CSE 260
MID ASSIGNMENT

Name: Sihat Sahariar

ID : 20101402

Section: 11

20101402

Answer to the qvestion no 1

There are 10 single digits (decimal) for the circuit. So the input range is : 0-9.

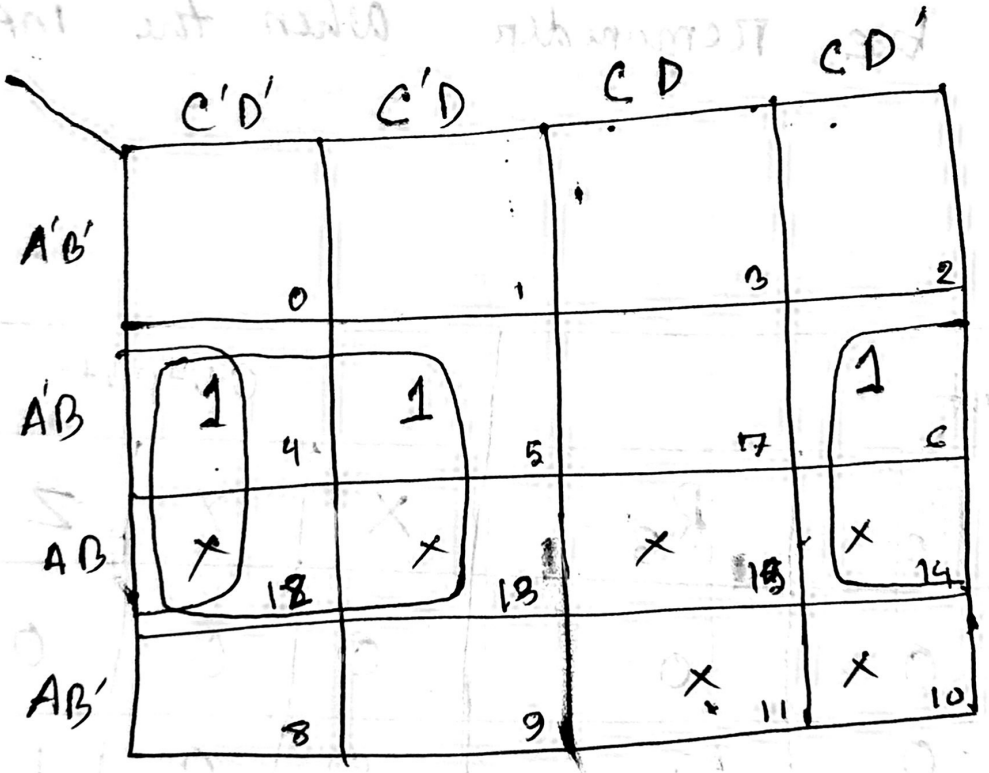
The outputs will be remainder when the input number is divided by 7.

Input (Dec)	Input				output			
	A	B	C	D	X	Y	Z	dec
0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	1	1
2	0	0	1	0	0	1	0	2
3	0	0	1	1	0	1	1	3
4	0	1	0	0	1	0	0	4
5	0	1	0	1	1	0	1	5
6	0	1	1	0	1	1	0	6
7	0	1	1	1	0	0	0	0
8	1	0	0	0	0	0	1	1
9	1	0	0	1	0	1	0	2
10	1	0	1	0	x	x	x	x
11	1	0	1	1	x	x	x	x
12	1	1	0	0	x	x	x	x
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

Here,

For X, minterm = $\sum(4,5,6)$

don't care = $\sum(10,11,12,13,14,15)$

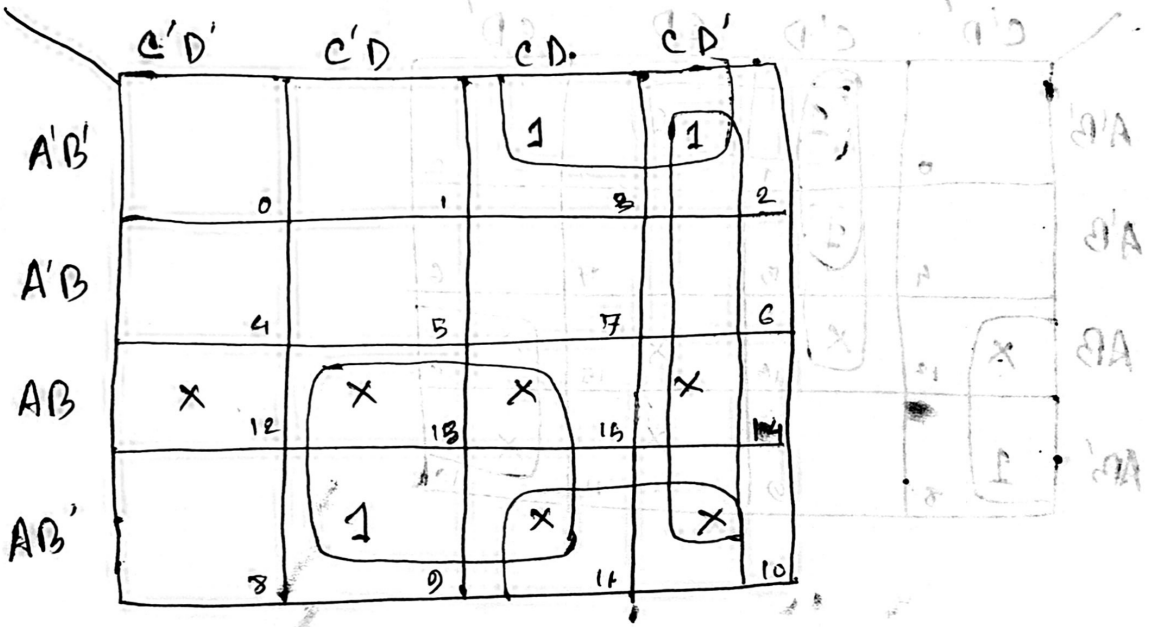


$X = BC' + BD'$

For Y,

Minterm = Σ (2,3,6,9)

don't care = Σ (10,11,12,13,14,15)

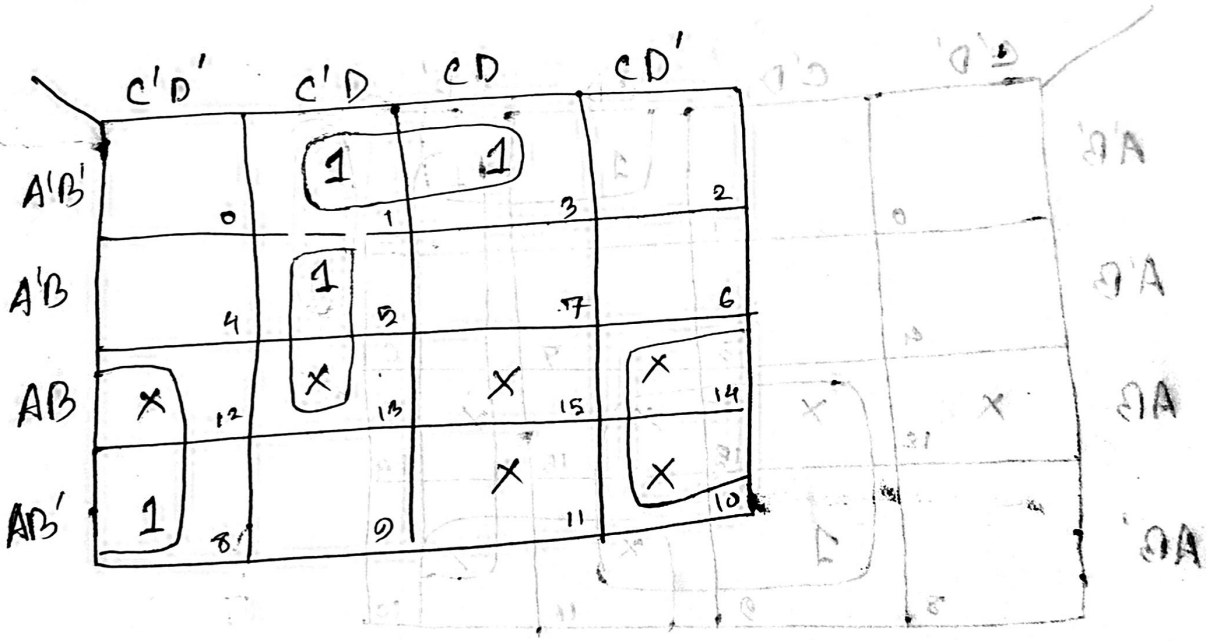


$\therefore Y = B'C + C'D' + AD$

For Z,

$$\text{minterm} = \Sigma\,(1,3,8)$$

$$\text{don't care} = \Sigma\,(10,11,12,13,14,15)$$



$$\therefore Z = AD' + A'B'D + B'C'D$$

So, we get,

$$X = BC' + BD'$$

$$Y = B'C + CD' + AD$$

$$Z = AD' + A'B'D + BC'D$$

20101402

Drawing the circuit: