Cal Poly Pomona
ECE Dept.

ECE 2300L   **Lab # 1**   **Dr. Rafi**

Prelab

1. **Design a combinational circuit that implements an exclusive- OR (XOR) function and an equivalence function using a minimum number of NAND gates. Your circuit should have two outputs. Draw a schematic of your circuit.**
2. **Draw the pin assignments and the truth table of the NAND gate from the Data book.**
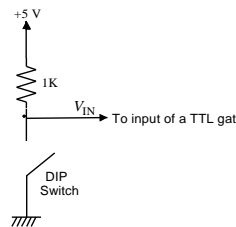3. **Obtain an XOR chip from the Data book and draw the pin assignments and the truth table.**

LAB

Construct a XOR and equivalence circuit that you designed in the prelab. Demonstrate the operations of the circuit for all output combinations.
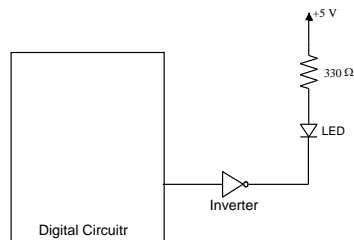
All inputs should be obtained from DIP switches, as shown below:

For TTL

For TTL

All outputs should be displayed with an LED as follows:

POSTLAB
1. **Why do you need 330 ohm resistor for the LED?**
2. **Name two applications of XOR logic operations.**