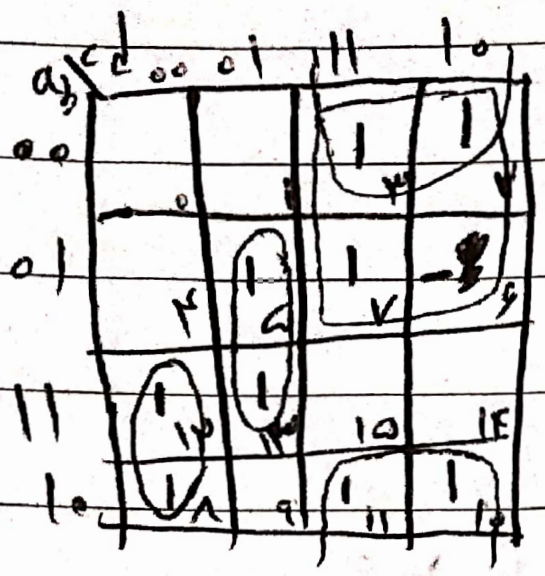
سوال ۲)

$$F(a,b,c,d) = \sum m(2,3,5,7,8,10,11,12,13) + d(4)$$

الف)



EPI

$\bar{b}c$

$\bar{a}c$

$b\bar{c}d$

$a\bar{c}d$

+4

EPI

$\bar{b}c$

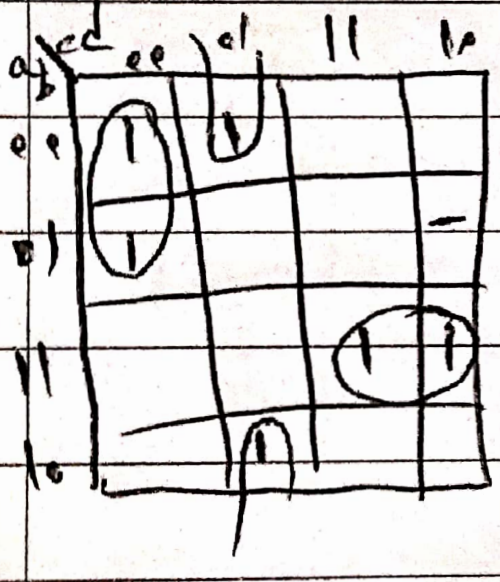
+2

-3 for F

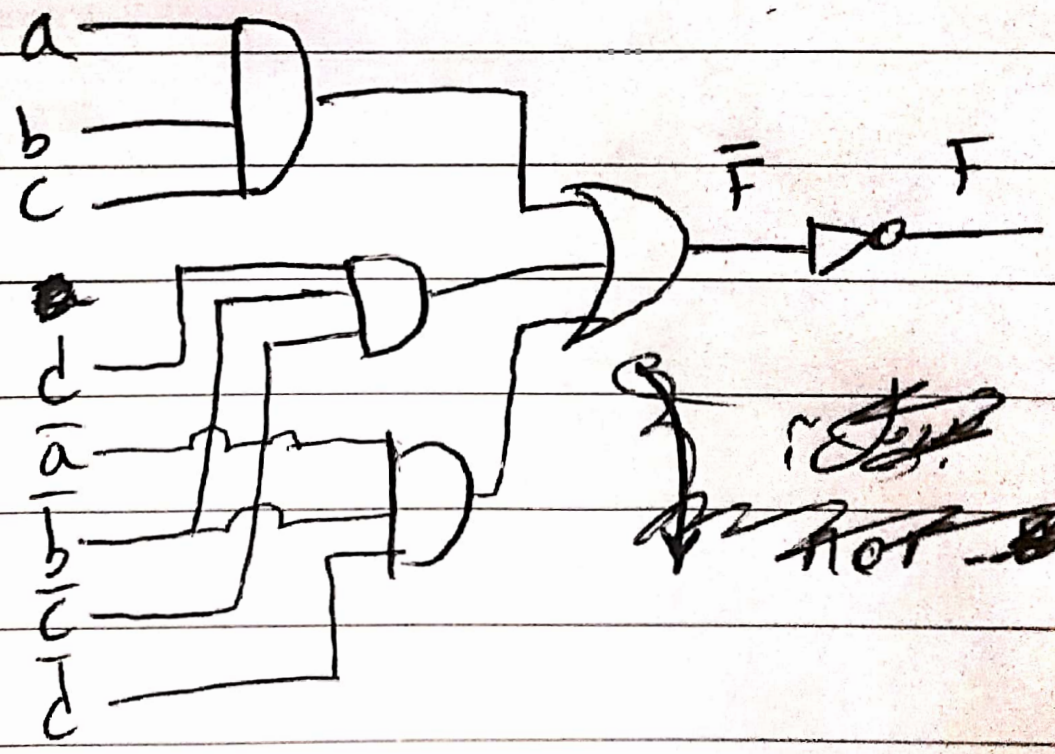
-3 for missed PIs

ب)

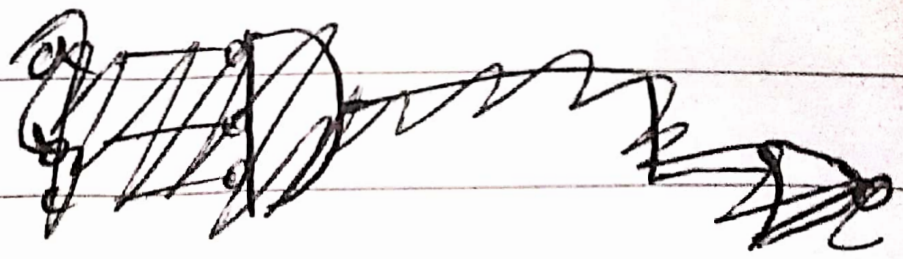
And - or - Inv → sop → $\bar{F}$



$\bar{a}c\bar{d} + \bar{b}c\bar{d} + abc$



+5



DAT

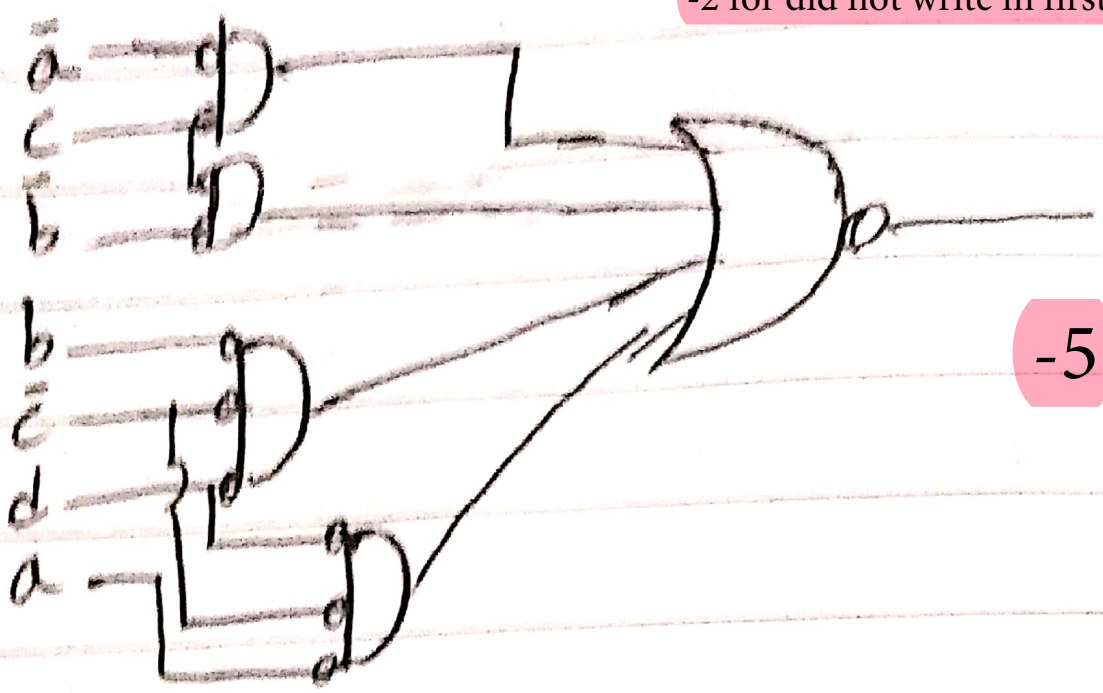
And - or

Nor - Nor

sop B $\bar{b}c + \bar{a}c + b\bar{c}d + a\bar{c}d$

+1 for finding F

-2 for did not write in first part of question and mention it



-5

ج) $F(a,b,c,d) = \sum m(2,3,5,7,8,10,11,12,13) + d(6)$

✓2 ✓3 ✓5 ✓7 ✓8 ✓10 ✓11 ✓12 ✓13	✓(2,3) 1 ✓(2,6) 4 ✓(2,10) 8 ✗(8,10) 2 ✗(8,12) 4 ✓(3,7) 4 ✓(3,11) 8 ✓(5,7) 2 ✓(5,13) 8 ✓(6,7) 1 ✓(10,11) 1	(2,3,6,7) (1,4) = $\bar{a}c$ (2,3,10,11) (1,8) = $\bar{b}c$ ~~(2,3,6,7) (4,1)~~ ~~(2,3,10,11) (8,1)~~ (8,10) 2 = $a\bar{b}\bar{d}$ (8,12) 4 = $a\bar{c}\bar{d}$ (5,7) 2 = $\bar{a}bd$ (5,13) 8 = $b\bar{c}d$

+8

+4

-3 for missed PIs

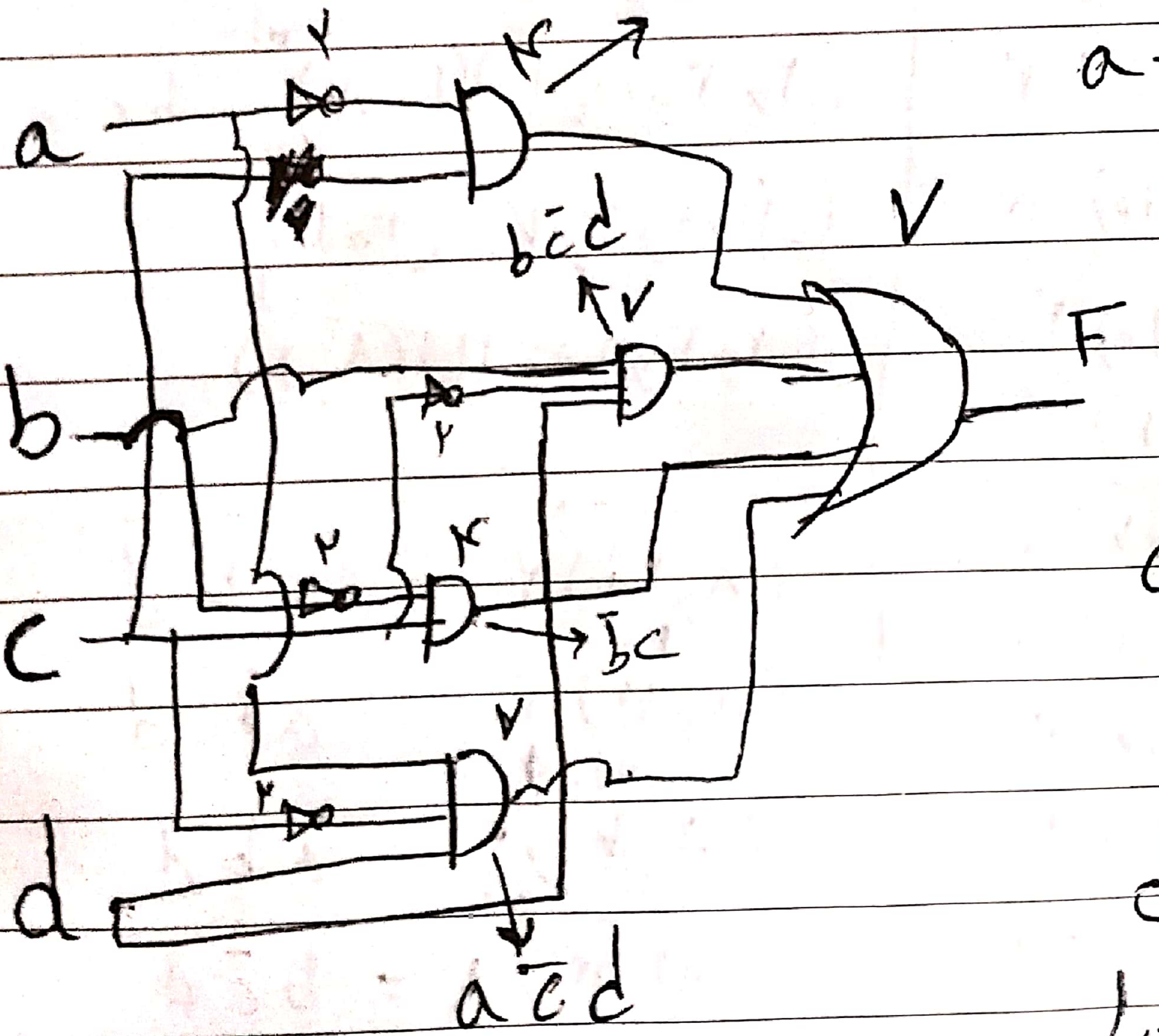
ادامه‌ی ج)

PI \ minterm	۲	۳	۵	۷	۸	۱۰	۱۱	۱۲	۱۳
$\bar{a}c$	x	x		x					
$\bar{b}c$	x	x				x	x $^{\alpha}$		
$a\bar{b}\bar{d}$					x	x			
$a\bar{c}\bar{d}$					x			x $^{\alpha}$	
$\bar{a}bd$			x	x					
$b\bar{c}d$			x						x $^{\alpha}$
	✓	✓	✓	✓	✓	✓	✓	✓	✓

+2

$$F = \bar{b}c + a\bar{c}d + b\bar{c}d + \begin{Bmatrix} \bar{a}c \\ \bar{a}bd \end{Bmatrix}$$

-3 for not accurate F



abcd 0111 → abcd 1111

$a \rightarrow$ ۱۴ - ۱۳ = ۱ (۵

۱ ≤ ۷ میرا نیست

-6

b(۷+۷) - (۲+۴+۷)

۱۴ - ۱۳ = ۱

میرا نیست

-6

$c \rightarrow$ ۱۴ - ۱۱ = ۵

۵ < ۷ میرا

+6

d

۱۴ - ۱۴ = ۰

میرا