Q3) Design a combinational circuit that accepts a 3-bit binary input (ABC) and generates a 2-bit output (XY) where **the output is the total number of 0's in the input.**

   (a) Determine the sum-of-minterms (SOM) of the circuit.
   (b) Determine the product-of-maxterms (POM) of the circuit.
   (c) Optimize the circuit product-of-sums (POS) form.
   (d) Implement the circuit with NOR gates only.