

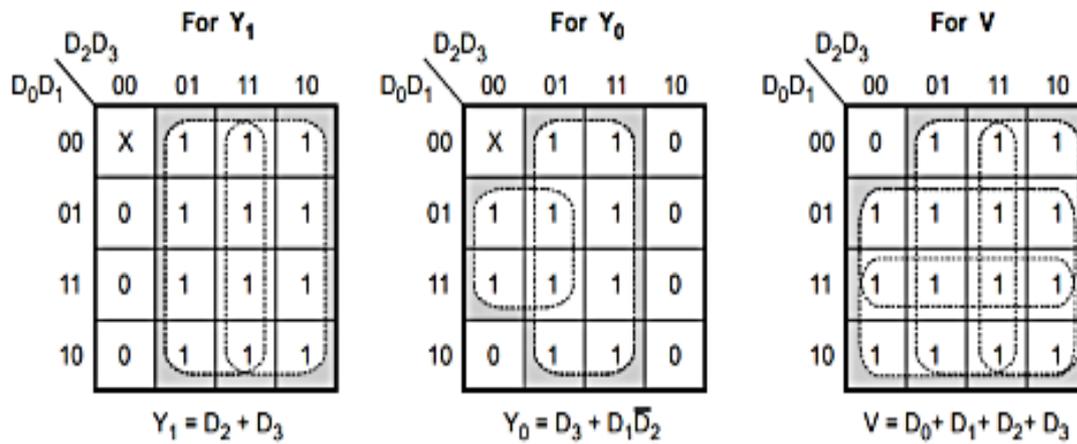
Priority Encoder:

- A priority encoder is an encoder circuit that includes the priority function. In priority encoder, if two or more inputs are equal to 1 at the same time, the input having the highest priority will take precedence.
- Table shows D_3 input with highest priority and D_0 input with lowest priority. When D_3 input is high, regardless of other inputs output is 11. The D_2 has the next priority. Thus, when $D_3 = 0$ and $D_2 = 1$, regardless of other two lower priority input, output is 10. The output for D_1 is generated only if higher priority inputs are 0, and so on. The output V (a valid output indicator) indicates, one or more of the inputs are equal to 1. If all inputs are 0, V is equal to 0, and the other two outputs (Y_1 and Y_0) of the circuit are not used.

Truth table of 4-bit priority :

Inputs				Outputs		
D_0	D_1	D_2	D_3	Y_1	Y_0	V
0	0	0	0	X	X	0
1	0	0	0	0	0	1
X	1	0	0	0	1	1
X	X	1	0	1	0	1
X	X	X	1	1	1	1

K-MAP SIMPLIFICATION :



LOGIC DIAGRAM :

