CLASS: S.E. E &TC **SUBJECT: DC**

ROLL NO.: 22119 **DATE: 05/12/2020**

TITLE: Study of IC-74LS85 as a magnitude comparator

PRE-REQUISITES FOR EXPT. : IC-74LS85, truth table for 1 bit and 2 bit comparator.

OBJECTIVE :

1. Design and Implement 1 bit comparator using logic gates.
2. Design and Implement 2 bit comparator using logic gates.
3. Verify the function table and implement 4 bit comparator using IC-74LS85.
4. Design and Implement 8 bit, 7 bit and 6 bit comparator using IC-74LS85.
5. Design and Implement 5 bit comparator using single IC-74LS85 and logic gates.

APPARATUS : : 7486, 7432, 7408, 7404 ,Bread board, LEDs and connecting wires.

THEORY: A magnitude digital Comparator is a combinational circuit that compares two digital or binary numbers in order to find out whether one binary number is equal, less than or greater than the other binary number. We logically design a circuit for which we will have two inputs one for A and other for B and have three output terminals, one for A > B condition, one for A = B condition and one for A < B condition.

PROCEDURE:

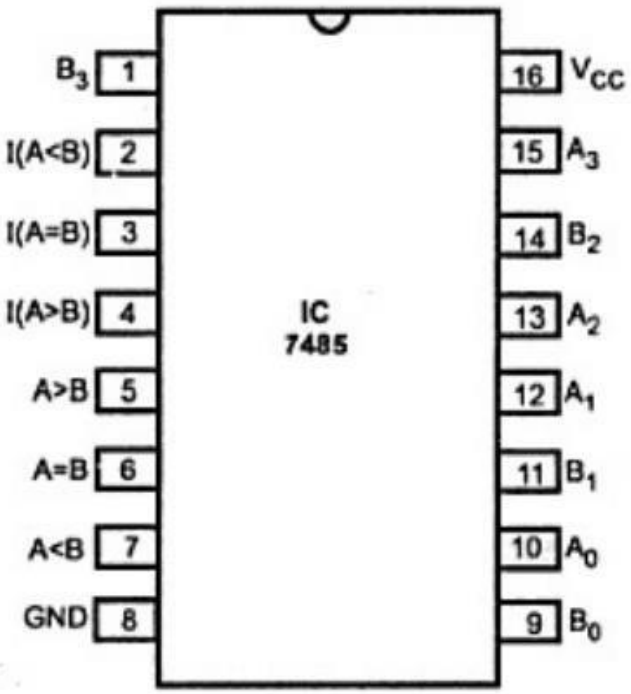
1. Make the connections as per the Logic circuit of 1-bit comparator using IC74LS85 and Verify its Truth Table.

2. Make the connections as per the Logic circuit of 2

bit comparator using IC74LS85 and Verify its Truth Table

3. Make the connections as per the Logic circuit of 4-bit comparator using IC74LS85 and Verify its function Table.
4. Make the connections as per the Logic circuit of 8-bit, 7-bit, 6-bit comparator using IC74LS85 and Verify its function Table.
5. Make the connections as per the logic circuit of 5-bit comparator using IC-74LS85 and logic gates.

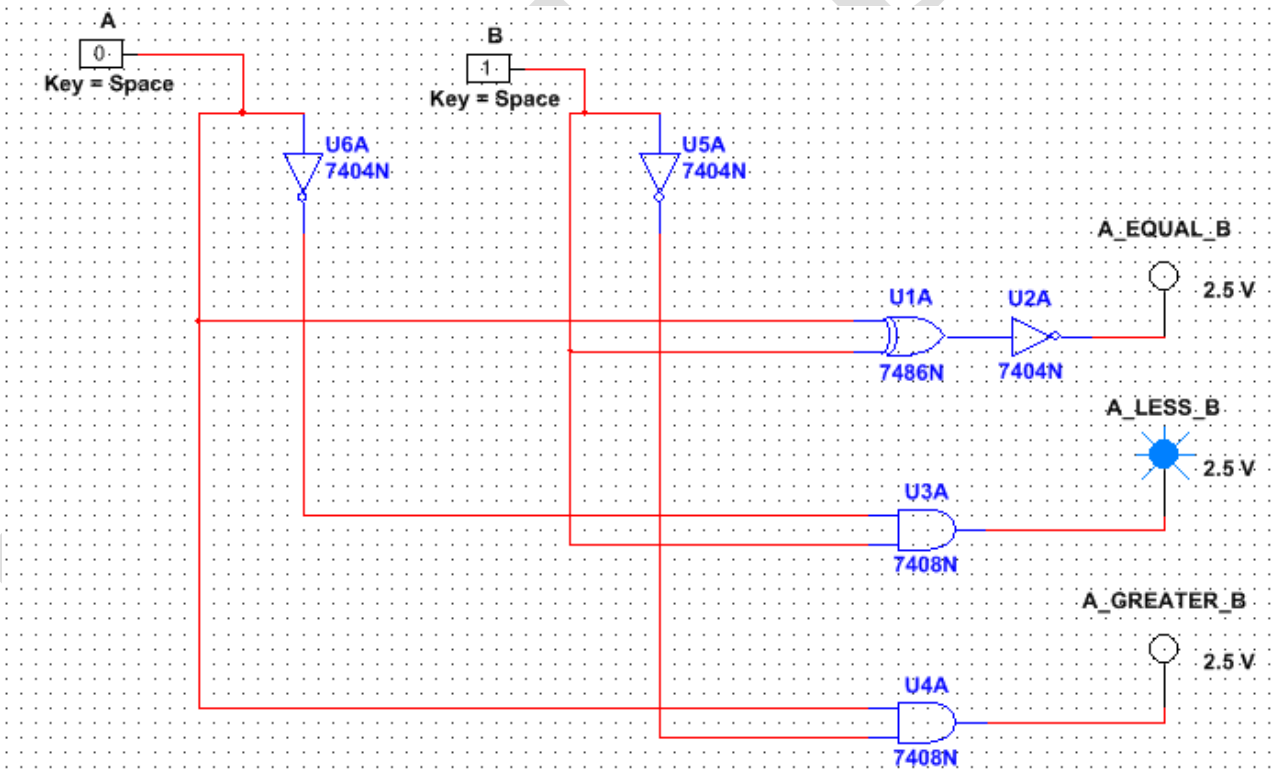
PIN Diagram:



(a) Pin diagram (IC 7485)

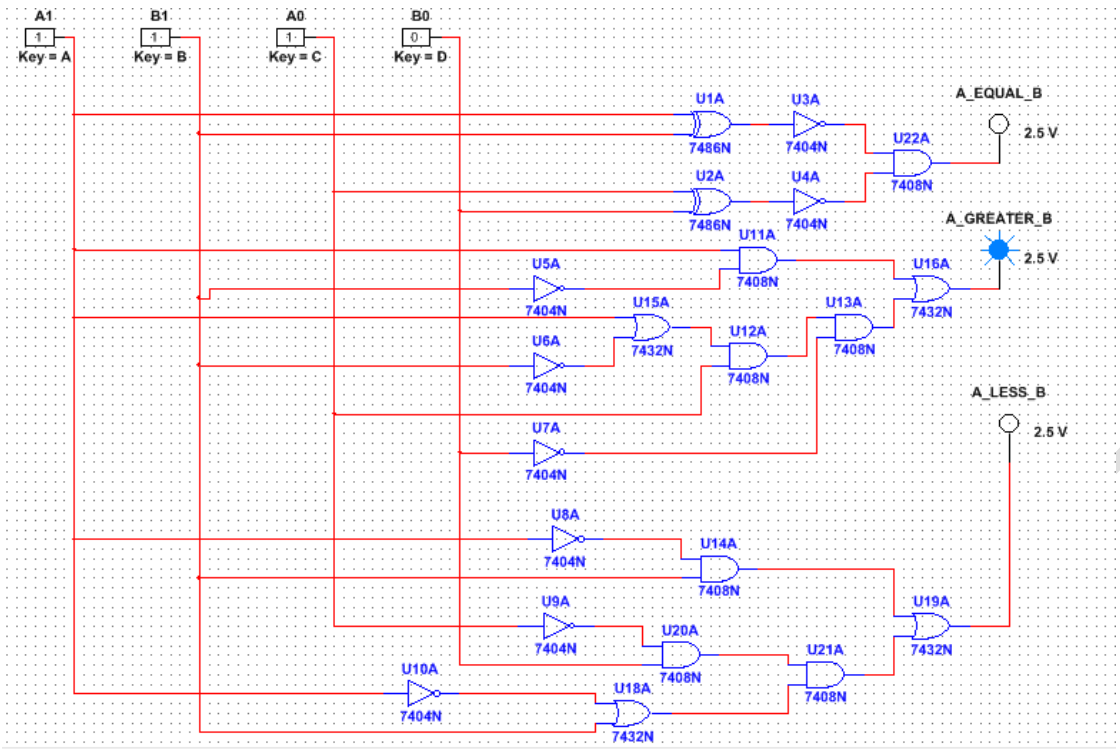
1) 1 BIT COMPARATOR USING LOGIC GATES:

A	B	A>B	A=B	A<B
0	0	0	1	0
0	1	0	0	1
1	0	1	0	0
1	1	0	1	0

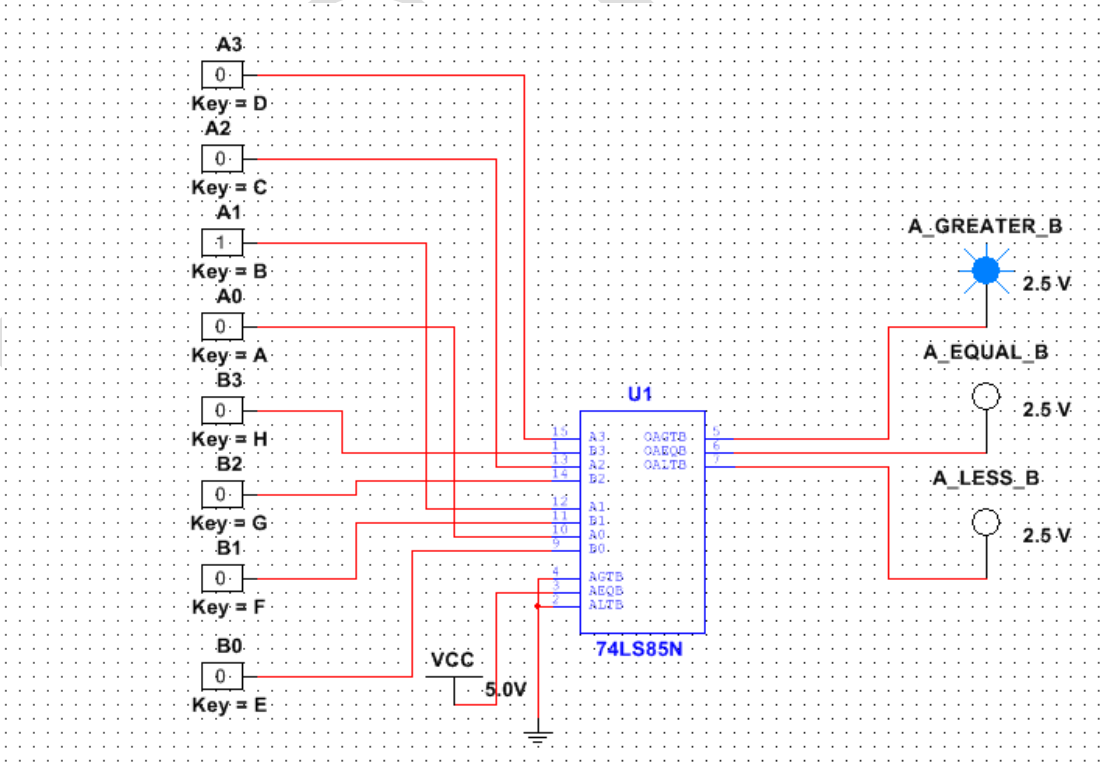


2) 2 BIT COMPARATOR USING LOGIC GATES:

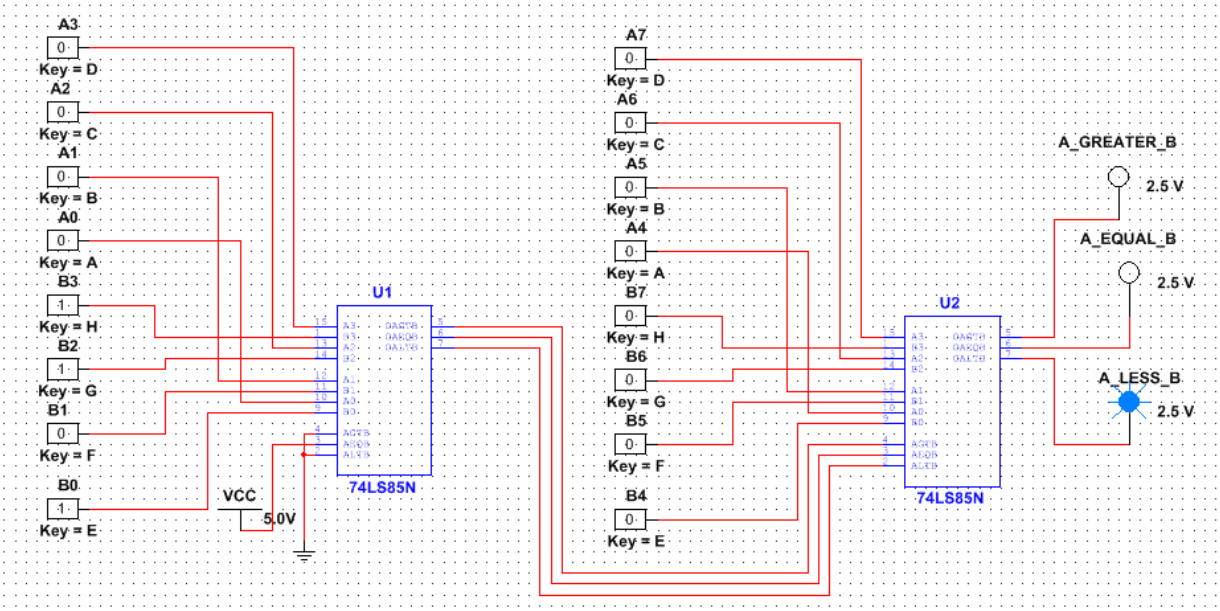
A1	A0	B1	B0	A>B	A=B	A<B
0	0	0	0	0	1	0
0	0	0	1	0	0	1
0	0	1	0	0	0	1
0	0	1	1	0	0	1
0	1	0	0	1	0	0
0	1	0	1	0	1	0
0	1	1	0	0	0	1
0	1	1	1	0	0	1
1	0	0	0	1	0	0
1	0	0	1	1	0	0
1	0	1	0	0	1	0
1	0	1	1	0	0	1
1	1	0	0	1	0	0
1	1	0	1	1	0	0
1	1	1	0	1	0	0
1	1	1	1	0	1	0



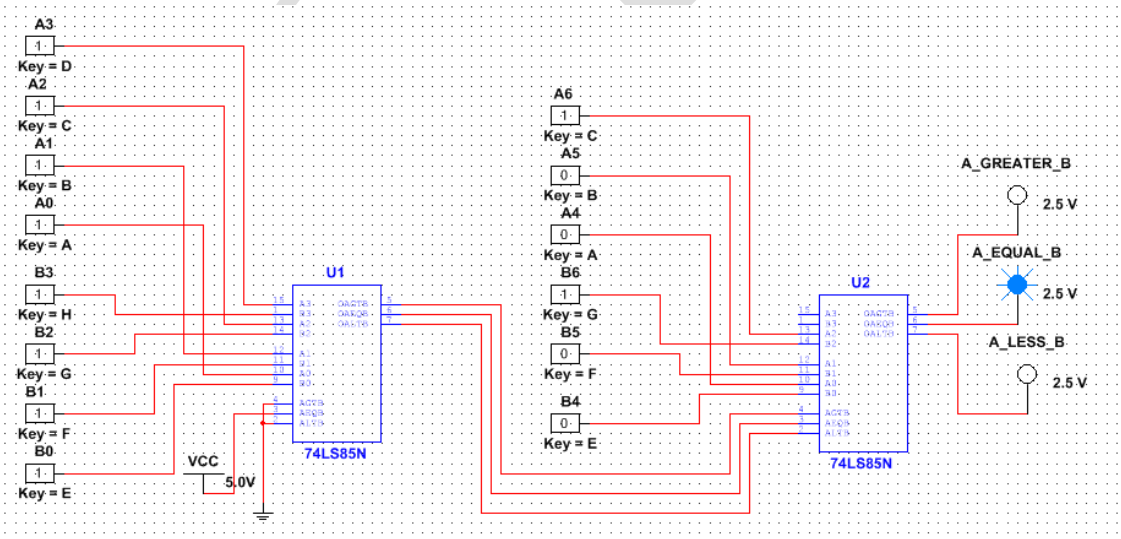
3) 4 BIT COMPARATOR:



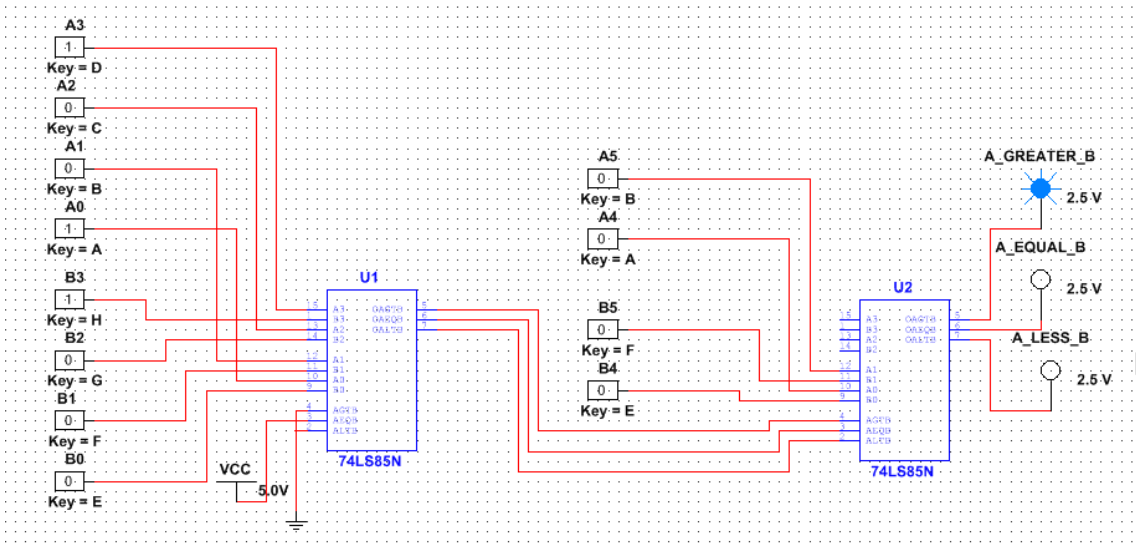
4) a) 8 BIT COMPARATOR:



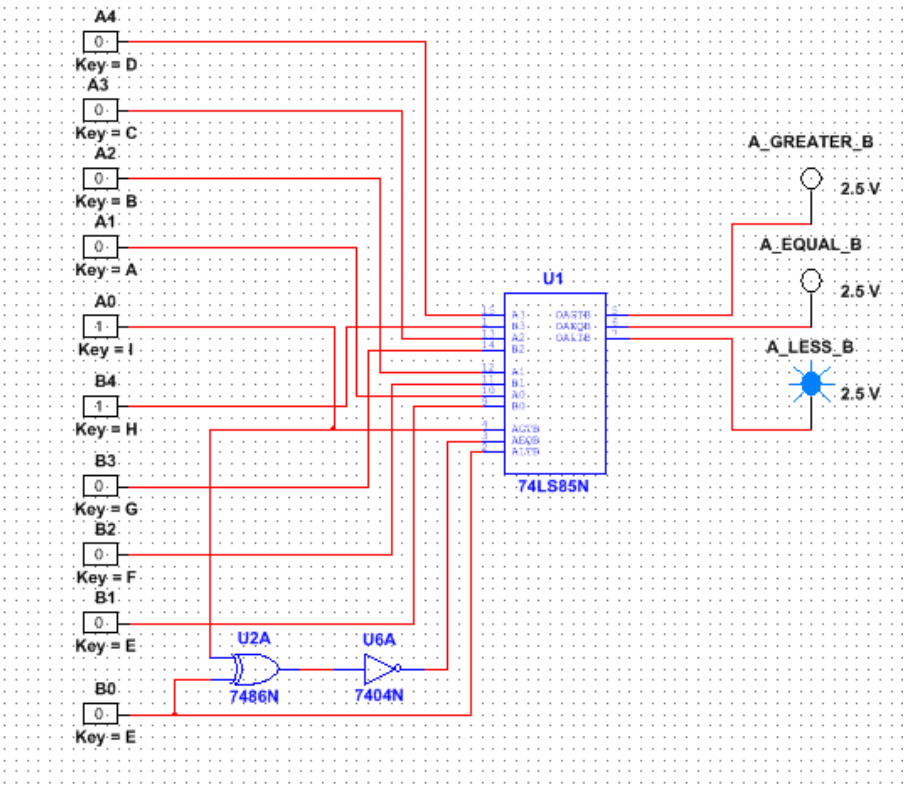
b) 7 BIT COMPARATOR:



c) 6 BIT COMPARATOR:



5) 5 bit comparator using single IC-74LS85 and logic gates.



CONCLUSION:

1) With the help of Multisim 11.0 software, we were able to implement 1 bit comparator using logic gates.
2) Also we saw the 2 bit comparator using logic gates.
3) For more than 2 bit comparator, it is difficult to find out their truth table and corresponding k-map equations. So, with the help of IC-74LS85, it was possible to implement the 3 bit, 4 bit, 5 bit, 6 bit, 7 bit and 8 bit comparator.

REFFRENCE:

1) : R.P. Jain , "Modern digital electronics" , 3rd edition

2) : A. Anand Kumar, "Fundamentals of digital circuits" 1st edition

Subject teacher Sign with Date Remark