

Switching Theory & Logic Design Laboratory
CSE Department, IIT Kharagpur
Spring Semester 2022-23

Module 2: CMOS Characteristics

Assignment 5:

1. (i) Realize an inverter using CD 4007 IC.

(ii) Study the transfer characteristics of the inverter by varying the input voltage in steps of 0.5V and measuring both the input and output voltages with the help of an oscilloscope. You may have to increase the measurement resolution (like in steps of 0.1V) at the transition zone of the curve. Plot the characteristics on a graph paper.

(iii) Display the transfer characteristic by applying a saw-tooth signal at the input (use X-Y mode of the oscilloscope). Plot the characteristics on a graph paper.
2. Realize 3-input NAND and NOR gates using the CD 4007 IC. Verify the truth table and measure the rise and the fall times by switching the input between 000 and 111.

(1 day)