Lab #5 – Design of a Multiplexer/Demultiplexer

In this lab, you will design a 4 × 1 multiplexer and 1 × 4 de-multiplexer and verify their operations. A 4 × 1 multiplexer functions as a switch, connecting one of the four inputs, which is selected, to the output. A 1 × 4 de-multiplexer operates in reverse, connecting the input to the selected output.

1. Using Electronic WorkBench, design and implement a 4 × 1 multiplexer using NAND gates and verify its operation.
2. Using Electronic WorkBench, design and implement a 1 × 4 de-multiplexer using NAND gates and verify its operation.
3. Connect the 4 × 1 multiplexer to the 1 × 4 de-multiplexer, and verify sending a selected input to the selected output.
4. Implement the design on the breadboard and verify its operation.
5. Have T/A or instructor verify your circuit.

In preparation for this lab, design a multiplexer and de-multiplexer in your notebook.