Digital Electronics and Logic Design (DELD) - Practical Number - 05.

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Title:-
Multiplexer And Demultiplexer.

Aim:-
To realize the boolean expression for suitable combinational logic using the mux and demux.

Theory:-
a) Multiplexer:-
A multiplexer is also known as data selector, it is a device that selects between several analog or digital input that has select lines. The select lines are used to select the line to send the output.
In this experiment we are using Mux 74151/74153.

b) De-Multiplexer:-
A Demux is a device that takes a single input line and routes it to one of several digital output lines. Also called as Data Distributor.
In this experiment we are using Demux 74154/74138.

Experiment:-

a) Solve the boolean equation using 4:1 multiplexer.

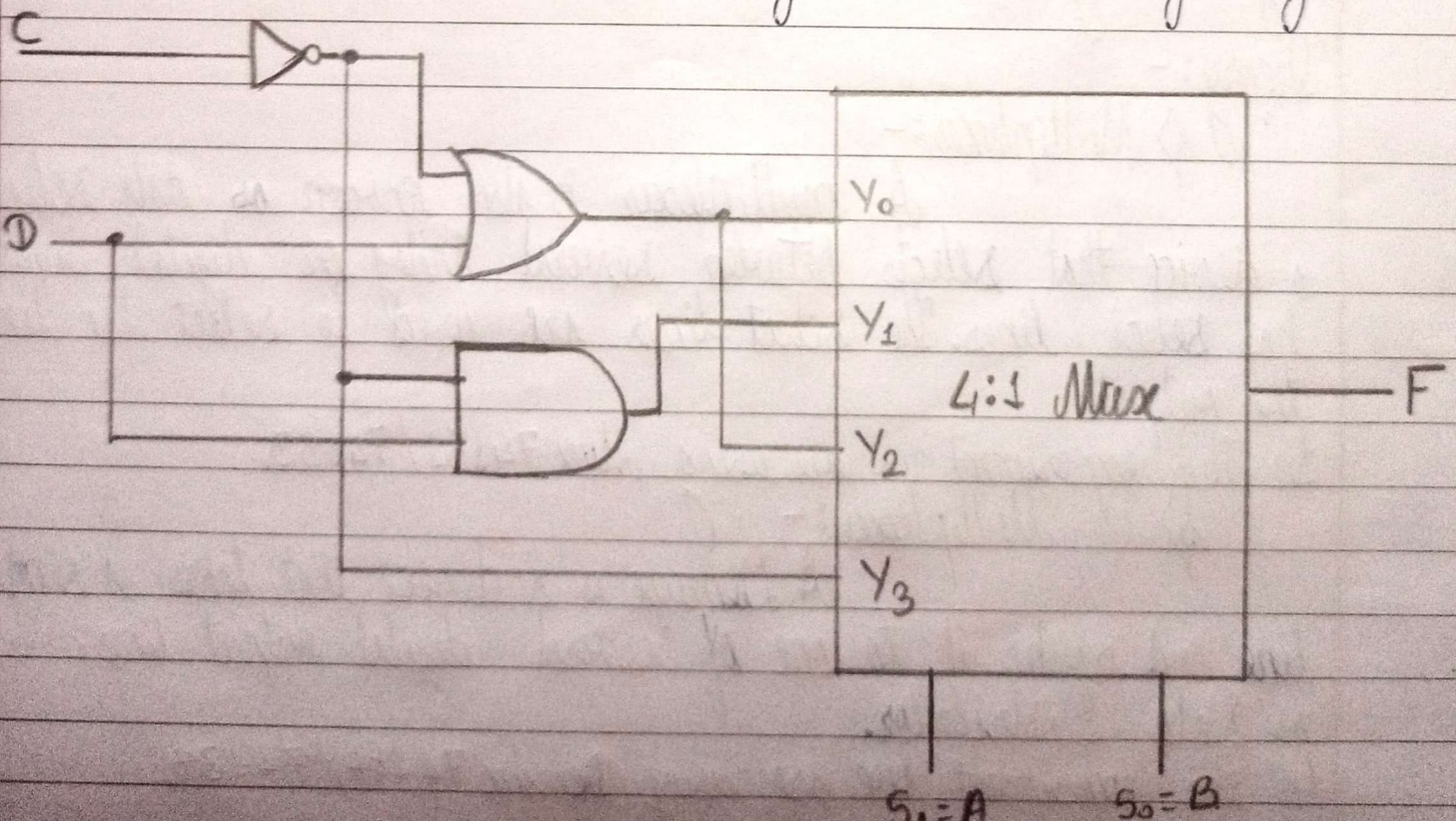
$F(A, B, C, D) = \Sigma m(1, 4, 5, 7, 9, 12, 13)$.

Using K-map :-

CD \ AB	00	01	11	10
00		1	1	
01	1	1	1	1
11		1		
10				

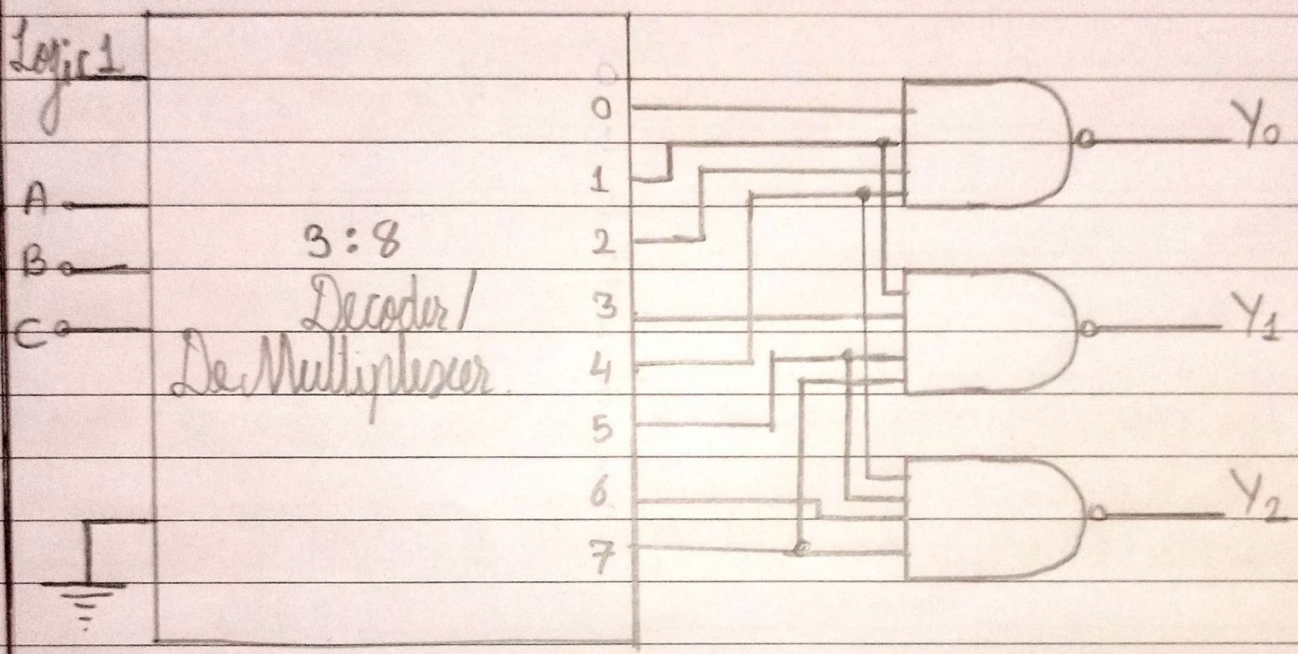
S_1	S_0	Y	
0	0	C'D	Y_0
0	1	C'+D	Y_1
1	0	C'D	Y_2
1	1	C'	Y_3

Using the truth table logic diagram is:-



6) Implement the following function using 3:8 line decoder.

$Y_0(A,B,C) = \Sigma m(0,1,2,4)$
$Y_1(A,B,C) = \Sigma m(1,3,5,7)$
$Y_2(A,B,C) = \Sigma m(4,5,6,7)$



Outcomes:-

The student are able to realize the boolean equation using logic circuit mux and demux.

Conclusion:-

Hence, we have realized the expression for suitable combinational circuit, i.e. Mux and De Mux.