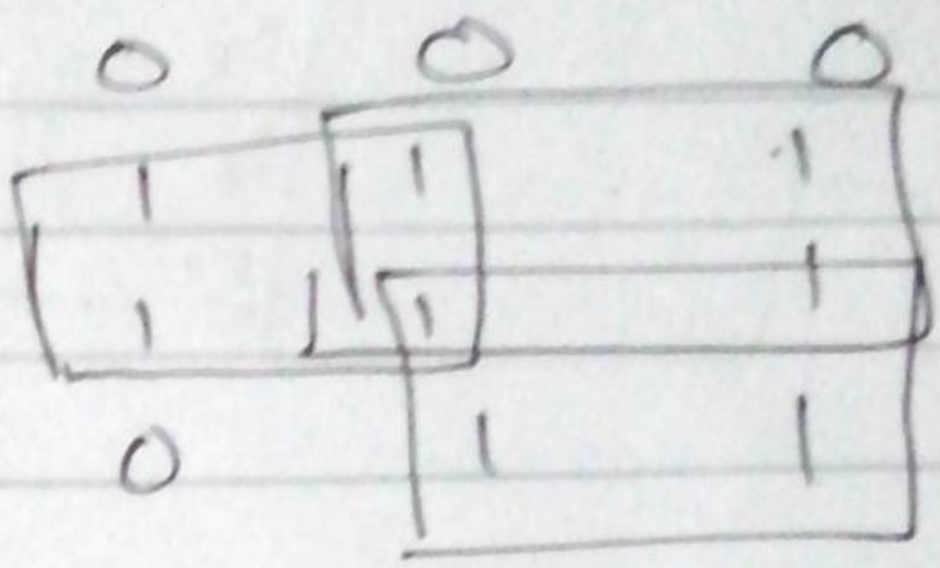
Q#1 19F0228

part (i)

	00	01	11	10
00	1	0	0	0
01	0	1	1	1
11	0	1	1	1
10	0	0	1	1

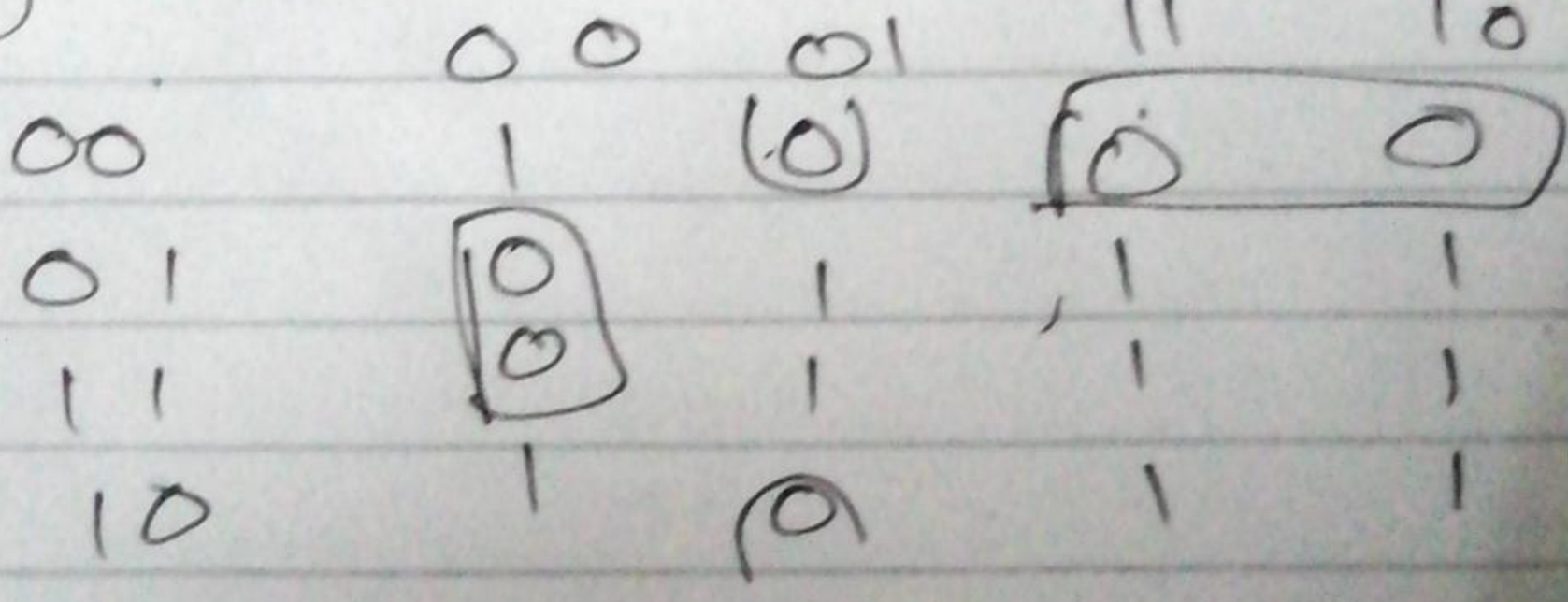


$$F = BD + AC + \bar{B}\bar{C}\bar{D} + BC$$

This is minimum expression of SOP

Part (ii)

	00	01	11	10
00	1	0	0	0
01	0	1	1	1
11	0	1	1	1
10	1	0	1	1



$$F = (\bar{B} + C + \bar{D})(A + B + \bar{C})(\bar{B} + C + D)$$

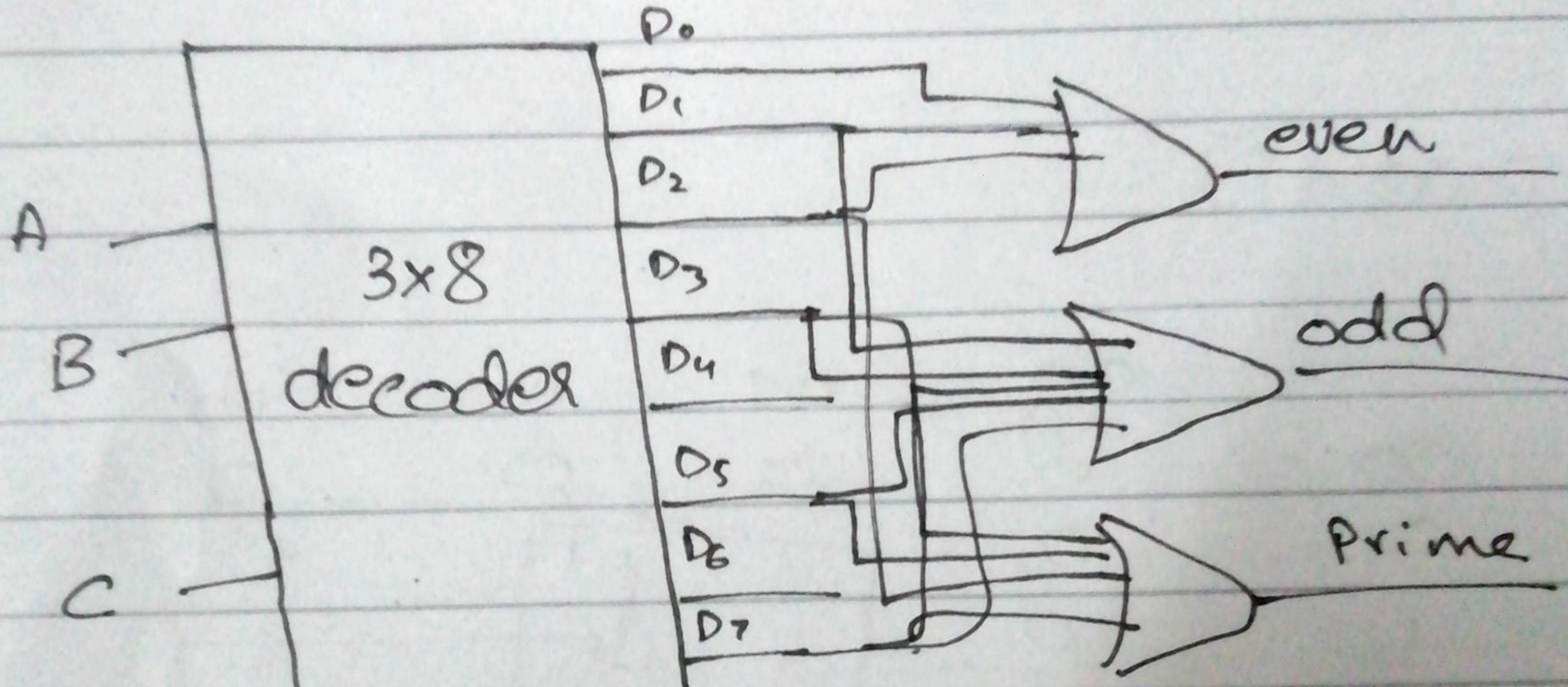
This is minimum expression POS

Q2 19F-0228.

a)

A	B	C	even	odd	prime
0	0	0	1	0	0
0	0	1	0	1	0
0	1	0	1	0	1
0	1	1	0	1	1
1	0	0	1	0	0
1	0	1	0	1	1
1	1	0	1	0	0
1	1	1	0	1	1

Q2 (b)



Q3 19F-0228

Design and implement 4 bit data and generates a bit along with data bits.

x	A	B	C	parity
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

(2)

k-map

xA \ BC	00	01	11	10
00	1	0	1	0
01	0	1	0	1
11	1	0	1	0
10	0	1	0	1

(2)

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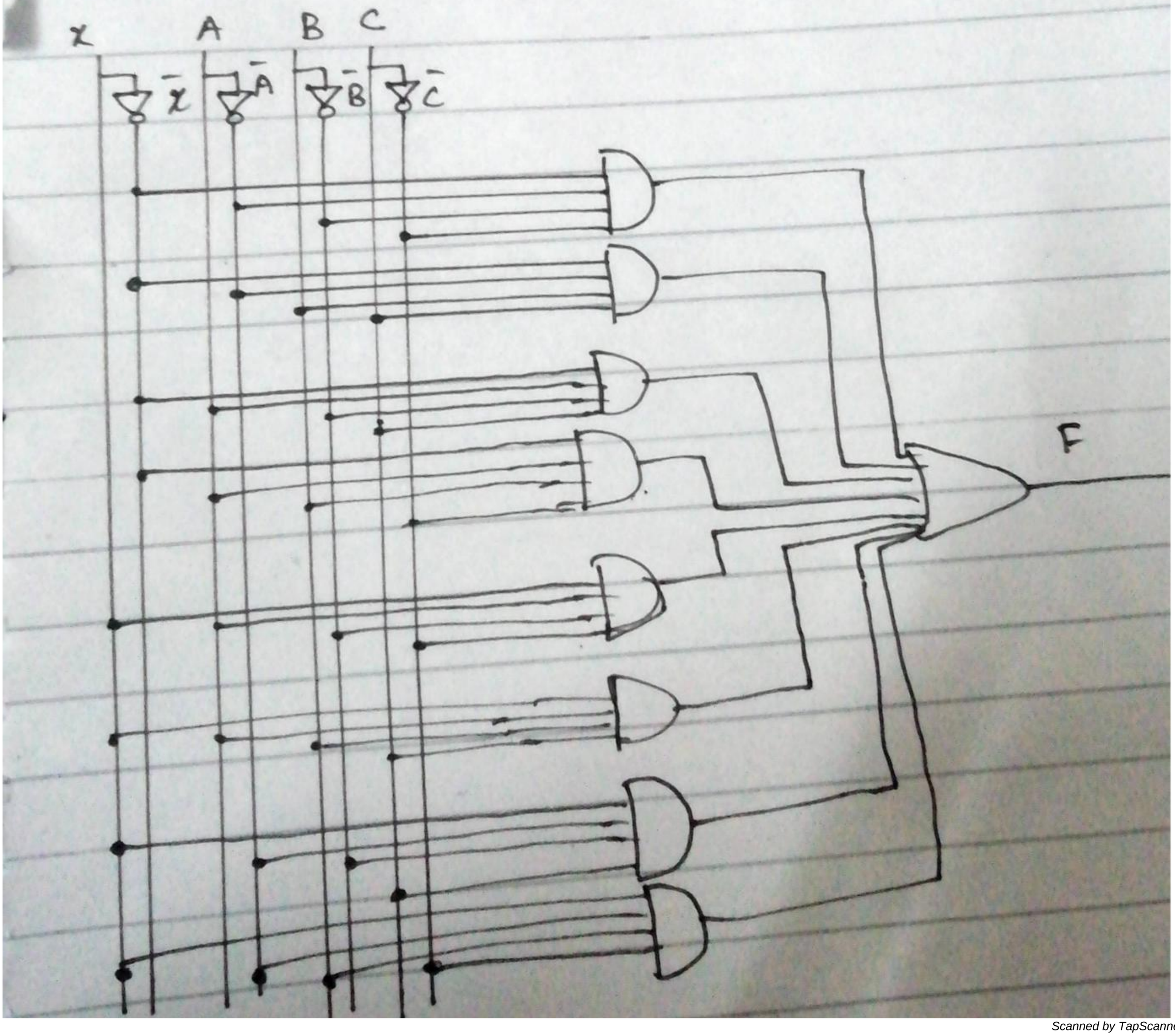
Equations:

$$F(x,A,B,C) = \bar{x}\bar{A}\bar{B}\bar{C} + \bar{x}\bar{A}BC + \bar{x}A\bar{B}C + \bar{x}AB\bar{C} + xA\bar{B}\bar{C} + xABC + x\bar{A}\bar{B}C + x\bar{A}B\bar{C}$$

Circuit:



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QNO4

BCD code divisible by 4

0	0	0	0	0	
0	0	0	1	0	
0	0	1	0	0	8x1 mux
0	0	1	1	1	0-1 = 0
0	1	0	0	1	2-3 = 0
0	1	0	1	0	4-5 = 0
0	1	1	0	1	~~8-9~~
0	1	1	1	0	(6-7) = 0
1	0	0	0	1	8-9 = 1
1	0	0	1	1	10-11 = 0
1	0	1	0	0	12-13 = 0
1	0	1	1	0	14-15 ~ 0
1	1	0	0	1	
1	1	0	1	0	
1	1	1	0	0	
1	1	1	1	1	