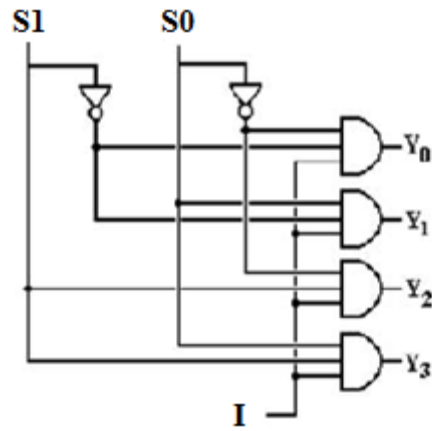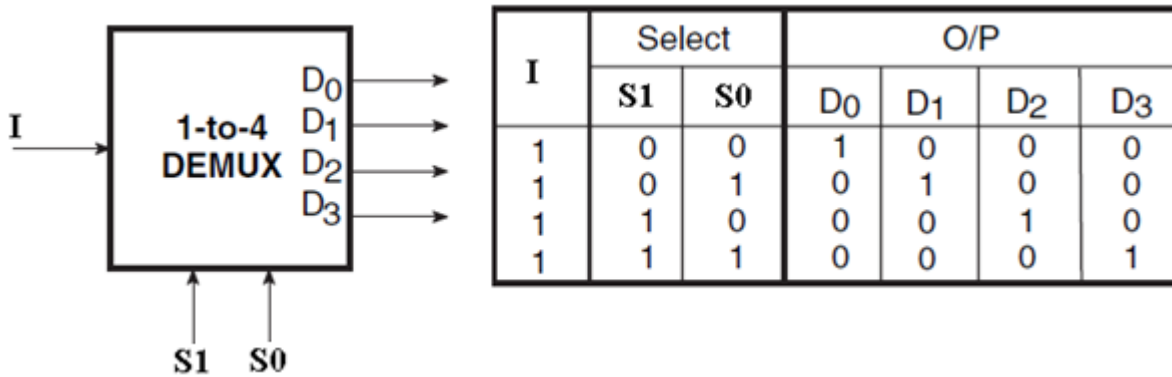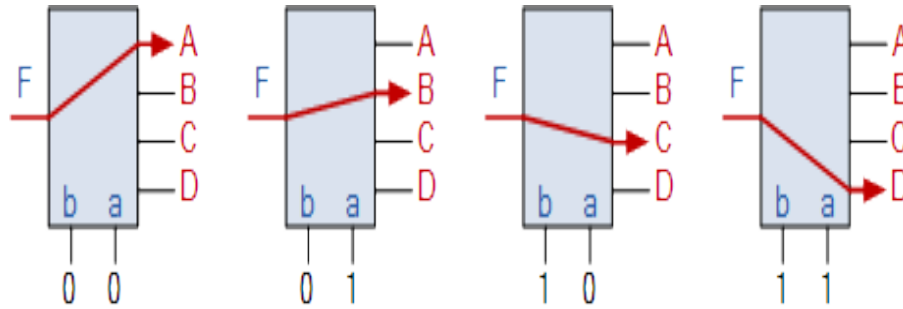# Demultiplexer

The demultiplexer (DEMUX) is a combinational logic circuit designed to switch one common input line to one of several separate output line

## Demultiplexer Output Line Selection:

	Select		O/P			
I	S1	S0	D0	D1	D2	D3
1	0	0	1	0	0	0
1	0	1	0	1	0	0
1	1	0	0	0	1	0
1	1	1	0	0	0	1

1-to-8 Demultiplexer:

`   The below figure shows the block diagram of a 1-to-8 demultiplexer that consists of single input D, three select inputs S2, S1 and S0 and eight outputs from Y0 to Y7.

It is also called as 3-to-8 demultiplexer due to its three select input lines and 8 output lines. It distributes one input line to one of 8 output lines depending on the combination of select inputs, From these obtained equations. The logic diagram of this demultiplexer can be implemented by using eight 4-input AND gates and three NOT gates as shown in below figure.
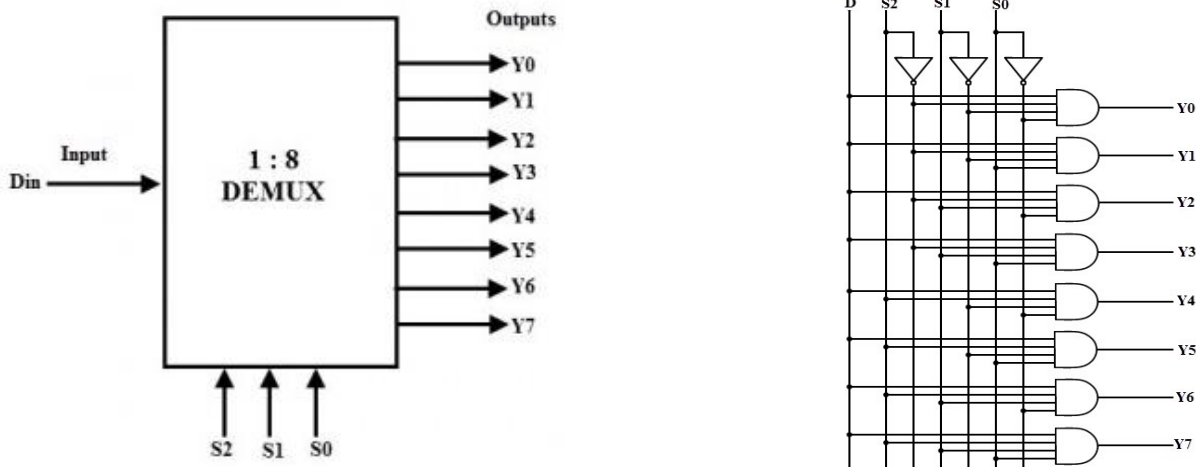
The truth table for 1-to-8 demultiplexer is shown below:

S2	S1	S0	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	0	0	0	0	0	0	0	0	0	D
0	0	1	0	0	0	0	0	0	D	0
0	1	0	0	0	0	0	0	D	0	0
0	1	1	0	0	0	0	D	0	0	0
1	0	0	0	0	0	D	0	0	0	0
1	0	1	0	0	D	0	0	0	0	0
1	1	0	0	D	0	0	0	0	0	0
1	1	1	D	0	0	0	0	0	0	0