INTRODUCTION TO BASIC LOGIC GATES

Learning Objective:

Practice implementing and verifying basic logic gates.

Pre-Lab:

None

Laboratory:

Procedure you need follow to complete and verify the truth table for all the logic gates:

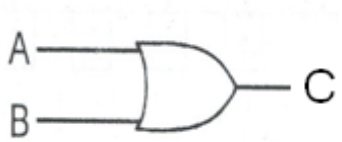
1. **Connect the NI ELVIS board with the power supply**
2. **Mount the corresponding 74LS…..IC on the board.**
3. **Connect the IC first by connecting pin 14 to +5 V and pin 7 to GND.**
4. **Wire the circuit according to the diagram by consulting the corresponding gate ICs data sheet.**
5. **Apply all the combinations of inputs and observe the output on the LED to complete and verify the truth tables of the gates.**

1. Check the operation of OR gate (IC 74LS32)

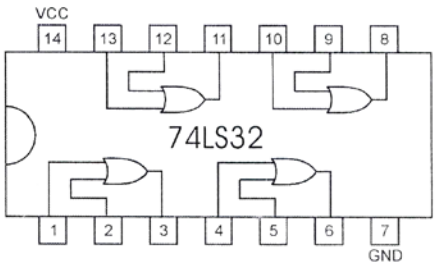
Equipment Required:

1. 74LS32

Symbolic diagram:



Pin Configuration:



Truth Table:

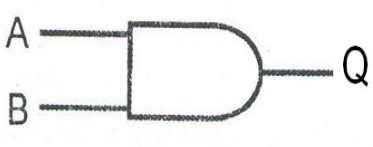
Input		Output
A	**B**	**C**

Check the operation of AND gate(IC 74LS08)

Equipment Required:

2. 74LS08

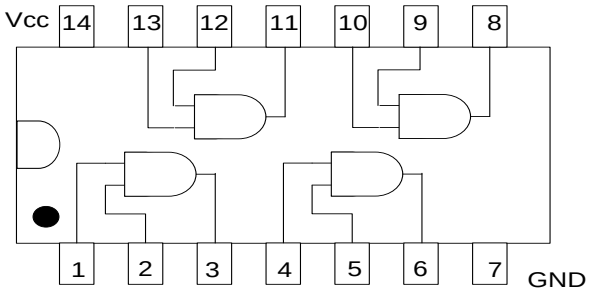
Symbolic diagram:



Truth Table:

Input		Output
A	**B**	**Q**

Pin Configuration:



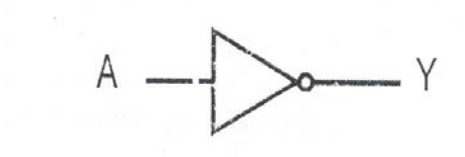
Quad 2-input AND gate 7408

Check the operation of NOT gate (IC 74LS04)

Equipment Required:

1. 74LS04

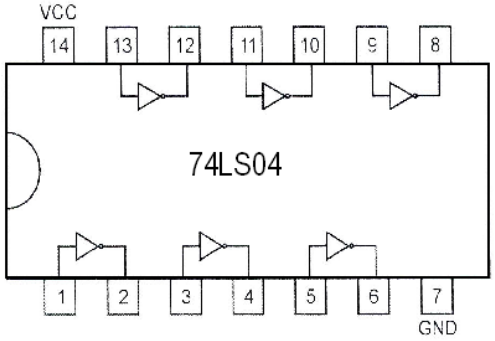
Symbolic diagram:



Truth Table:

Input	Output
A	**Y**

Pin Configuration:



Check the operation of NOR gate (IC 74LS02)

Equipment Required:

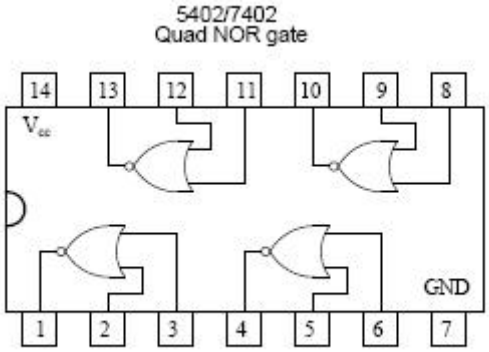
3. 74LS02

Symbolic diagram:

Truth Table:

Input		Output
A	**B**	**C′**

Pin Configuration:

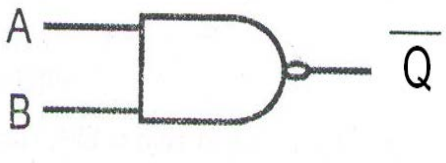


Check the operation of NAND gate(IC 74LS00).

Equipment Required:

4. 74LS00

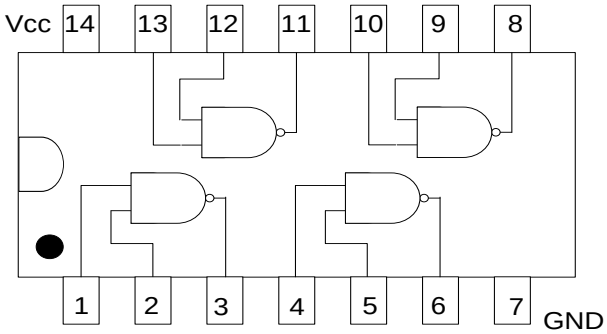
Symbolic diagram:



Truth Table:

Input		Output
A	**B**	**Q′**

Pin Configuration:

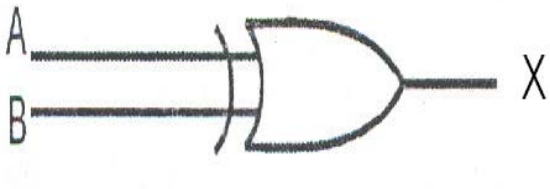


Quad 2-input NAND gate 7400

Check the operation of XOR gate (IC 74LS86)

Equipment Required:

5. 74LS86

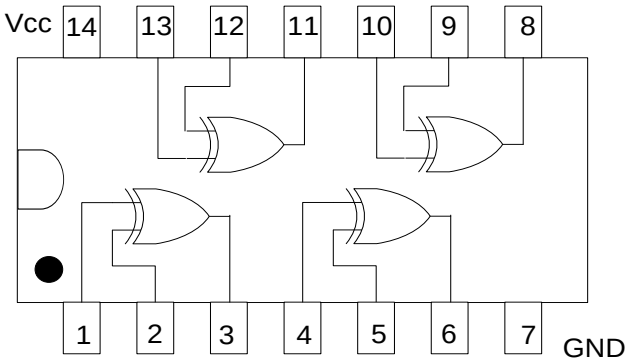


Symbolic diagram:

Truth Table:

Input		Output
A	**B**	**X**

Pin Configuration



Quad 2-input XOR gate 7486

Conclusion:

Lab performed on (date): _____ Signature: _____

Checked by: _____ Date: _____

Marks Awarded: _____