1. Design a full adder circuit for performing 3-bit binary addition.

   Ans: Figure 1 shows the 3-bit full adder circuit.

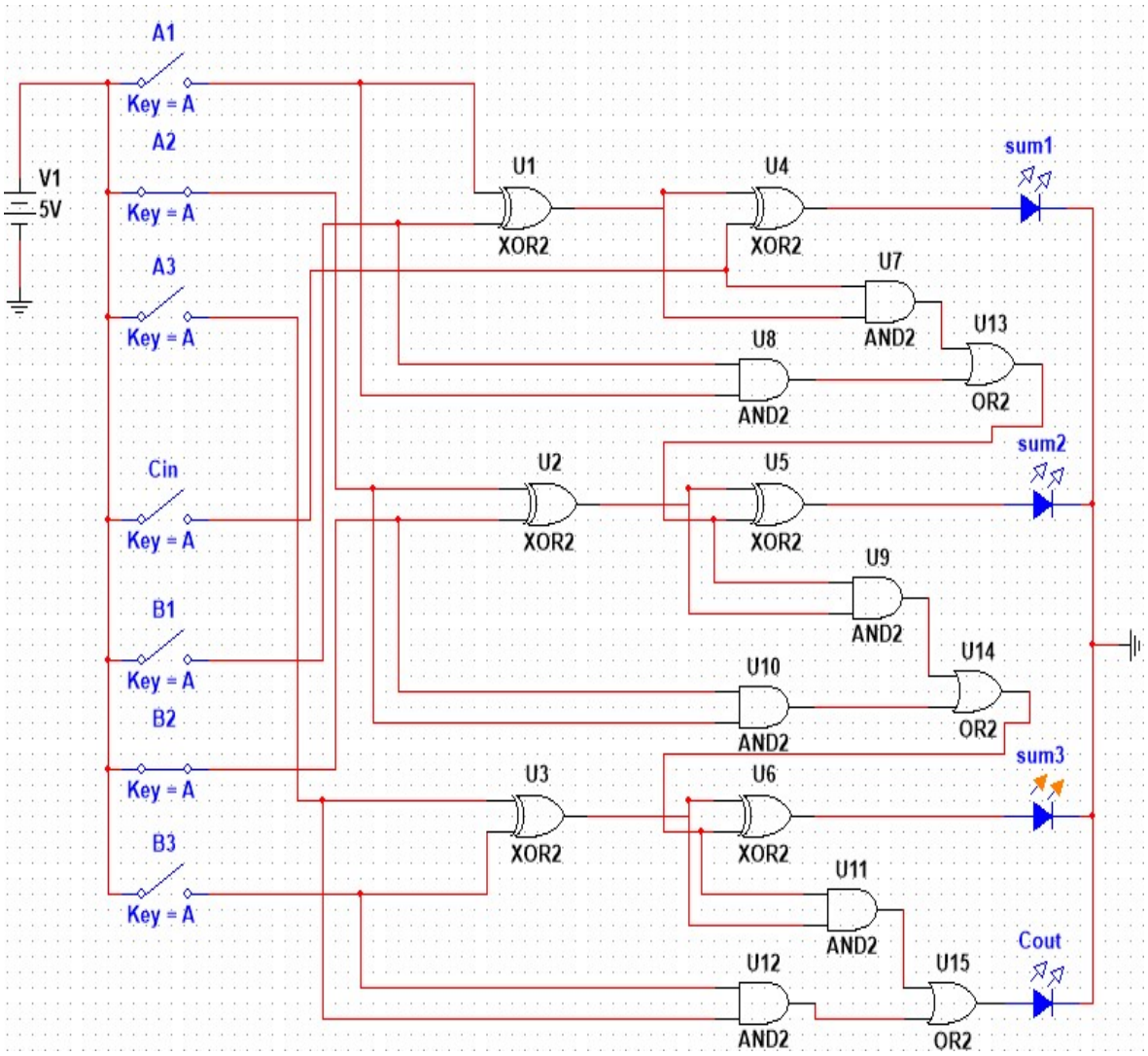

Figure 1: 3-bit full adder circuit

2. Design a full subtractor circuit for performing 3-bit binary subtractor.

Ans: Figure 2 shows the 3-bit subtractor circuit.

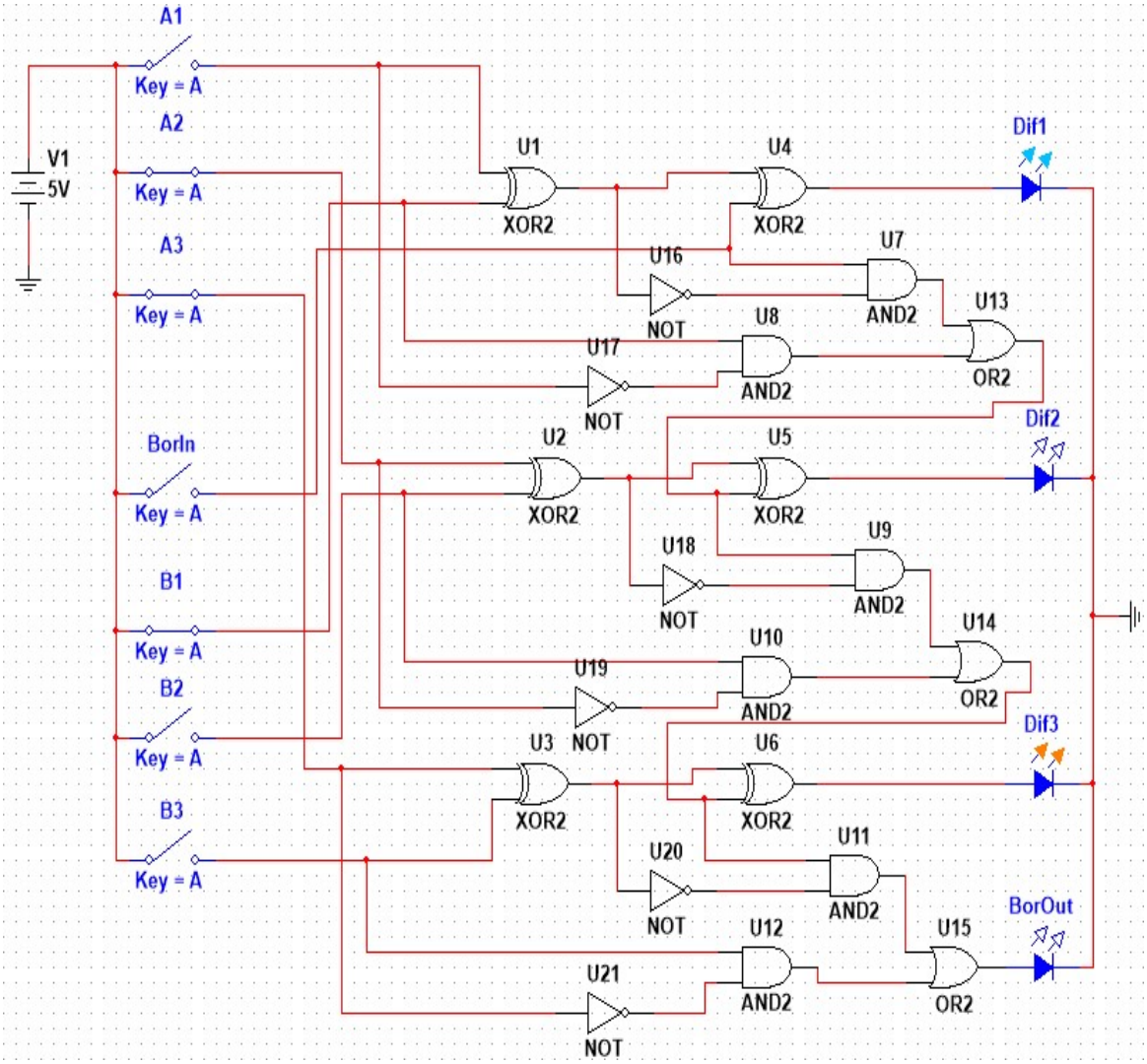

Figure 2: 3-bit full subtractor circuit.

3.Design an 8-bit full adder using 4-bit full adder IC 4008 from PSIM.

Ans: An 8-bit full adder was designed and shown in figure 3 using two 4-bit adder IC using Multisim.

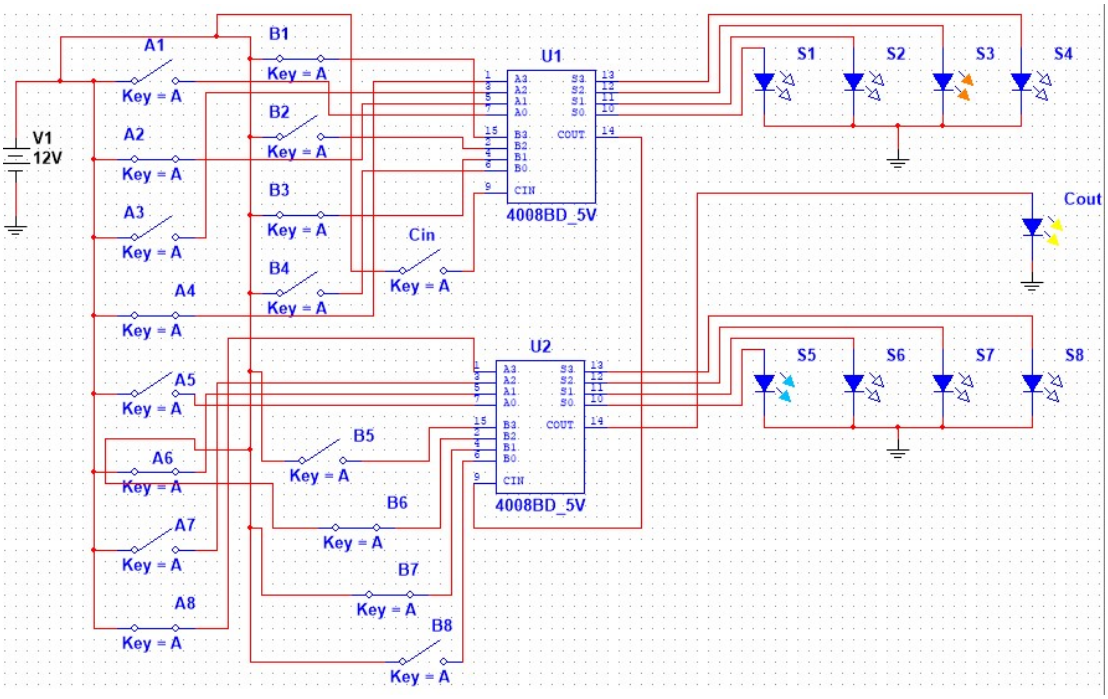

Figure 3: 8-bit full adder circuit using two 4-bit adder IC.

4.Design a comparator circuit for comparing two words, each of 3 bits of input using 1 bit block.

Ans: The comparator circuit is given in figure 4. The 7485N 4 bit comparator IC was used with its last remaining pins being disconnected.

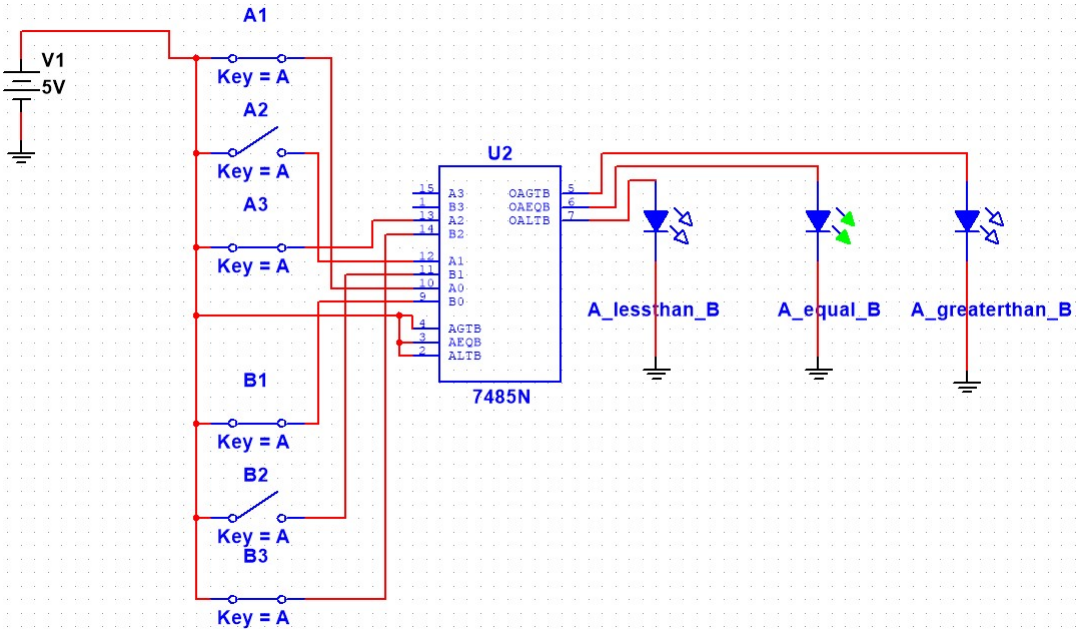

Figure 4: Simulation and design of a 3-bit comparator circuit using 7485 N IC.