1)

A	B	C	D	X₁	X₀
0	0	0	0	0	0
0	0	0	1	0	1
0	0	1	0	1	0
0	0	1	1	0	1
0	1	0	0	1	0
0	1	0	1	1	1
0	1	1	0	1	0
0	1	1	1	1	1
1	0	0	0	1	0
1	0	0	1	1	1
1	0	1	0	1	0
1	0	1	1	1	1
1	1	0	0	1	0
1	1	0	1	1	1
1	1	1	0	0	1
1	1	1	1	1	0

X_0:

AB\CD	00	01	11	10
00	0	1	0	1
01	1	0	1	0
11	0	1	0	1
10	1	0	1	0

$$X_0 = \bar{A}\bar{B}C\bar{D} + A\bar{B}C\bar{D} + \bar{A}\bar{B}CD + AB\bar{C}D + \bar{A}B\bar{C}D + A\bar{B}CD$$
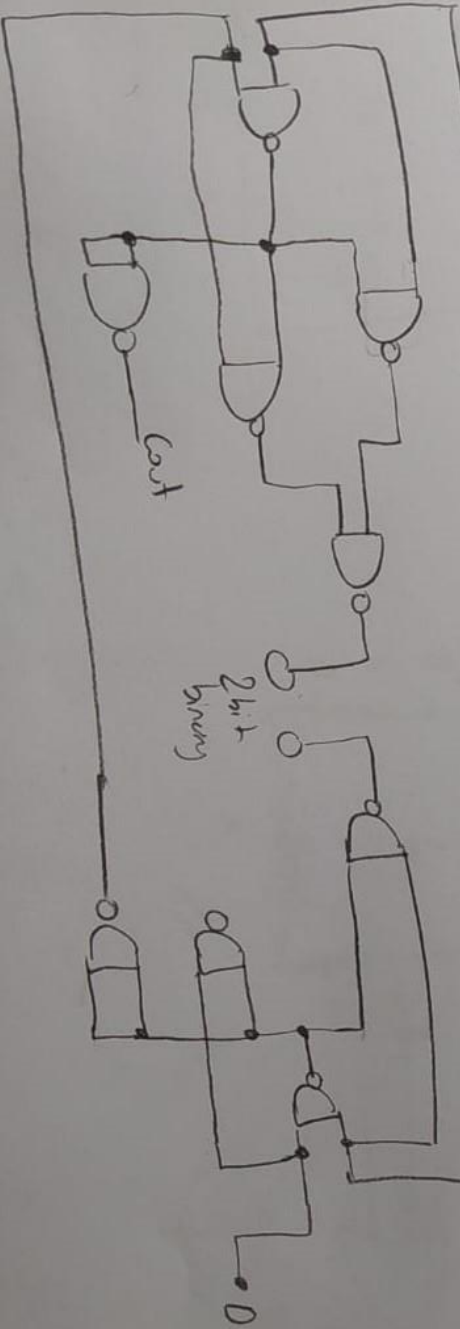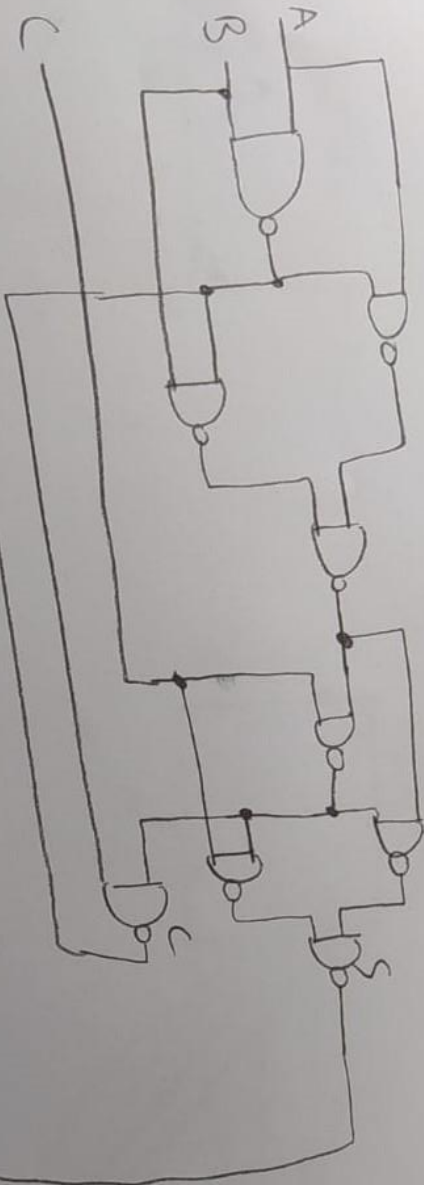$$+ \ \bar{A}\bar{B}C\bar{D} + AB\bar{C}D$$

X_1:

AB\CD	00	01	11	10
00	0	0	1	0
01	0	1	1	0
11	1	1	0	1
10	0	0	1	1

$$X_1 = \bar{A}B\bar{D} + \bar{A}C\bar{D} + AB\bar{D} + \bar{A}BC$$
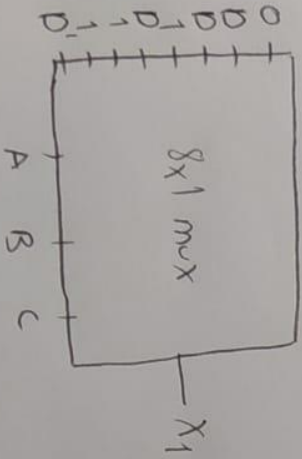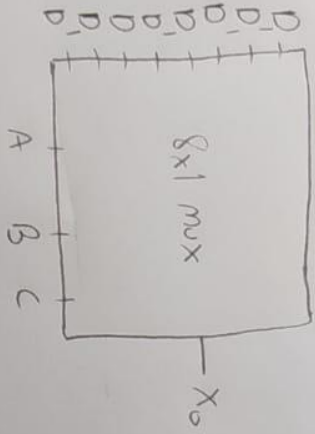$$+ \ AB\bar{C} + \bar{B}CD$$

2)

Full Adder

3)

8x1 mux with inputs D_0, D_1, D_2, D_3, D_4, D_5, D_6, D_7 and select lines A, B, C, output X_0

8x1 mux with inputs D_0, D_1, D_2, D_3, D_4, D_5, D_6, D_7 and select lines A, B, C, output X_1

4)