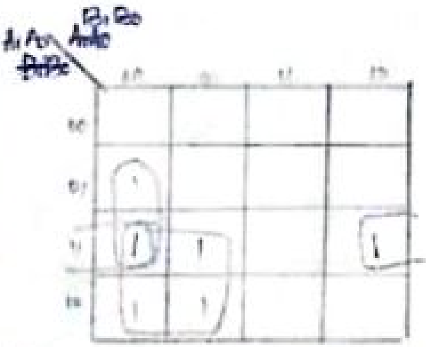
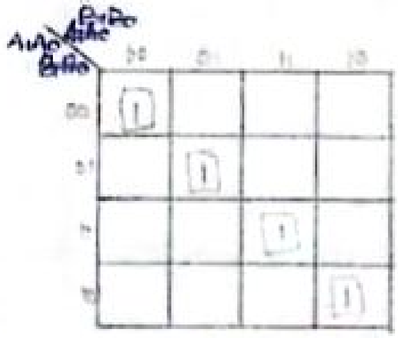
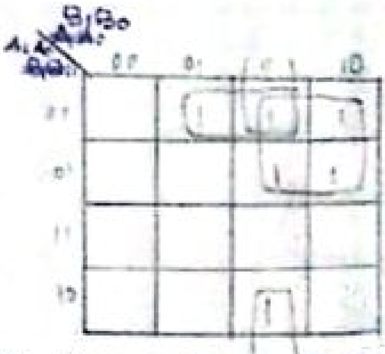
Input				Output		
A_1	A_0	B_1	B_0	$A>B$	$A=B$	$A<B$
0	0	0	0	0	1	0
0	0	0	1	0	0	1
0	0	1	0	0	0	1
0	0	1	1	0	0	1
0	1	0	0	1	0	0
0	1	0	1	0	1	0
0	1	1	0	0	0	1
0	1	1	1	0	0	1
1	0	0	0	1	0	0
1	0	0	1	1	0	0
1	0	1	0	0	1	0
1	0	1	1	0	0	1
1	1	0	0	1	0	0
1	1	0	1	1	0	0
1	1	1	0	1	0	0
1	1	1	1	0	1	0







$G_1 = \bar{A_1}B_1 + \bar{A_1}\bar{A_0}B_0 + \bar{A_0}B_0B_1$

$= A_0B_1 + \bar{A_0}B_0(\bar{A_1}+B_1)$

$= A_1B_1 + \bar{A_0}B_0(A_1B_1 + \bar{A_1}\bar{B_1} + B_1\bar{A_1} + B_1A_1)$

$E = \bar{A_1}\bar{A_0}\bar{B_1}\bar{B_0} + \bar{A_1}A_0\bar{B_1}B_0 + A_1A_0B_1B_0 + A_1\bar{A_0}B_1\bar{B_0}$

$= \bar{A_1}\bar{B_1}(\bar{A_0}\bar{B_0} + A_0B_0) + A_1B_1(\bar{A_0}\bar{B_0} + A_0B_0)$

$L = A_1\bar{B_1} + A_0\bar{B_1}\bar{B_0} + A_1A_0\bar{B_0}$

$= A_1\bar{B_1} + A_0\bar{B_0}(A_1\bar{B_1} + \bar{A_1}\bar{B_1} + A_1B_1 + A_1\bar{B_1})$

$G_1 = \bar{A_1}B_1 + \bar{A_0}B_0(A_1 \odot B_1)$

$E = (A_1 \odot B_1)(A_0 \odot B_0)$

$L = (A_1\bar{B_1}) + A_0\bar{B_0}(A_1 \odot B_1)$

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2. BIT BINARY COMPARATORS

AIM

To verify the truth table of two bit comparator using logic gates.

COMPONENTS REQUIRED

IC 7486, IC 7404, IC 7408 etc

THEORY

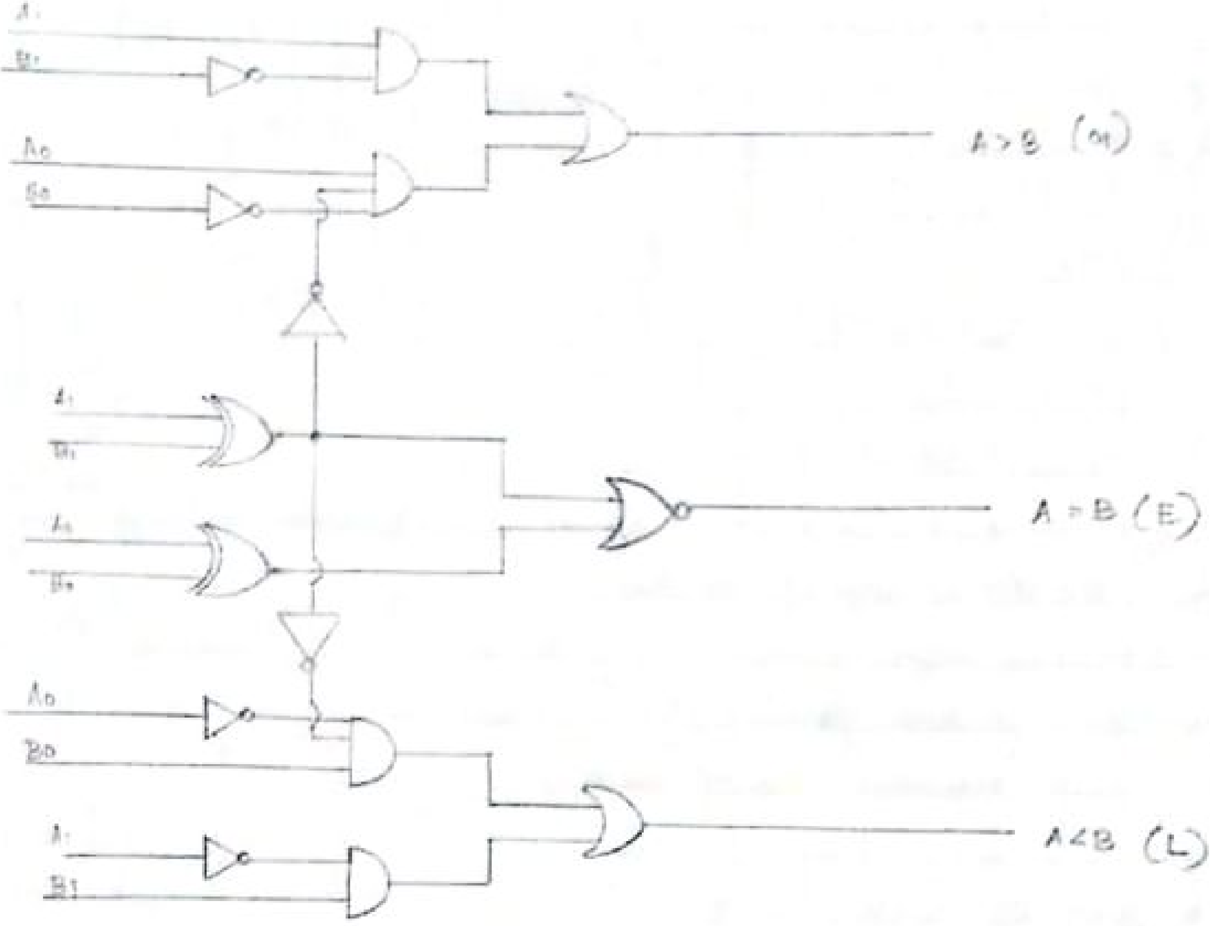
Digital binary comparators are made up of AND, NOR and NOT gates that compare the digital signals at their input terminals and produces an output depending upon the condition of the inputs. It produces an output ~~depe~~ one of three possible outputs based on if the input is less than, greater than or equal to each other

A comparator compares a variable or unknown number against a constant or known value and produces an output depending upon the result.

The binary number A and B will be equal if all the pairs of significant digits of both the numbers are equal.

In order to determine the greater of 2 binary numbers, we inspect the relative magnitude of pairs of significant digits, starting from the most significant bit, gradually producing towards lower significant bits until an inequality is found. When it is found, if the corresponding bit of A is 1 and B is 0, we conclude A>B. If is ~~the~~ ~~pr~~ opposite to we conclude B>A.

Teacher's Signature:



2- bit comparator

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PROCEDURE

1. Verify the gates
2. Make the connections as per circuit diagram
3. Switch on Vcc
4. Applying input check for the output
5. Tabulate the output readings

RESULT

Verified the truth table of 2 bit comparator using logic gates.

Teacher's Signature