## Q1

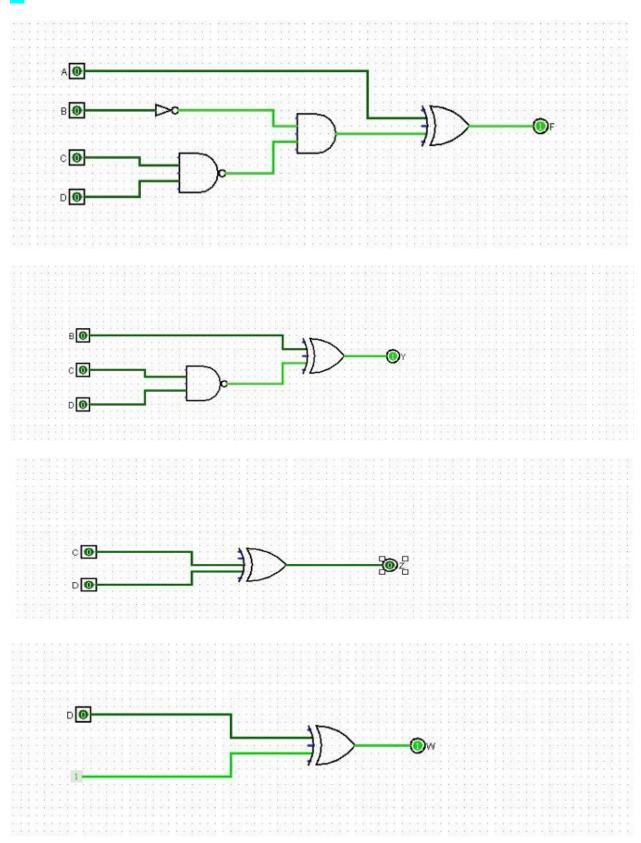
		Excess	s-3 Code	}	BCD Code				
Decimal Digit	A	В	С	D	X	Y	Z	W	
0	0	0	1	1	0	0	0	0	
1	0	1	0	0	0	0	0	1	
2	0	1	0	1	0	0	1	0	
3	0	1	1	0	0	0	1	1	
4	0	1	1	1	0	1	0	0	
5	1	0	0	0	0	1	0	1	
6	1	0	0	1	0	1	1	0	
7	1	0	1	0	0	1	1	1	
8	1	0	1	1	1	0	0	0	
9	1	1	0	0	1	0	0	1	
10	1	1	0	1	1	0	1	0	
11	1	1	1	0	1	0	1	1	
12	1	1	1	1	1	1	0	0	
13	0	0	0	0	1	1	0	1	
14	0	0	0	1	1	1	1	0	
15	0	0	1	0	1	1	1	1	

## b.

$$X = A \oplus (B'.(C.D)')$$

$$Y = B \oplus (C.D)'$$

$$Z = C \oplus D$$



Decimal	Α	В	С	D	X	Y	Z	W
Digit								
0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	1	1	1
2	0	0	1	0	0	1	1	0
3	0	0	1	1	0	1	0	1
4	0	1	0	0	0	1	0	0
5	0	1	0	1	1	0	1	1
6	0	1	1	0	1	0	1	0
7	0	1	1	1	1	0	0	1
8	1	0	0	0	1	0	0	0
9	1	0	0	1	1	1	1	1

## b.

X = ((C+D).B) + A

Y = ((C'.D').B) + ((C+D).B')

**Z** = **C**⊕ **D** 

W = D

## C.

