The digital circuit shown in Fig. 2 is used to perform arithmetic and logic operations on two 8-bits variables (A and B). The operation is selected using (op_sel) bits as shown in table (1). The final result is displayed on **two** 7-segments display in **HEX format**. Write a VHDL code to implement the circuit by using **with-select** statements only.

op_sel (4 bits)	Result
0001	A+B
0010	A-B
0101	A and B
0100	A or B
0101	2's complement of B
0111	2's complement of A
1000	A+1
1001	A nor B
1010	A+B+c_{in}

Write a test bench program to test the previous circuit by entering A="**00001010**", B="**01010010**" and cin='1' to the circuit. Sketch the resultant waveform