EE200-03&04   (071)

Homework # 4

1. Simplify the following Boolean function, which is given in a product of maxterms form, together with the don't care conditions, first in SOP, then in POS forms. Implement the function using two level NAND-NAND.

   $F(w,x,y,z) = \Pi(0,2,3,7,8,10,11,15)$

   $with \quad don't\, care\, conditions \quad d(w,x,y,z) = \Sigma(5,12,13,14)$

2. Design a combinational circuit with three inputs (*x, y, z*) and one output (*F*). The output is 1 when the binary value of the inputs is less than decimal 2 or greater than decimal 4. The output is 0 otherwise.

3. Design a combinational circuit that converts a 4-bit Gray code (Table 1-6 of the textbook) to a 4-bit binary number. Implement the circuit with exclusive-OR gates. (Use the letters *w, x, y, z* to represent the inputs and *A, B, C, D* to represent the outputs).