a transmission line. This process of coding is chosen so as to avoid overlap and distortion of signal such as inter-symbol interference.

- Line codes are used commonly in computer communication networks over short distances.

- Line coding is the process of converting digital data to digital signals. By this technique we converts a sequence of bits to a digital signal. At the sender side digital data are encoded into a digital signal and at the receiver side the digital data are recreated by decoding the digital signal.
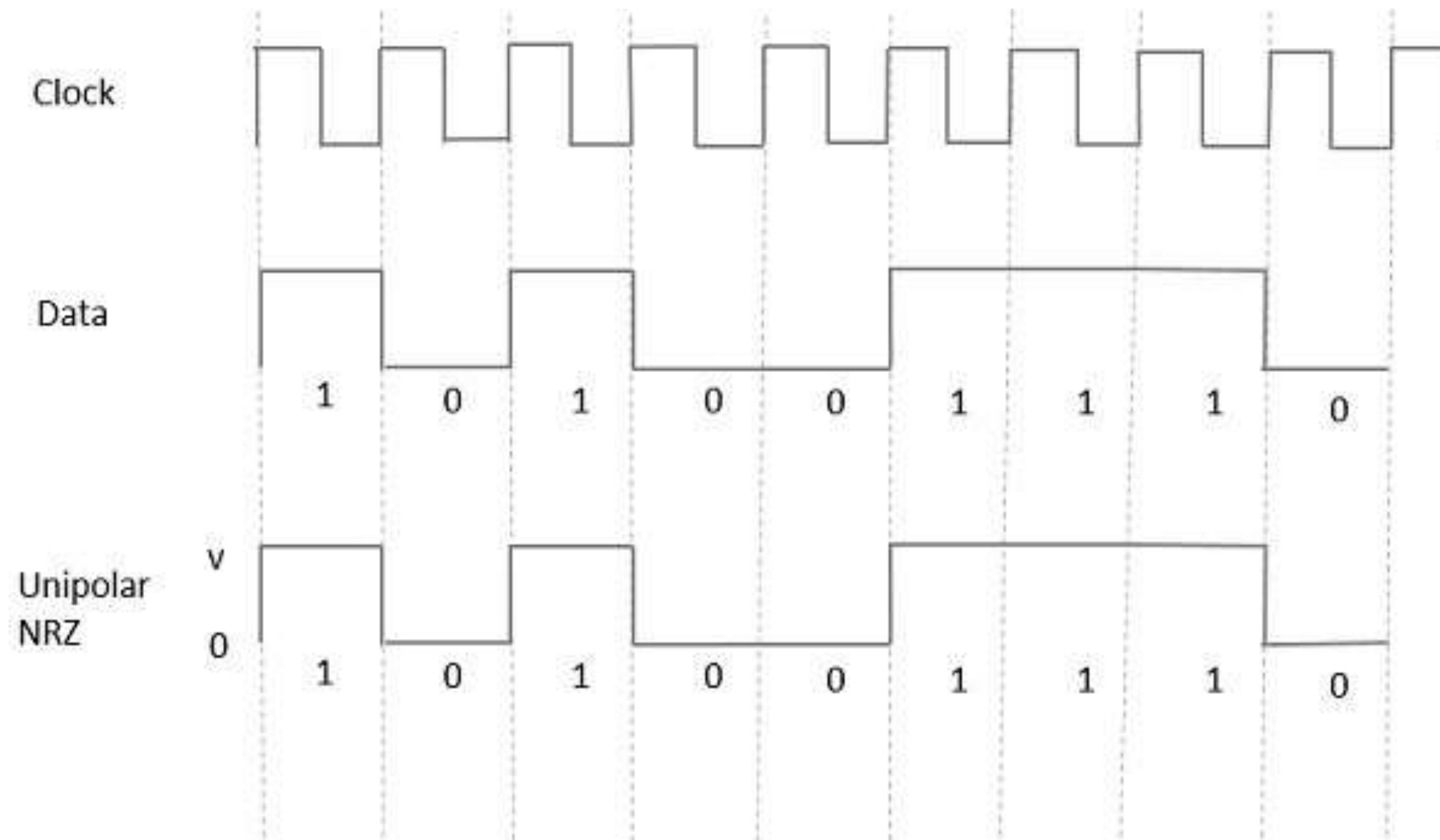
TYPES
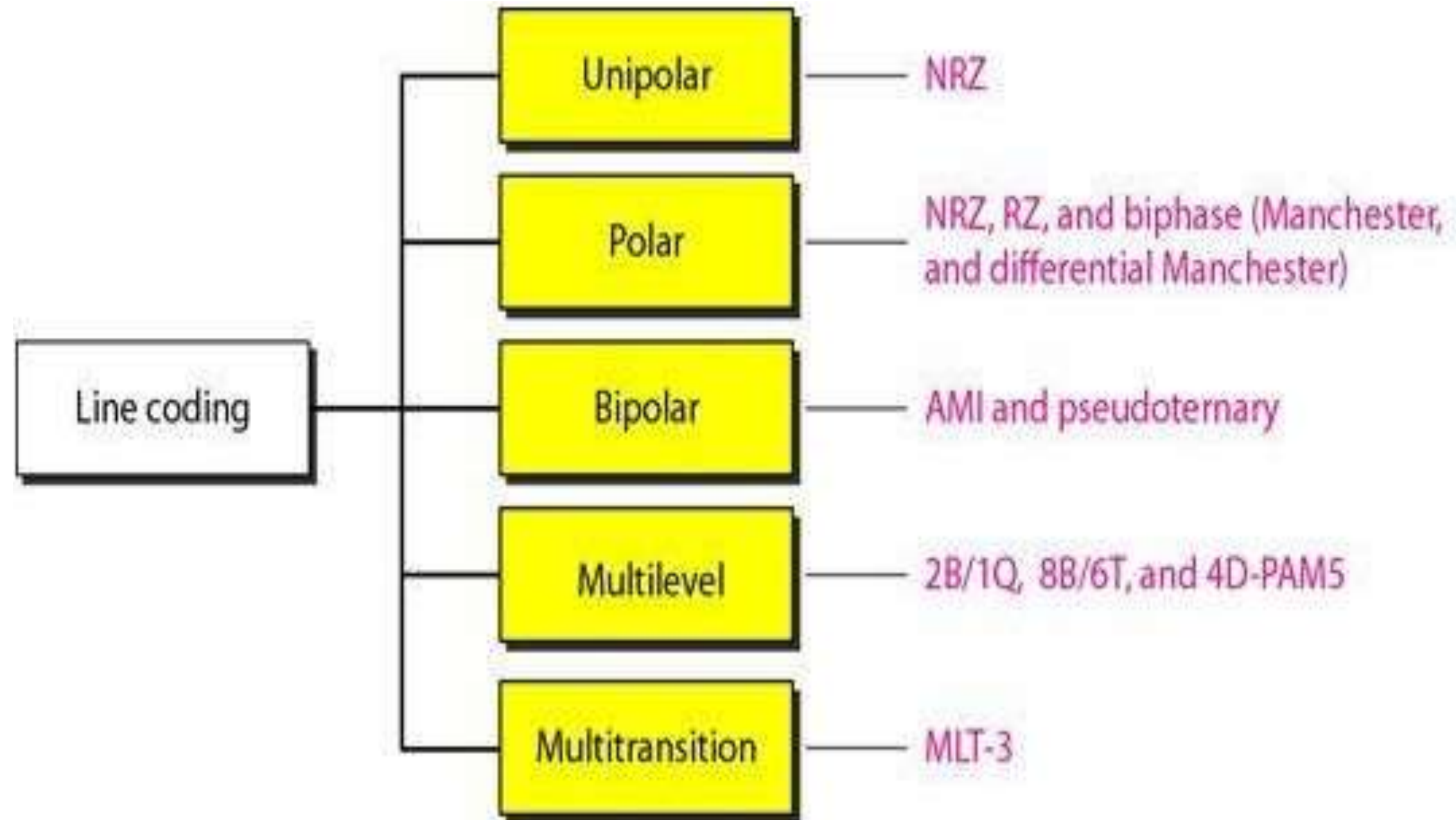
UNIPOLAR

All the signal levels are either above or below the axis. NRZ-Non Return to Zero=Uses More power compared to polar
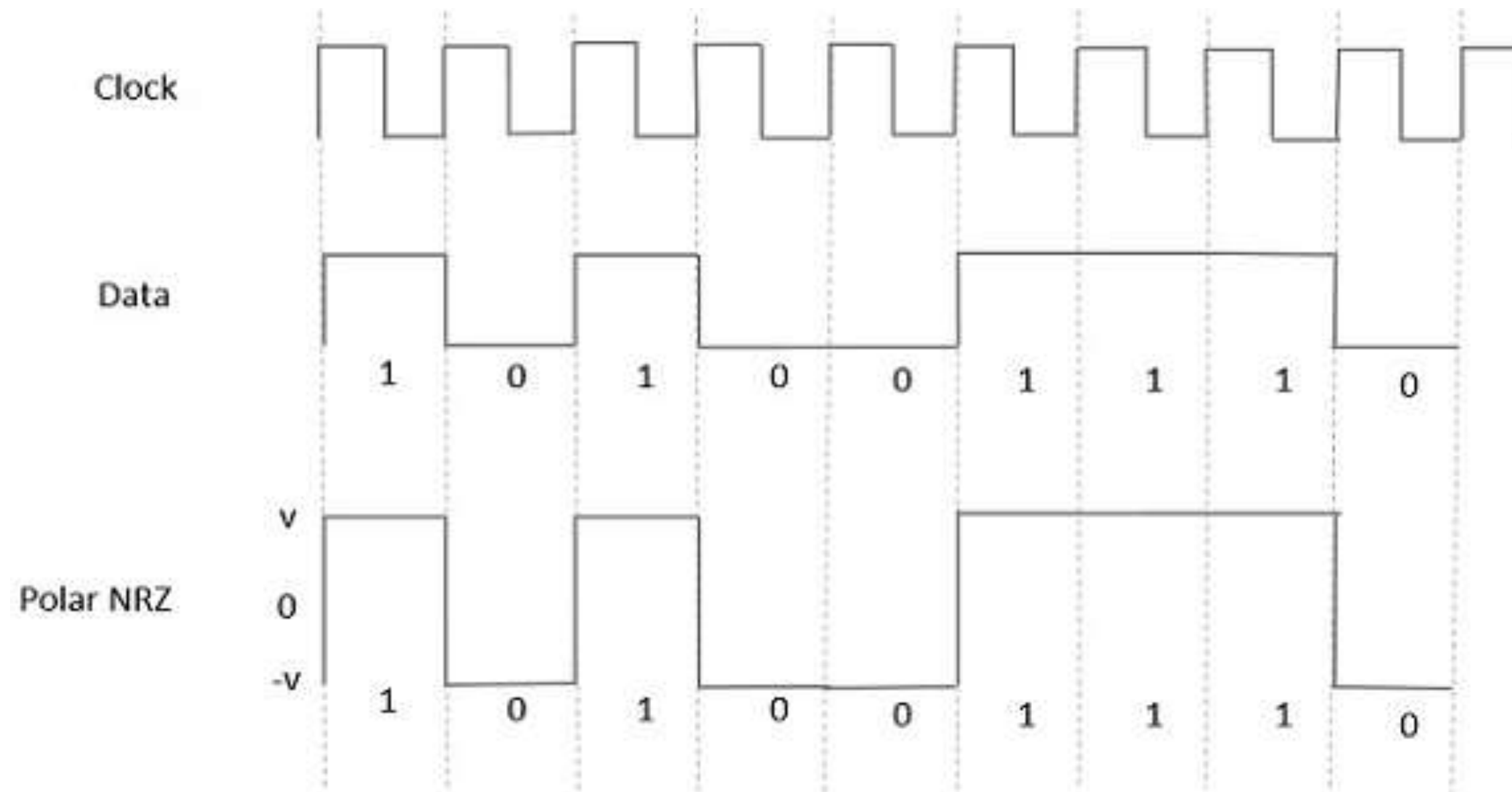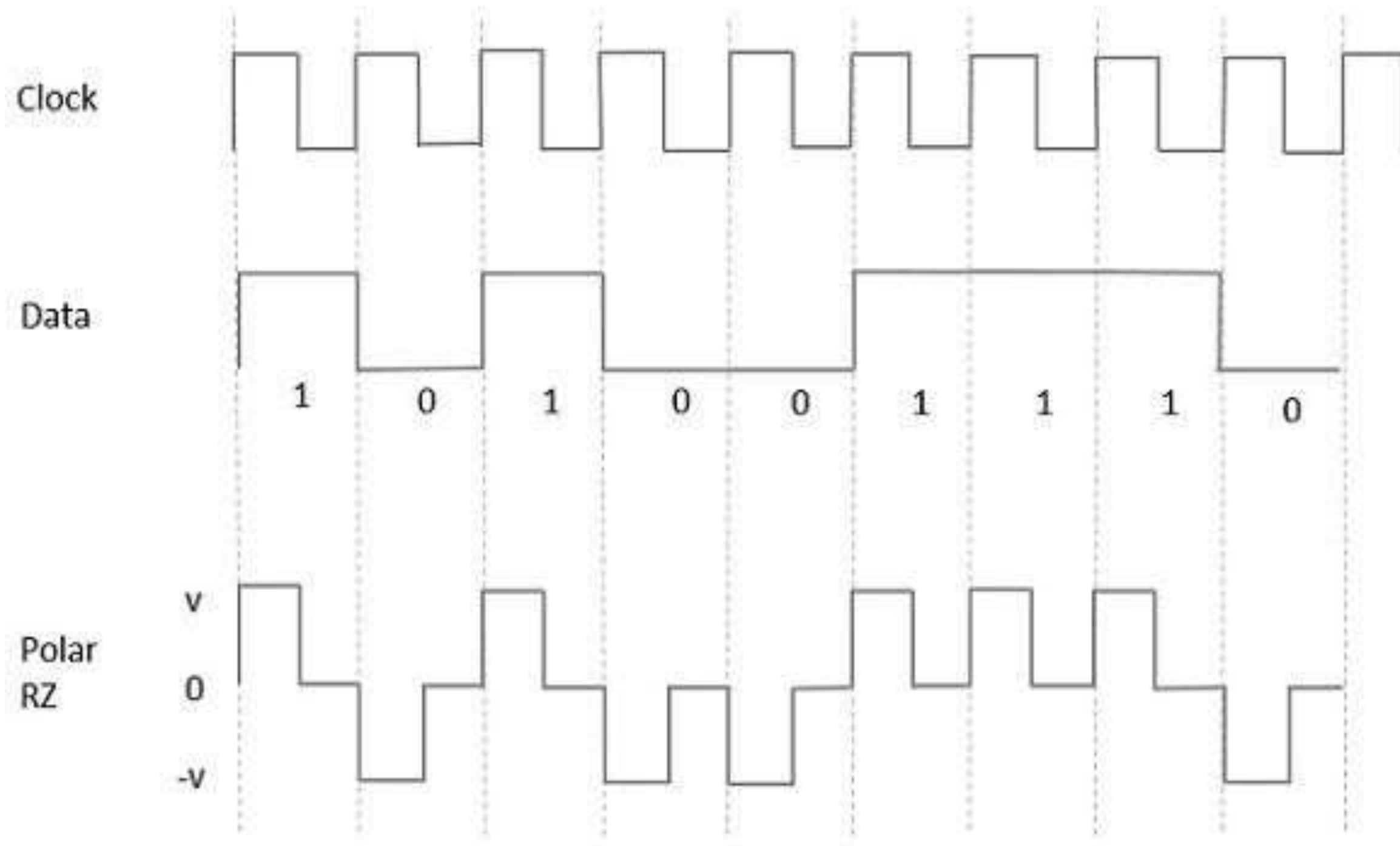
POLAR

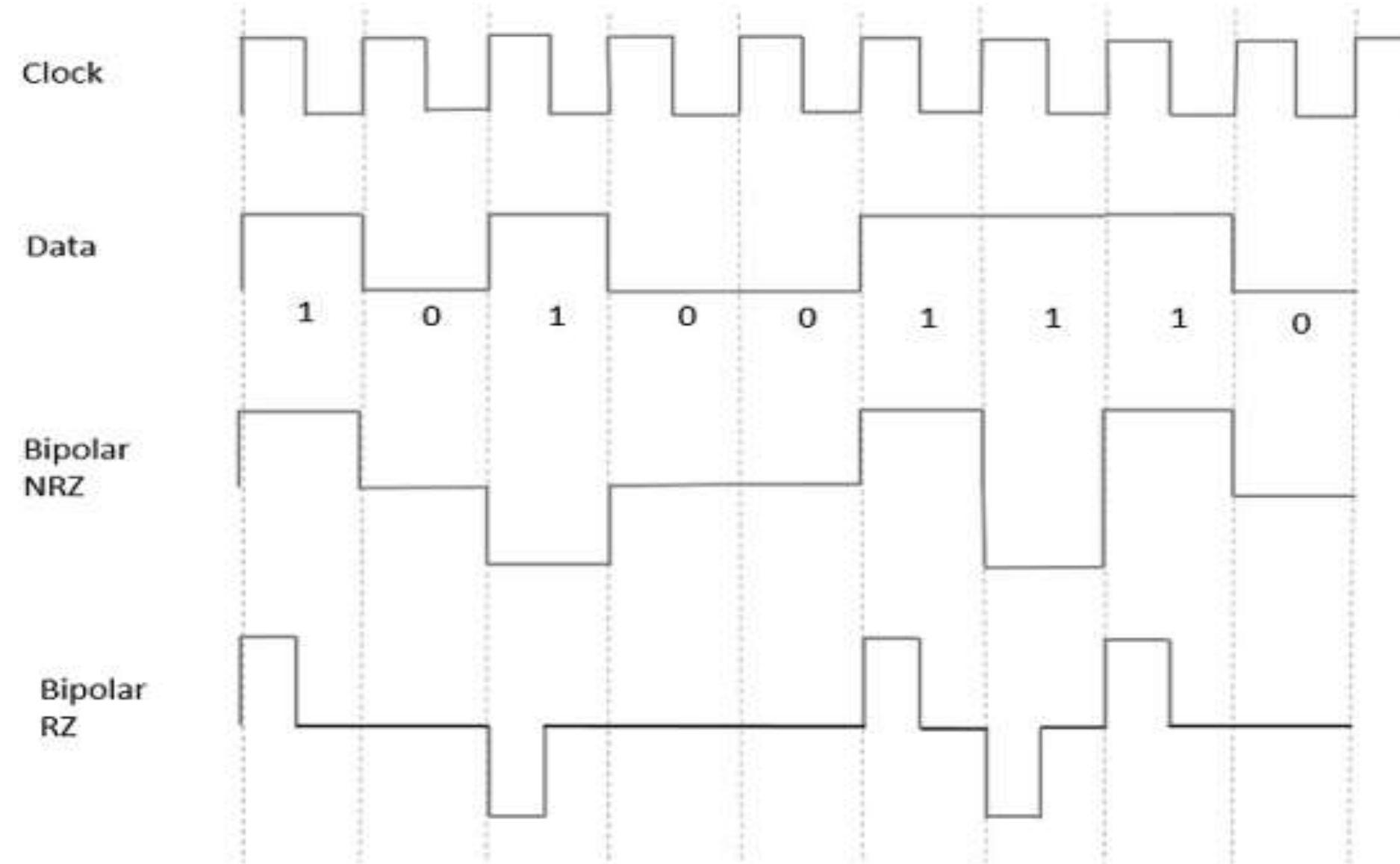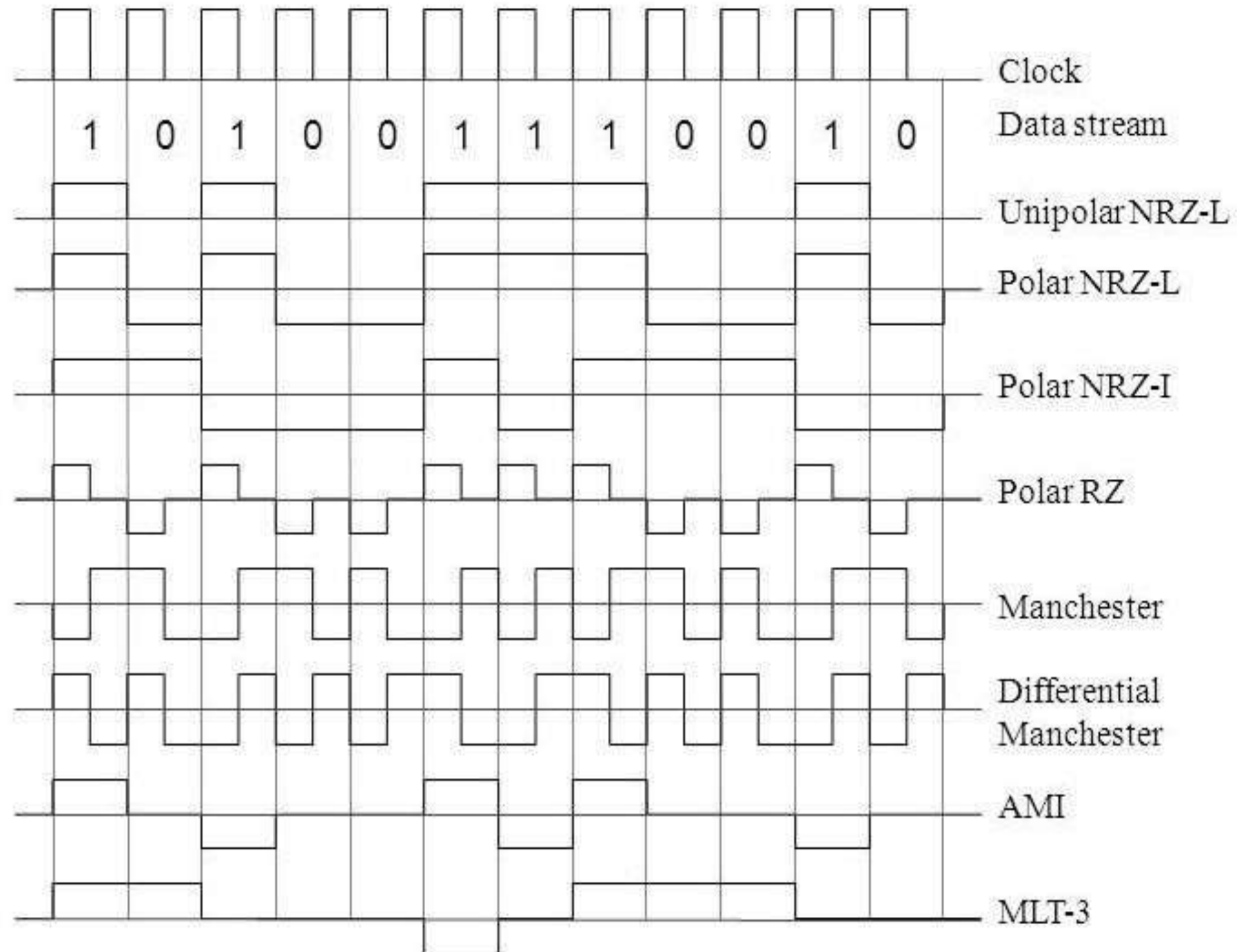The voltages are on the both sides of the axis.

POLAR RZ

BIPOLAR

There are three voltage levels positive, negative, and zero. The voltage level for one data element is at zero, while the voltage level for the other element alternates between positive and negative.

LINE CODES

PROPERTIES

- As the coding is done to make more bits transmit on a single signal, the bandwidth used is much reduced.

- For a given bandwidth, the power is efficiently used.

- The probability of error is much reduced.

- Error detection is done and the bipolar too has a correction capability.

- Power density is much favorable.

- The timing content is adequate.

- Long strings of **1s** and **0s** is avoided to maintain transparency.

PROPERTIES

- Self-synchronizing i.e., both receiver and sender clock should be synchronized.

- Immunity to noise and interference.

- Less complexity.

- No low frequency component (DC-component) as long distance transfer is not feasible for low frequency component signal.

THANK YOU