Ejercicio 1. Segundo parcial : Departamento de distribución de agua

a. Definición de variables :

A : tubería A = 5 l/m
B : tubería B = 15 l/m
C : tubería C = 25 l/m
D : tubería D = 30 l/m

SA : salida 1 = 5 l/m
SB : salida 2 = 10 l/m
SC : salida 3 = 20 l/m
SD : salida 4 = 40 l/m

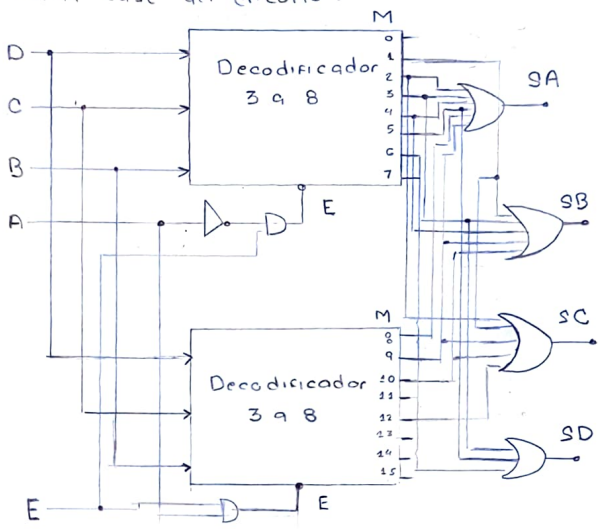
0 = cerrado
1 = abierta

b. Tabla de verdad del circuito :

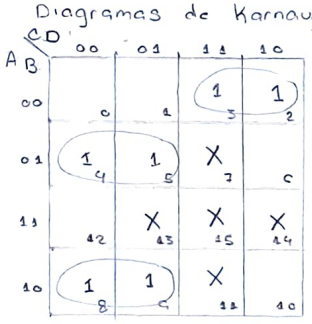
	5 A	15 B	25 C	30 D	5 SA	10 SB	20 SC	40 SD
0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	1	1	0
2	0	0	1	0	1	0	1	0
3	0	0	1	1	1	1	0	1
4	0	1	0	0	1	1	0	0
5	0	1	0	1	1	0	0	1
6	0	1	1	0	0	0	0	1
7	0	1	1	1	X	X	X	X
8	1	0	0	0	1	0	0	0
9	1	0	0	1	1	1	1	0
10	1	0	1	0	0	1	1	0
11	1	0	1	1	X	X	X	X
12	1	1	0	0	0	0	1	0
13	1	1	0	1	X	X	X	X
14	1	1	1	0	X	X	X	X
15	1	1	1	1	X	X	X	X

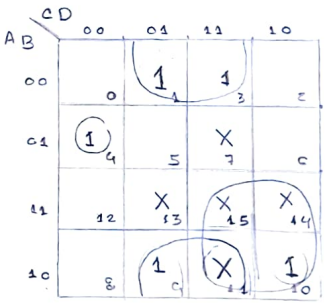
c. Circuito de control de cada válvula de salida :

Forma base del circuito :

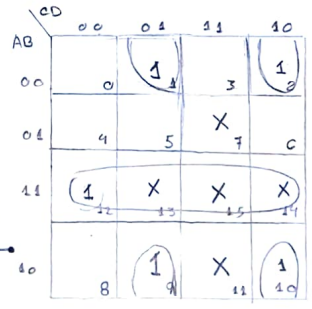


Diagramas de Karnaugh :

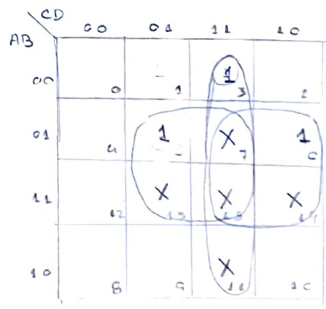




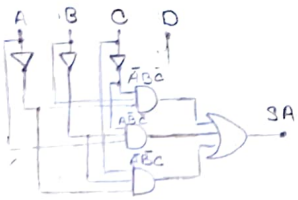
$SA = \bar{A}B\bar{C} + A\bar{B}\bar{C} + \bar{A}\bar{B}C$

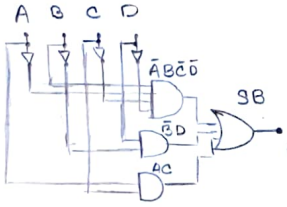


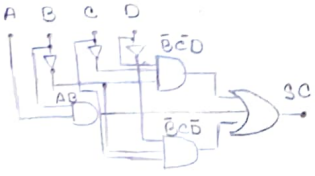
$SB = \bar{A}B\bar{C}\bar{D} + \bar{B}D + AC$

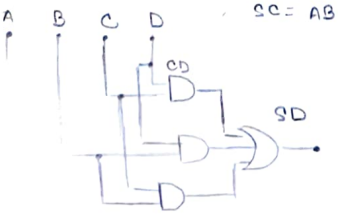


Circuitos individuales :







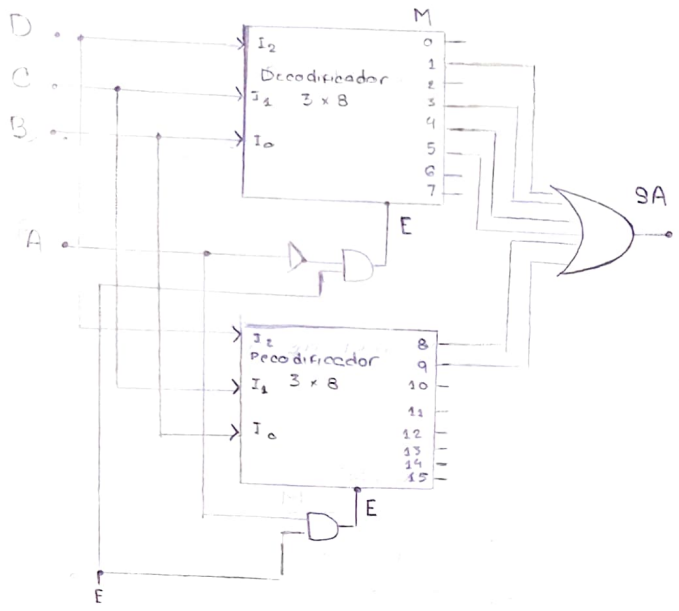


$SC = AB + \bar{B}\bar{C}D + \bar{B}C\bar{D}$

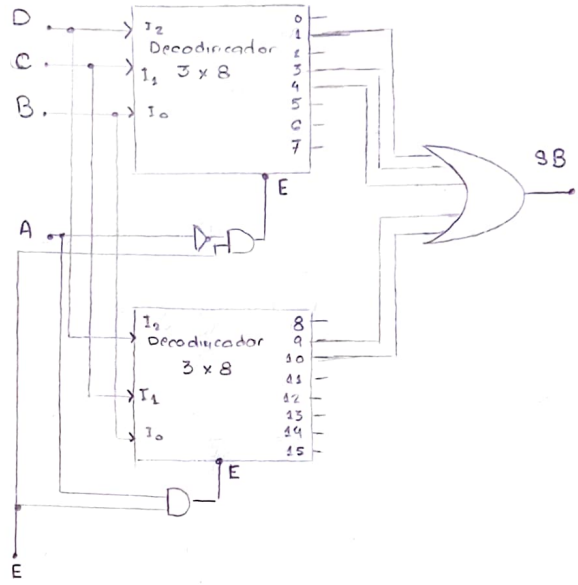
$SD = CD + BD + BC$

Circuitos decodificadores individuales:

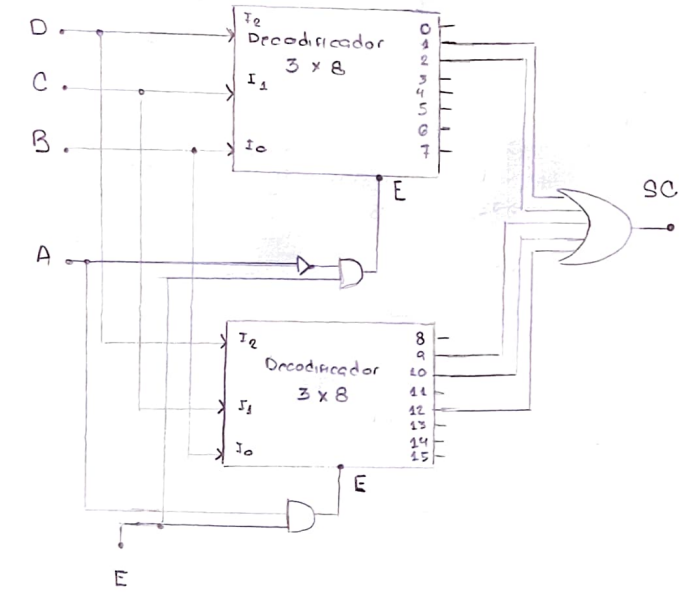
1.



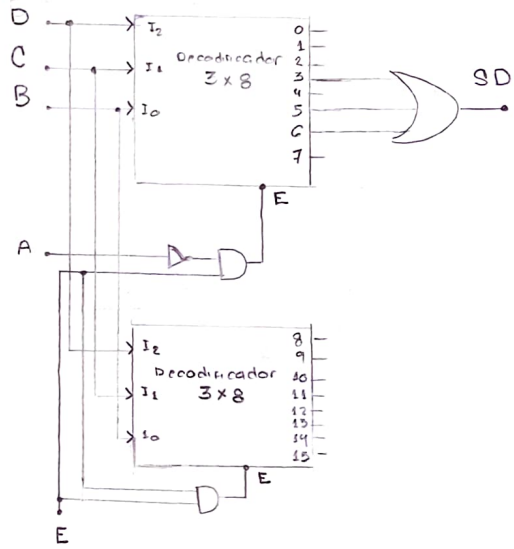
2.



3.



4.



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