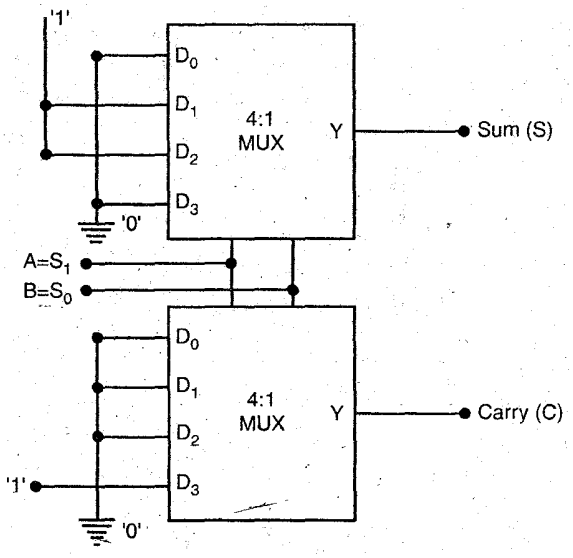
EXAMPLE

1.implement half adder circuit using 4 : 1 MUX or multiplexers only.

Ans. Truth table of half adder is as shown:

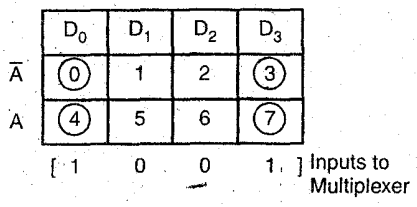
Inputs		Outputs	
A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1



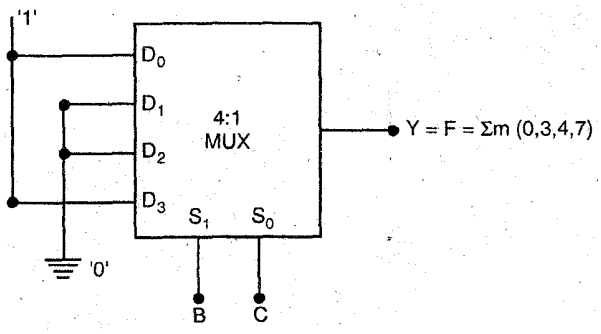
2. Implement using 4: 1 MUX

$$F = \Sigma m\ (0, 3, 4, 7)$$

Ans. The implementation table is as shown:



Implementation:

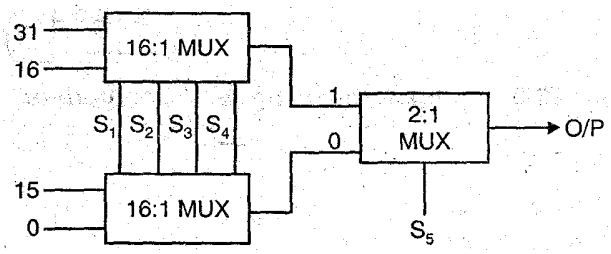


3. How many select lines are there for a 30 to 1 MUX?

Ans. For 30: 1 MUX, 5 select lines are required. 4 select lines are for 16 : 1 MUX's and

1 select line for 2: 1 MUX. 2^n = M formula is used. Where n = number of select lines and M are the number of inputs for a MUX.

= 32.Thus, 5 select lines are needed.



4. Implement using 4 x 1 MUX

$$F = \Sigma m\ (0, 3, 4, 7)$$

Ans.

X	Y	Z	f	
0	0	0	1	$\overline{D}$
0	0	1	0	
0	1	0	0	D
0	1	1	1	
1	0	0	1	$\overline{D}$
1	0	1	0	
1	1	0	0	D
1	1	1	1