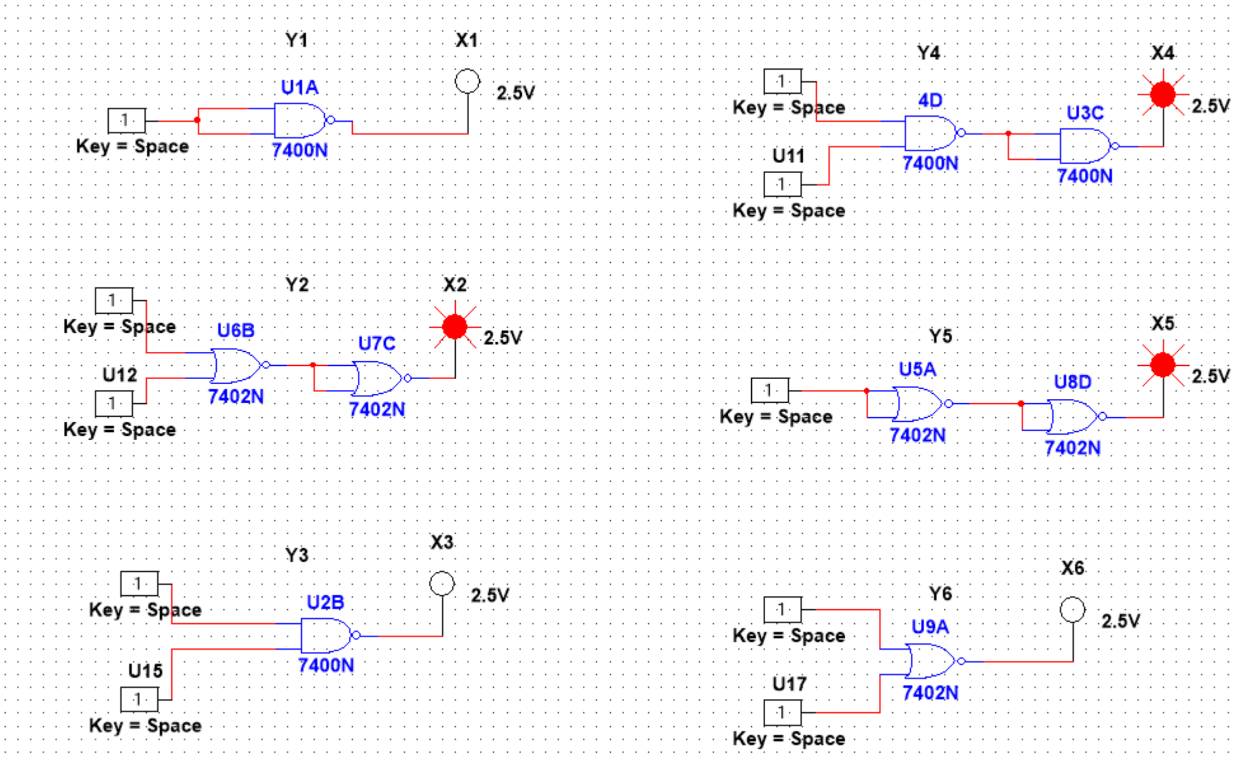
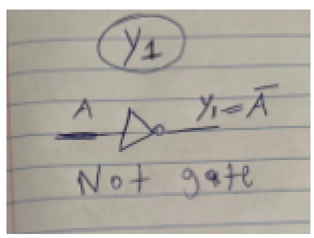
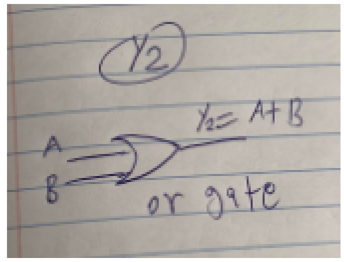
PART A





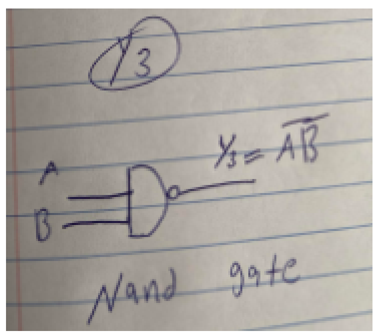
Y1

A	Y1
0	1
1	0



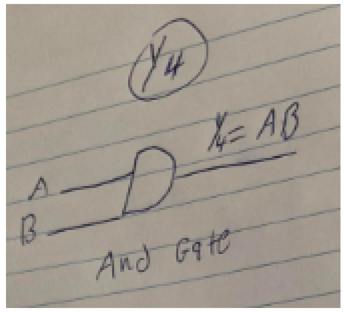
Y2

A	B	Y2
0	0	0
0	1	1
1	0	1
1	1	1



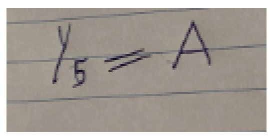
Y3

A	B	Y3
0	0	1
0	1	1
1	0	1
1	1	0



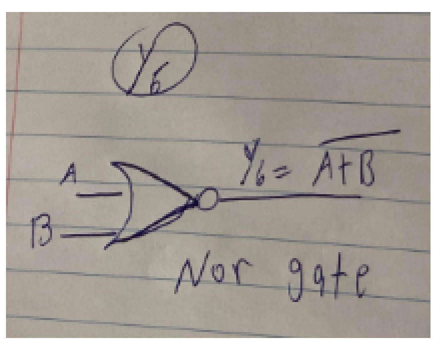
Y4

A	B	Y4
0	0	0
0	1	0
1	0	0
1	1	1



Y5

A	Y5
0	0
1	1

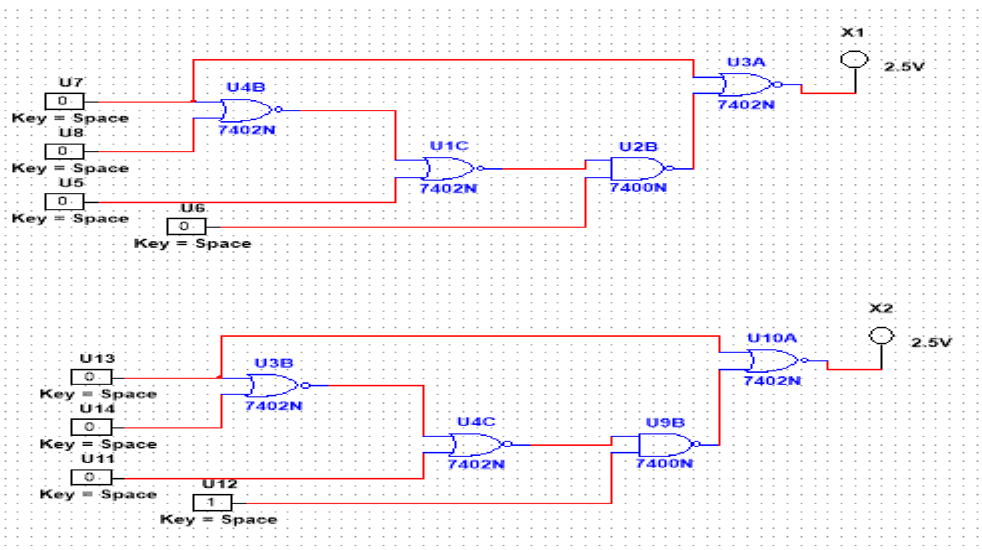


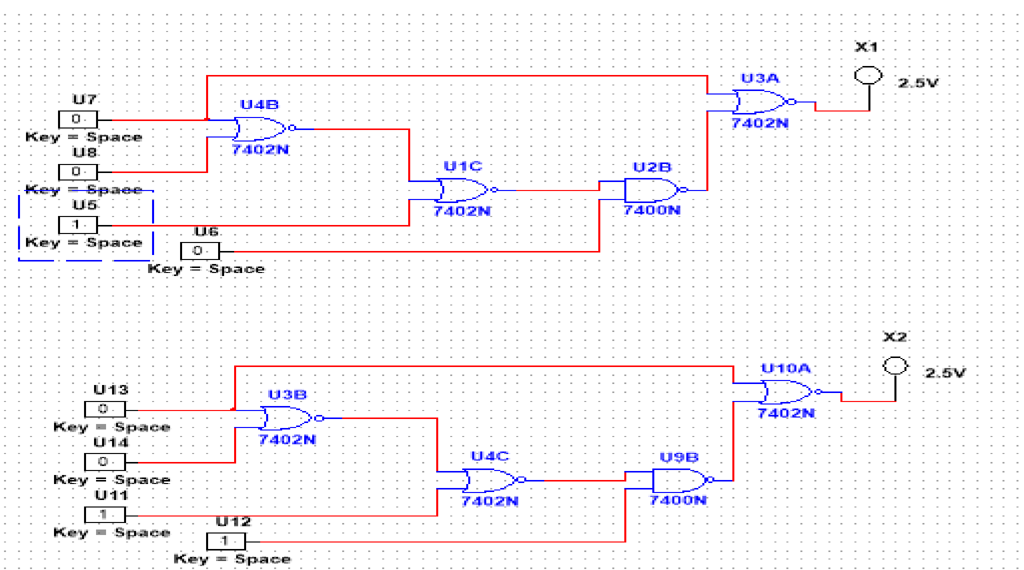
Y6

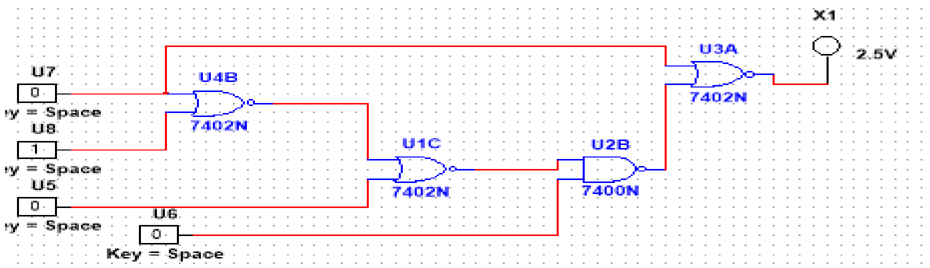
A	B	Y6

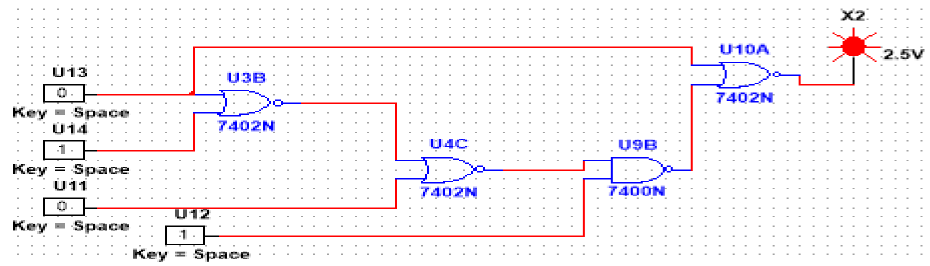
o	0	1
o	1	0
1	0	0
1	1	0

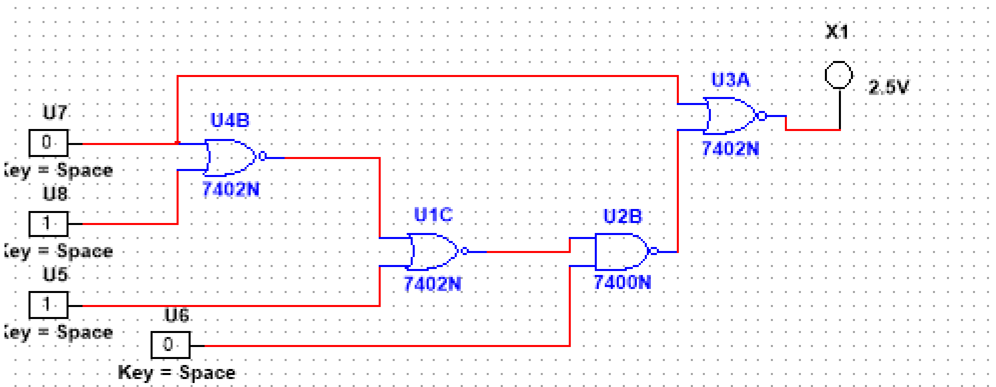
PART B:

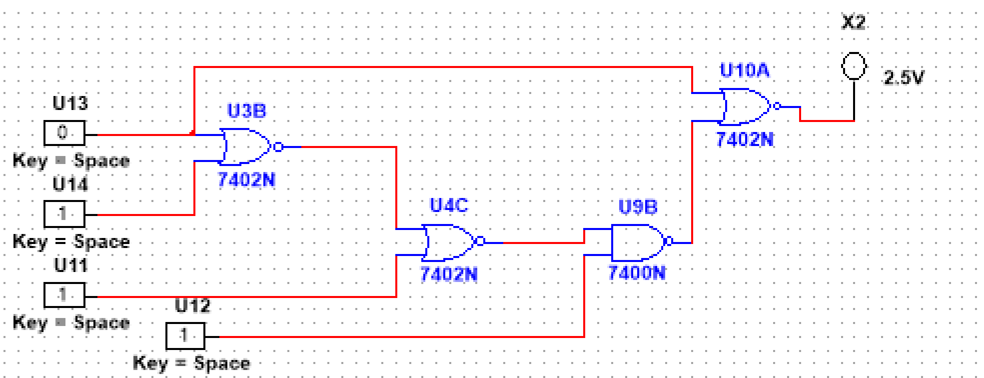












……… The remaining cobminations up to 1111 will result in a out put of 0/low will be using demorgans Law

gate 1 = $\overline{A+B}$

gate 2 = $\overline{(\overline{A+B}) + C} = ((\overline{\overline{A+B}}) \cdot \overline{C}) = [(A+B) \cdot \overline{C}]$

gate 3 = $\overline{[(A+B) \cdot \overline{C}] \cdot D}$

So $Y_1 = \overline{\overline{[(A+B) \cdot \overline{C}] \cdot D} + A}$

$= \overline{\overline{[(A+B) \cdot \overline{C}] \cdot D}} \cdot \overline{A}$

there for $Y_1 = [(A+B) \cdot \overline{C}] \cdot D \cdot \overline{A}$

Y (unreduced)

now we are reducing Y_1

$\overline{A}\,\overline{D}[(A+B)\overline{C}] = [A\overline{C} + B\overline{C}]\overline{A} \cdot D$

$= A\overline{A}D\overline{C} + B\overline{C}\overline{A}D$

$\boxed{A\overline{A} = 0}$ so $= 0 + B\overline{C}\overline{A}D$

there for $\boxed{Y_1 = \overline{A}B\overline{C}D}$

reduced Y_1 or Y (msop)

Y(UNREDUCED)=Y(MSOP)

A	B	C	D	Y(unreduced)	Y(msop)
0	0	0	0	0	0
0	0	0	1	0	0
0	0	1	0	0	0
0	0	1	1	0	0
0	1	0	0	0	0
0	1	0	1	1	1
0	1	1	0	0	0
0	1	1	1	0	0
1	0	0	0	0	0
1	0	0	1	0	0
1	0	1	0	0	0
1	0	1	1	0	0
1	1	0	0	0	0
1	1	0	1	0	0
1	1	1	0	0	0
1	1	1	1	0	0

Y=A’BC’D :