CSE232_2023_HW2

1) You are given a function $F(x, y, z, w) = \sum(5,6,7,8,9,10,14,15)$

   A) Simplify the circuit using K-Map and draw the circuit (10 points).
   B) Draw the circuit using a Decoder (15 points)
   C) Draw the Circuit using a Multiplexer (15 points)

2) A car has a fuel-level detector that outputs the current fuel-level as a 3-bit binary number, with 000 meaning empty and 111 meaning full. Create a circuit that illuminates a "low fuel" indicator light (by setting an output L to 1) when the fuel level drops below level 3.
   a. Obtain the canonical form of the circuit using K-map (10 points)
   b. Draw the circuit using only NAND Gates (10 points)
   c. Daw the circuit using only NOR Gates (10 points)

3) Design a 4-bit 4x1 multiplexer using four 4x1 multiplexers (30 points)