

Problem 1

Design a 1 out of 8 decoder, using 1-out-of-2 decoder with one active low enable line.

Problem 2

Implement the following Boolean expression using a decoder and an OR gate – You may choose a decoder with active high or active low outputs.

$$F(A,B,C,D) = \sum m(0, 1, 2, 4, 5)$$

Problem 3

Implement the following Boolean expression using a decoder and an OR gate – You may choose a decoder with active high or active low outputs.

$$f(w, x, y, z) = \prod M(0, 1, 3, 5, 13)$$

Problem 4

Implement the following Boolean expression using a decoder and a NAND gate – You may choose a decoder with active high or active low outputs.

$$F(A, B, C, D) = \sum m(4, 6, 7, 8, 12, 15)$$

Problem 5

Implement the following Boolean expression using a decoder and a NAND gate – You may choose a decoder with active high or active low outputs.

$$F(X, Y, Z, W) = \prod M(0, 6, 8, 13, 14) + d(2, 4, 10)$$