

Logic Lab – Exp #5

Combinational Circuit Synthesis

Y-0016/001D, Y-0016/002D and Y-0016/009D boards (given in the last page)

1) Decoder circuit design:

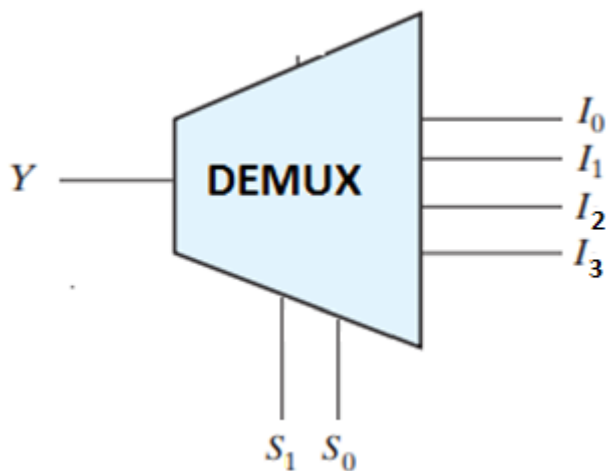
a) Design a 2-input, 4-output 2-bit decoder circuit. The truth table for the 2-bit decoder is given below:

A_1	A_0	D_3	D_2	D_1	D_0
0	0	0	0	0	1
0	1	0	0	1	0
1	0	0	1	0	0
1	1	1	0	0	0

Draw and implement the equivalent circuit using **Y-0016/002D** board.

Verify results by connecting inputs also to the 7-segment display.

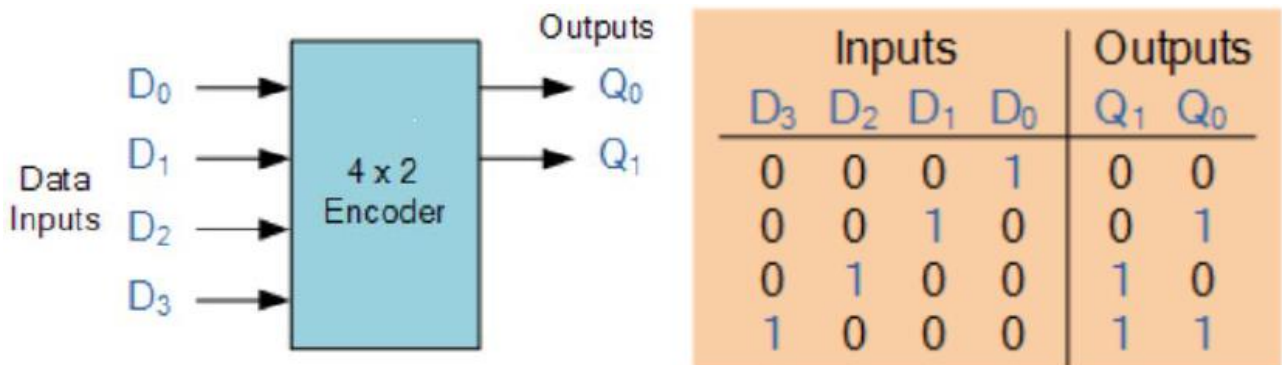
b) Fill in the truth table of 2x1 DEMUX and using same circuit in part (a) verify any one of the rows you select in truth table.



S_1	S_0	I_0	I_1	I_2	I_3
0	0				
0	1				
1	0				
1	1				

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2) Design a 4-input, 2-output 2 bit encoder. The representation and the truth table for the 2-bit encoder is given below:

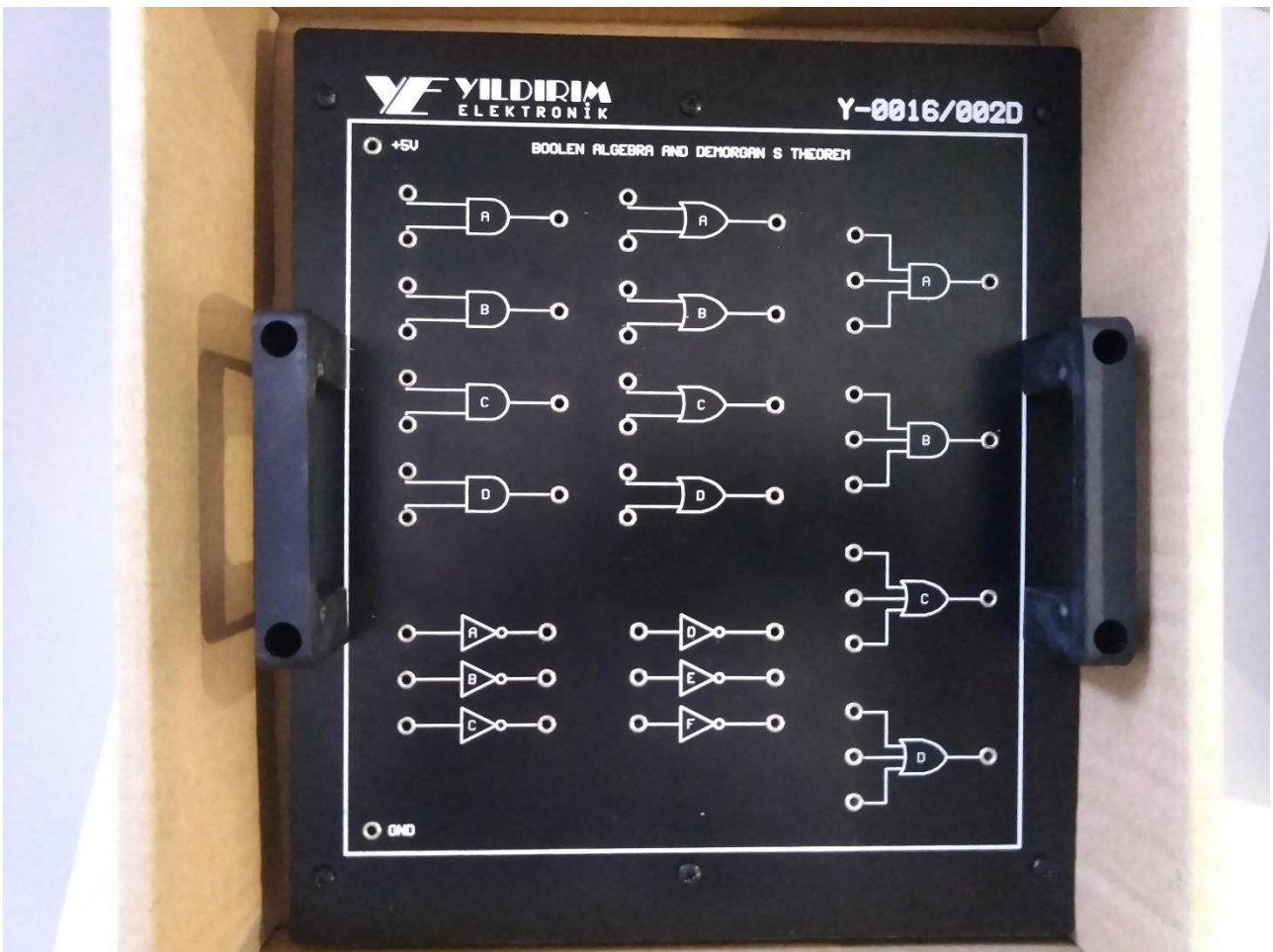
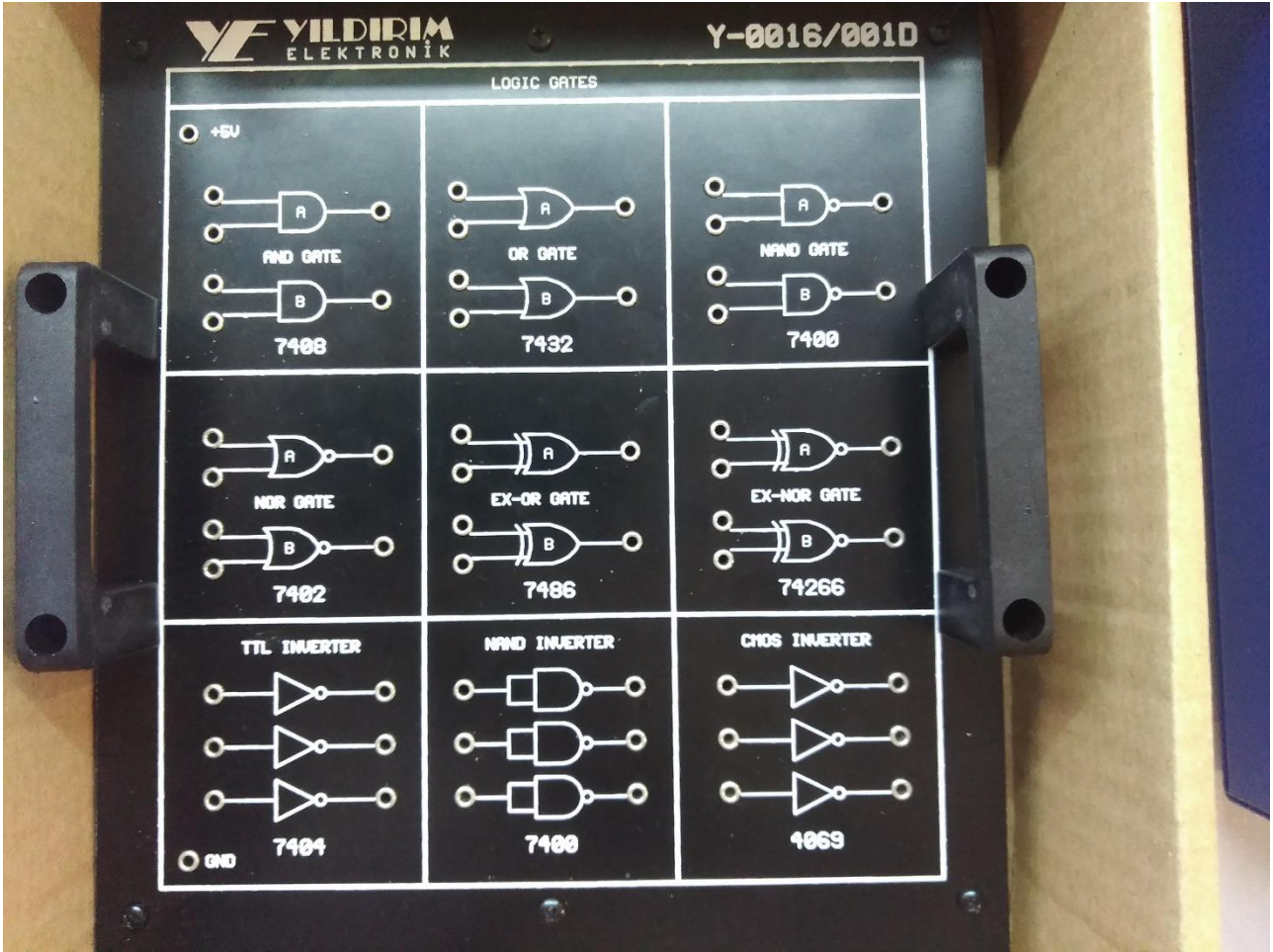


Draw and implement the equivalent circuit using Y-0016/001D board.

3) Using the Demultiplexer in 009D board, fill in the given truth table

Y	S ₂	S ₁	S ₀	D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇
0	0	0	0								
0	0	0	1								
0	1	0	0								
0	1	1	1								
1	0	0	0								
1	0	1	1								
1	1	1	0								
1	1	1	1								

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