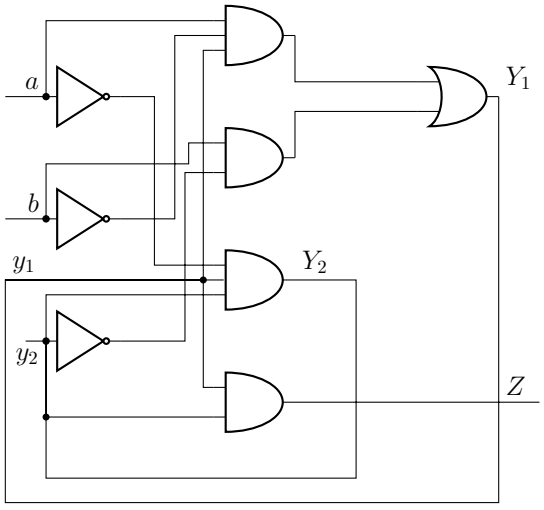
TP 4
Digital Electronics [ELEC-H-310]

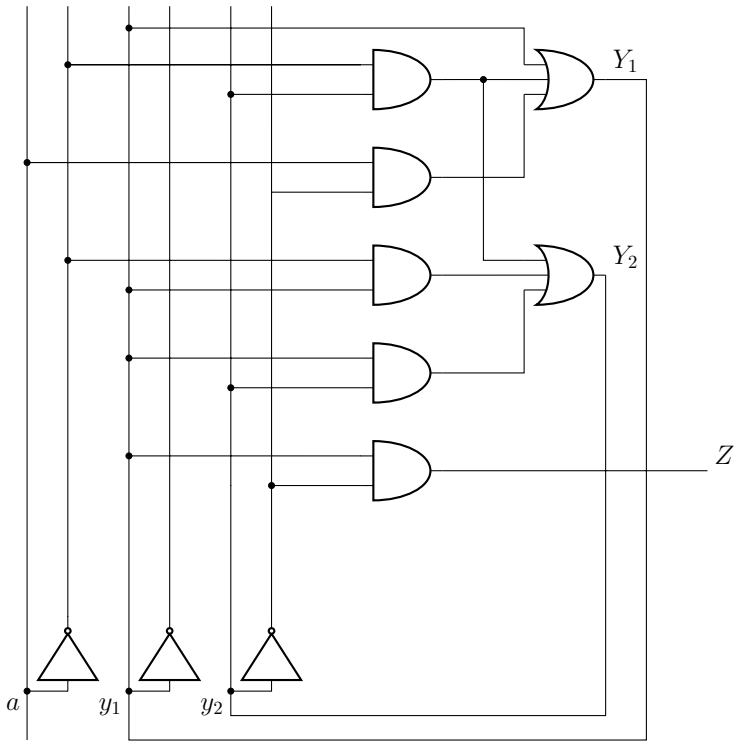
v1.0.1

Question 1. What are the logic equations for this circuit? Fill a Huffman table and find the corresponding state graph.

a)



b)



Question 2. A door opener is controlled by a password that is controlled using two buttons a and b. We assume that the value associated to each button equals 1 when the button is pressed, 0 otherwise. The door is being opened if the output Z_1 is set to 1, which happens whenever the last button of the password is pressed. The code is the following: press and release a two times, then press and release b and finaly press and release a again. Any wrong sequence sets the output Z_2 to 1, triggering the alarm. Once activated, the alarm stays active whatever the input.

Build the state graph and Huffman table for this problem.

Question 3. Use a K-map to simplify the following equation:

$$f(a,b,c,d,e) = \sum_m (0,2,5,7,8,9,10,11,13,23,26,27,29) + \sum_d (3,12,15,18,19,21,22,31)$$