

Theory Assignment 3

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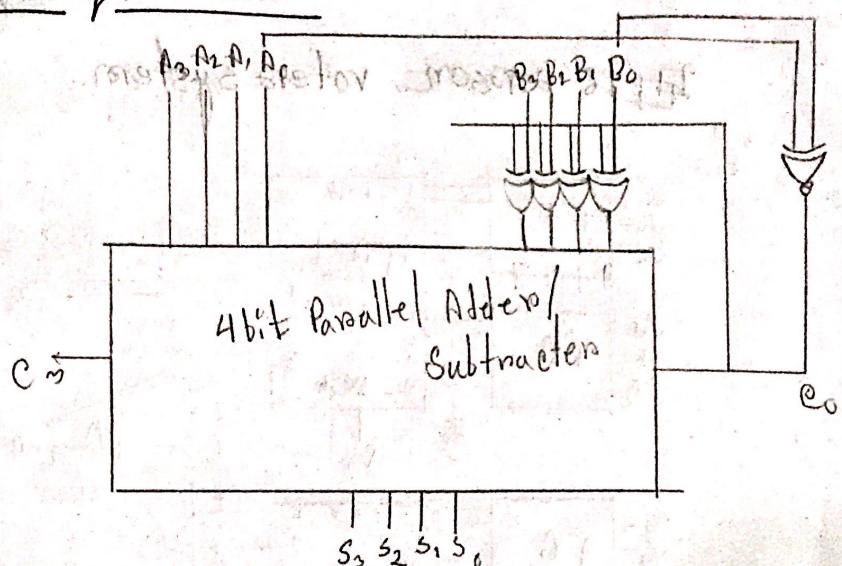
Section : 02

Course : CSE260

Ans.to the ques.no.1

Truth table

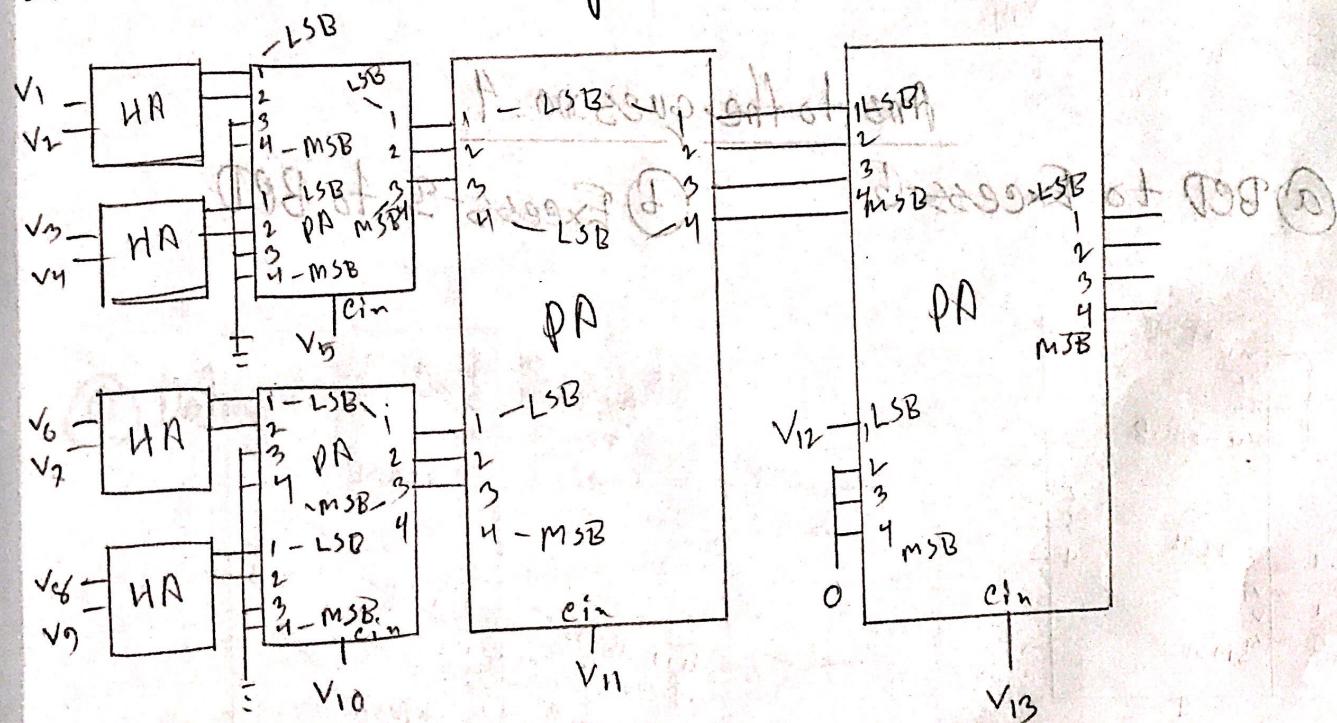
A ₀	B ₀	Output C
0	0	A-B
0	1	A+B
1	0	A+B
1	1	A-B



$$C = (A_0 \oplus B_0)'$$

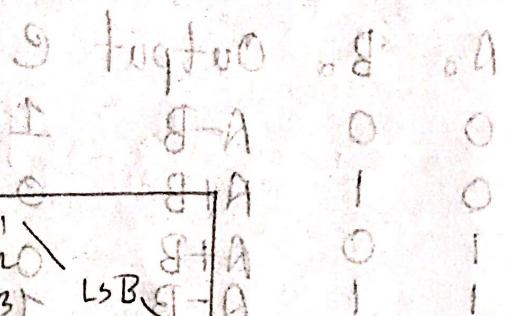
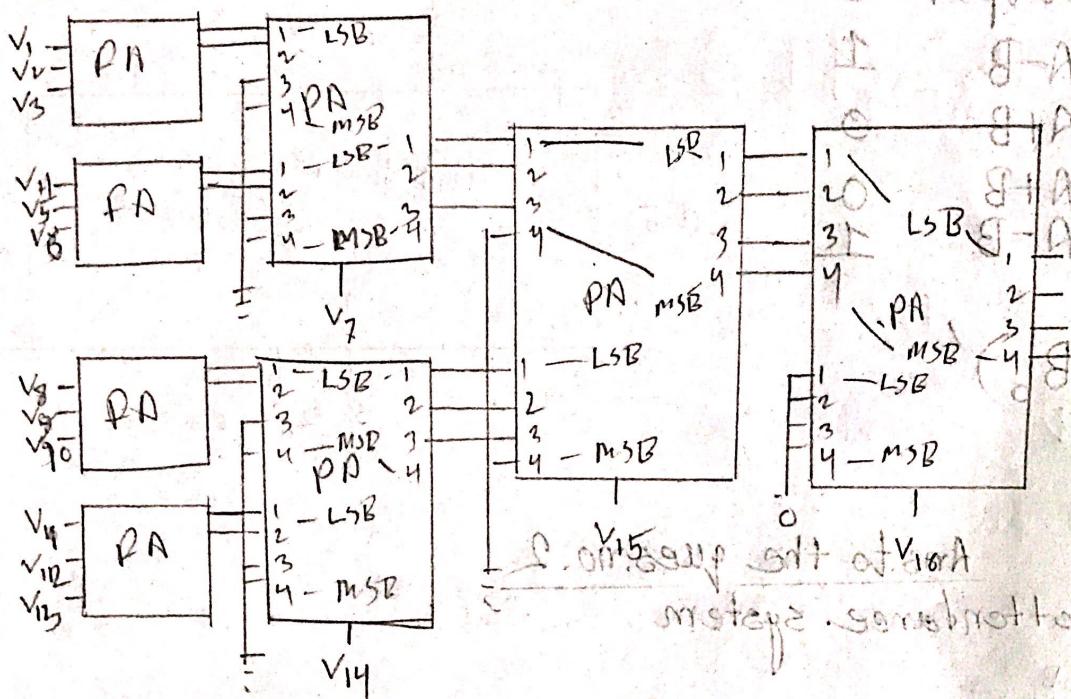
Ans.to the ques.no.2

13 person attendance system.



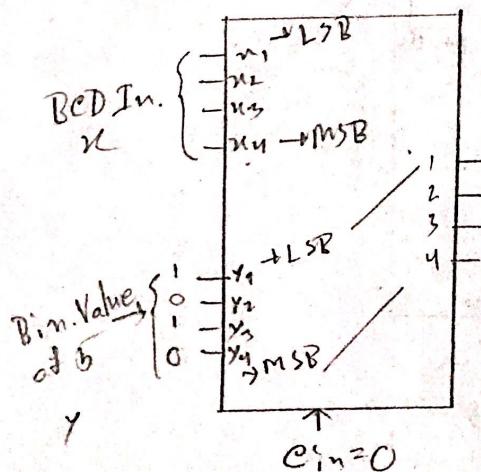
Ans. to the ques. no. 3.

16 person voters system.

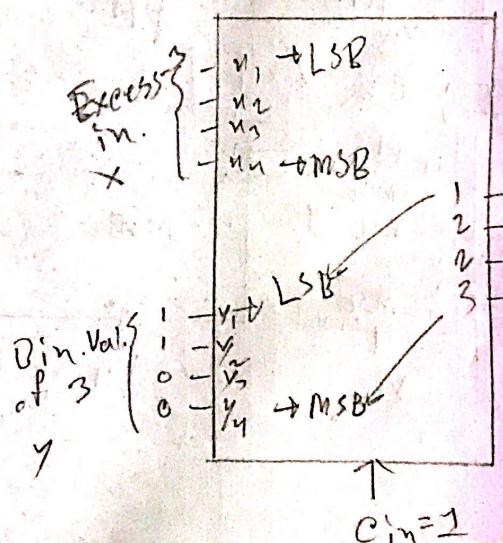


Ans. to the ques. no. 4.

(a) BCD to Excess-5



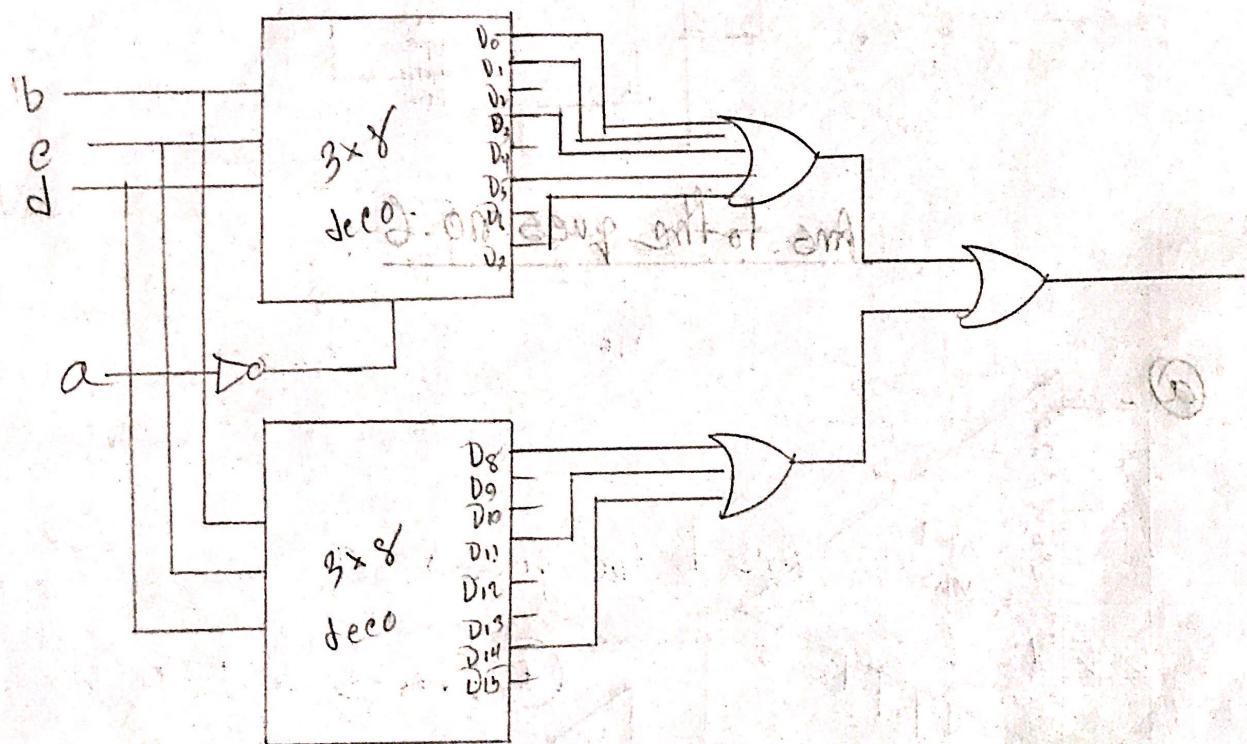
(b) Excess-3 to BCD



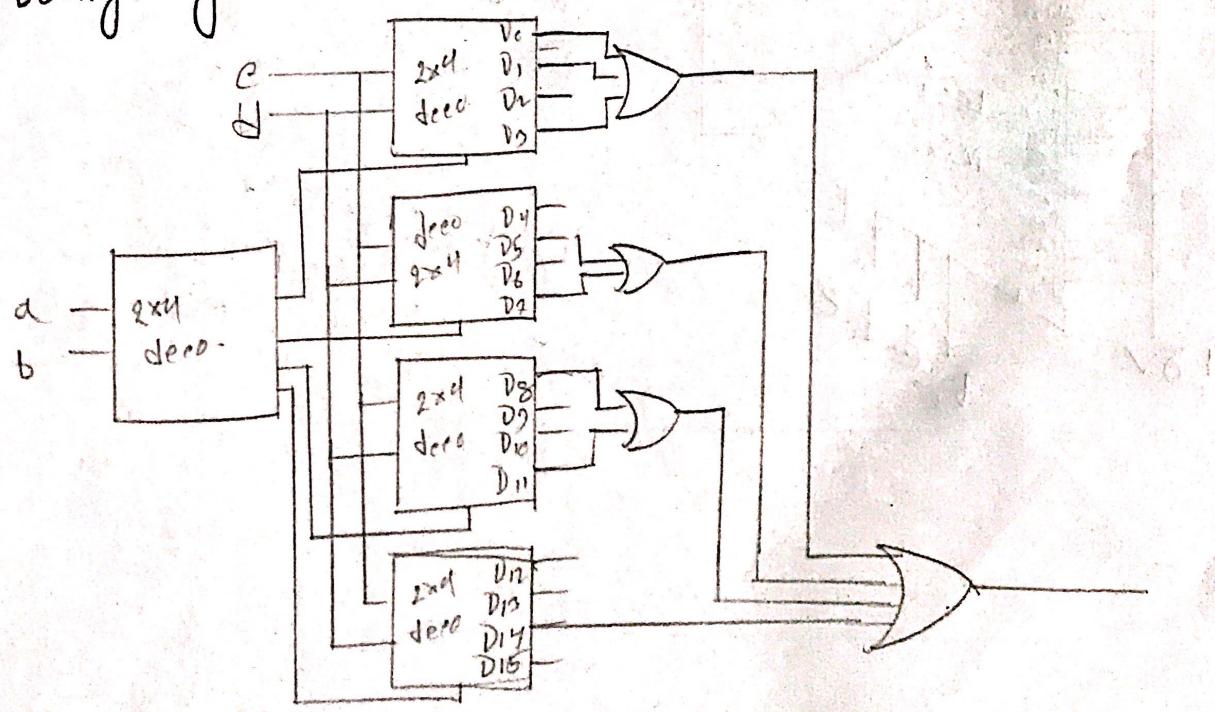
Ans. to the ques. no. 5.

$$f(a, b, c, d) = \Sigma(0, 1, 3, 5, 7, 8, 11, 14)$$

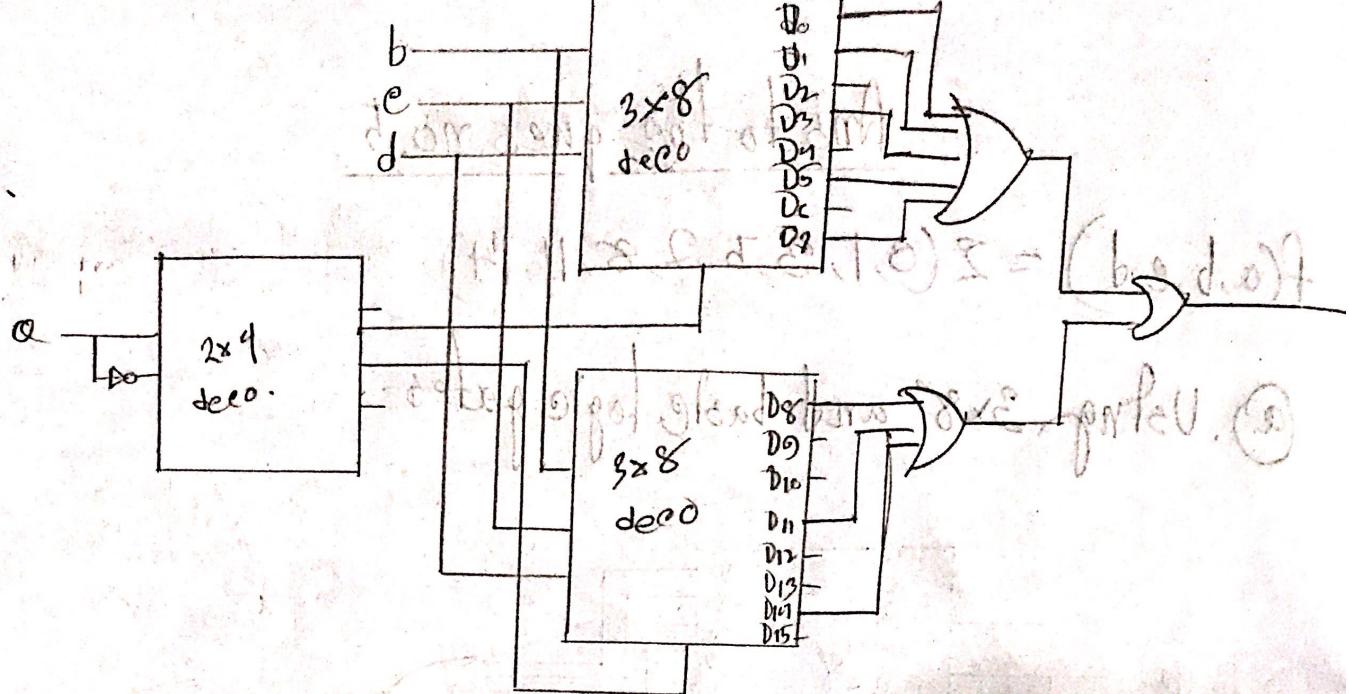
(a). Using 3×8 and basic logic gates -



(b) Using Only 2×4 decoders

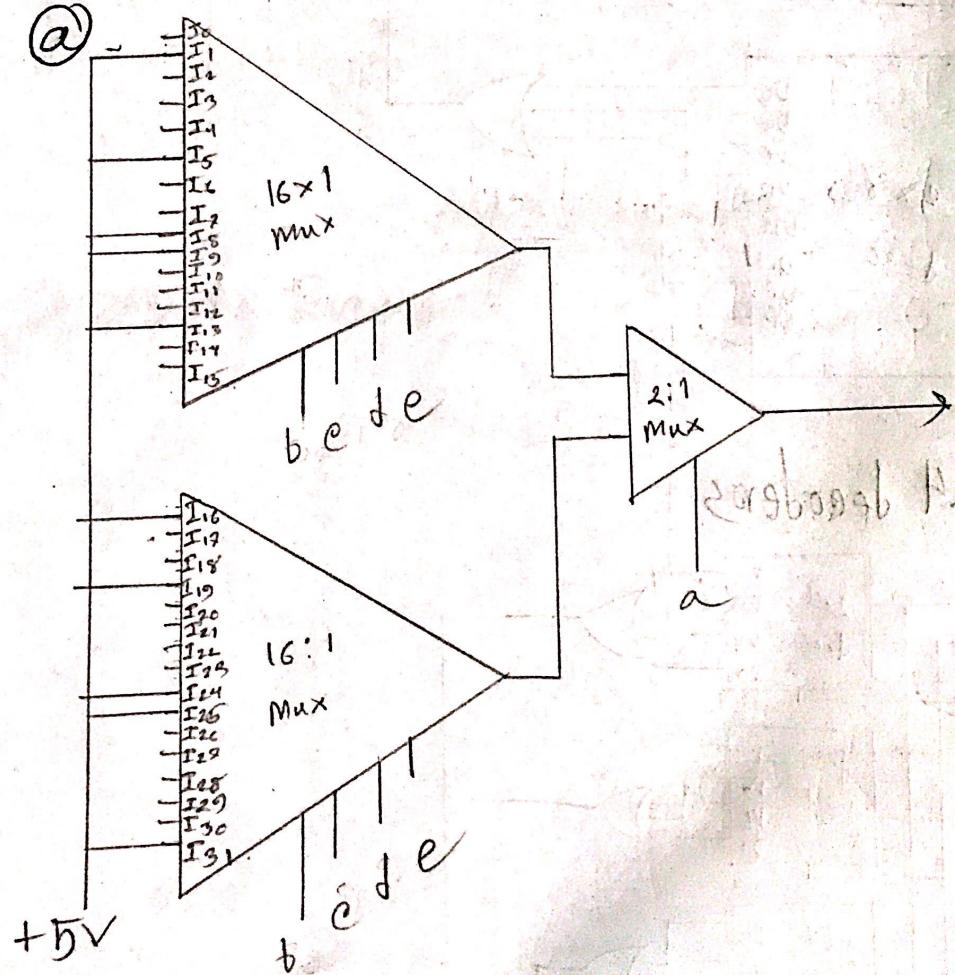


(b).



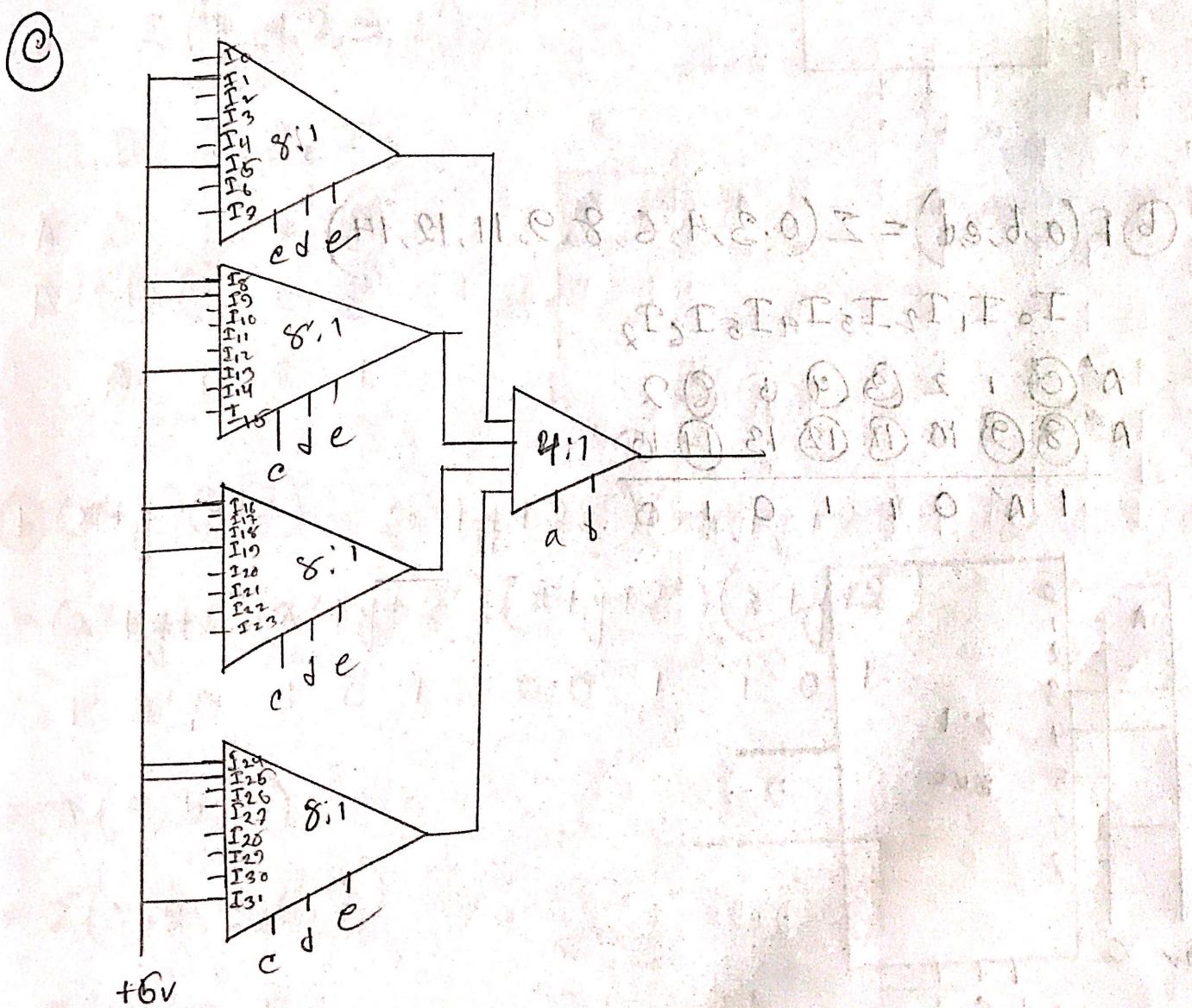
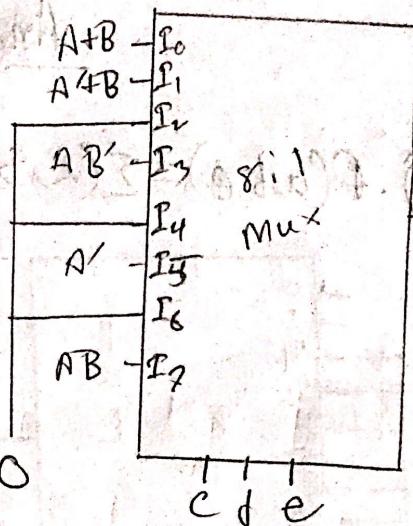
Ans. to the ques. no. 6

(a)



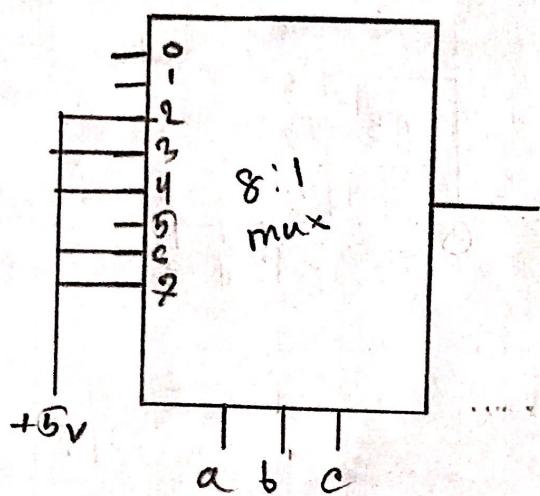
(b) $I_0 I_1 I_2 I_3 I_4 I_5 I_6 I_7$

$A'B'$	0	1	2	3	4	5	6	2
$A'B$	8	9	10	11	12	13	14	16
AB'	16	12	18	19	20	21	22	23
AB	24	25	26	27	28	29	30	31
$A+B$	$A'B$	$A'B'$	AB'	AB	A'	B	$A'B$	AB



Ans to the ques.no.2

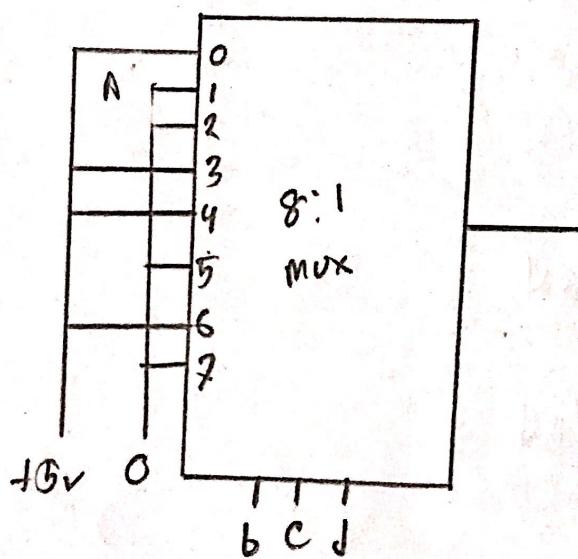
$$\textcircled{a}. P(a,b,c) = \Sigma(2,3,4,6,7)$$



$$\textcircled{b} F(a,b,c,d) = \Sigma(0,3,4,6,8,9,11,12,14)$$

$$I_0 I_1 I_2 I_3 I_4 I_6 I_7 P_2$$

$$\begin{array}{r}
 D' \quad \textcircled{1} \quad 2 \quad \textcircled{3} \quad \textcircled{4} \quad 5 \quad \textcircled{6} \quad 2 \\
 D'' \quad \textcircled{8} \quad \textcircled{9} \quad 10 \quad \textcircled{11} \quad \textcircled{12} \quad 13 \quad \textcircled{14} \quad \textcircled{15} \\
 \hline
 1 \quad 0 \quad 1 \quad 1 \quad 0 \quad 1 \quad 0
 \end{array}$$



Ans to the ques no. 8:

$$@. ab'c + c = ab'(c+c') + c(a+a')(b+b')$$

$$= ab'c + ab'c' + (ac + a'c)(b+b')$$

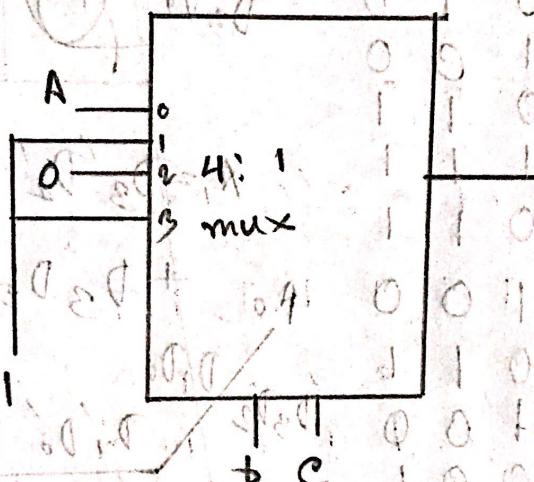
$$= ab'c + ab'c' + (abc + ab'c + a'b'c + abc')$$

$$= \Sigma(5, 4, 2, 3, 1)$$

$$I_0, I_1, I_2, I_3$$

$$\begin{matrix} A' & 0 & 1 & 2 & 3 \\ A & 4 & 5 & 6 & 2 \end{matrix}$$

$$A \quad 1 \quad 0 \quad 1$$



$$(b) (x+y)(y+z) = (x'+y+zz')(xz+y+z')$$

$$= (x'+y+z)(x'+y+z')(x+y+z')(x'+y+z')$$

$$1 \quad 0 \quad 0 \quad 1 \quad 0 \quad 1 \quad 0 \quad 0 \quad 1 \quad 1 \quad 0 \quad 1$$

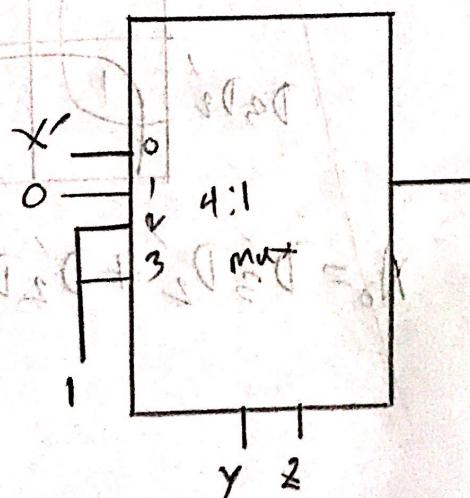
$$= \pi(4, 5, 1)$$

$$= \Sigma(0, 2, 3, 6, 7)$$

$$I_0, I_1, I_2, I_3$$

$$\times 0 \quad 1 \quad 2 \quad 3$$

$$\times 0 \quad 1 \quad 1$$



Ans to the ques no. 9

$D_2 D_1 D_0$	A_1	A_0
0 0 0	X X	
0 0 1	0 0	
0 1 0	0 1	
0 1 1	0 1	
1 0 0	1 0	
1 0 1	1 0	
1 1 0	1 0	
1 1 1	0 0	
0 0 0	1 1	
0 0 1	1 1	
0 1 0	1 1	
0 1 1	0 0	
1 0 0	1 1	
1 0 1	1 1	
1 1 0	1 1	
1 1 1	0 0	
1 1 1 0 0		
1 1 1 1 1		
1 1 1 1 1		

D_1	$D_1 D_0$	$D_1 D_0 D_1 D_0$	$D_1 D_0 D_1$	$D_1 D_0 D_1 D_0$
$D_3 D_2'$	X			
$D_3 D_2$	1	1		1
$D_3 D_2$	1		1	
$D_3 D_2'$	1	1		1

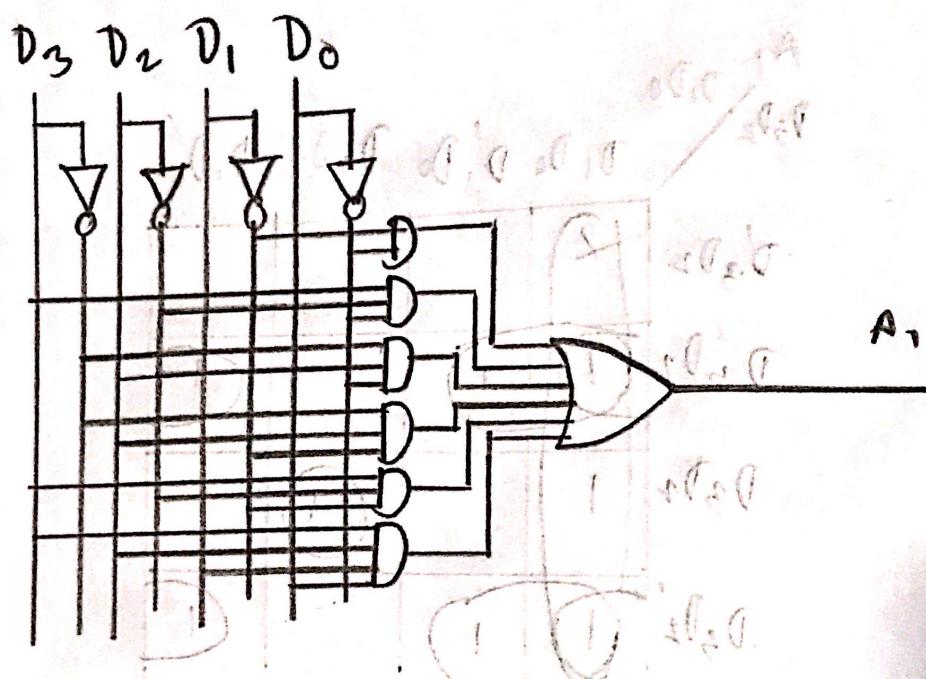
$$A_1 = D_1' D_0' + D_3 D_2' D_0 + D_3' D_2 D_1' + D_3 D_2' D_1 + D_3 D_2 D_1 D_0$$

$$A_1 = D_1' D_0' + D_3 D_2' D_0 + D_3' D_2 D_0' + D_3 D_2 D_1' + D_3 D_2' D_1 + D_3 D_2 D_1 D_0$$

D_0	$D_1 D_0$	$D_1 D_0 D_1 D_0$	$D_1 D_0$	$D_1 D_0$
$D_3 D_2$	X		1	1
$D_3 D_2'$				
$D_3 D_2$	1		1	1
$D_3 D_2'$	1	1		1

$$A_0 = D_3 D_0' + D_3' D_2' D_1 + D_3 D_2 1 + D_3 D_2' D_1'$$

Circuit Diagram for A,



Circuit Diagram for A₀

