CSE 260 Assignment 3 Name: Shihab Muhtasim ID: 21301610

#### : sland Ansito the or no I am most

Given, f(A,B,C,D) = \(\int(0,2,7,11,12,14)\) + d(3,4,5,6) Grouping based on the number of 1's in them,

carroup A : 20000)

carroup B: 20010,0100)

carroup C: (0011,0101,01100)

Group D: 80111/1101/11103

	step 1	Step 2	step 3
0	0000	(0,2) 00+0	(0,2,4,6) 00
		(0,4) 0_00 ×	
		V.	
2		(2,3)001- V	(2,13,6,7) 0-1-
4	01004	(2,6) 0-10	(4)6,12,14)-1-0
. ( -,	S - C 1 - A	(4,5) 010 - ~	(4,5,6,7)01
1	12 STACH ST	(4,6) 01-0 ×	Say of Maria
		(4/12)-100 V	
	, K.O	min rums proced	off min
3	00111	(3,7) 0-11 V	andrones -
5		(3/11) -011	10 modrour
6	0110V	(5/7) 01-1/ V	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
12	1100V	(6,7) OII- V	) · V (1707 12)
		(6,14)-110 NOCO	Pagarage B: 1
		(12,14) 11-0 X	
		,	o groups
7	0111 7	(rentine time)	L SHOUP D:
11	1011~		1) + quant
14	1110 /		

## Prime impliment chart from the table:

15 10 + (al.cl.)	ABCD	0	2	7	I	12	19
(3,11) -011	B'CD	WO	638	nal	X	quo	in)
(0,2,4,6) 0-0	A'AD'	8	X	7. (	· A	ANO.	(11)
(2,3,6,7)0-1-	MA /COOL	ÇÜ İ	( <b>X</b> )	<b>X</b> 2	- &	940	ird
(4,6,12,14)=1=0	BDZ	1.00	ЦО(		- 0	(X)	(X)
(4,5,6,7) 01	AB	0.1.	110	X		19 No.	100

Ans in SOP = B'CD + AOD' + BD' + CA'CO

(81,51,3 Ans to the of mos 22) vo 1 00 s

Given, F(A,B,C,D) = 5(0,1,2,7,8,10,11,13,15)

Grouping the minterns based on the number of 115 we get is villoo

Group A: {0000} y - 10 (4.3)

GROUP B: {0001,0010,1000}

or noup c: (1010) -11 (1151)

61011,1101,1101)

anoup E: {11113

Tabulation table for finding prime implecants is given below:

		A A A A A	
314	step 1	step 2	step 3
0	0000	(0,1)000-	(0,2,8,10) - 0-0
And content yell give	. X. X	(0,2)00-0 V	(0,8,2,10) -0-0
X		(028) -000 V	TITE VAICED
V	·	ACD	11-1 (31/11)
-!,	0001 ~	(2,10) -010 YOA	1-11 (31.8)
2	0010	(8,10)10-0 V	0.0=(012.5-0)
8	1000 ×	3 Q X 19 8	0-0- (2100210)
10	1010	(10/11) 101-18+0	Answert: A'B
7	0111	(7/15) - 111	
11	1011	(11/15) 1-11	
13	1101	(13,15) 11-1	1
15	1111 ~		

# Preime implicant dable:

			1 1	Tay	17	8	110	111	13	15
	ABCD	0	1	2	F	0	10	11		
(0,1) 000_	A'B'C'	X	(X)	1	1.0	-	4 ()	0.0	0	
(10/11) 101 -	A B'C	0	00	1	(0)	)	X	X		
(7/15) -111	BCD	00	<b>5</b>	(	$\otimes$	)				X
(11/15) 1-11	ACD			1			S.	X		X
(13,15) 11-1	ABD	JIC					V	0 1	$\otimes$	X
(0,2,8,10)-0-0	B'D'	X	(	8	6	<b>(V)</b>	X	00	01	8

Answer: A'B'C'+B'D'+BCD+ABD+ABCC 01

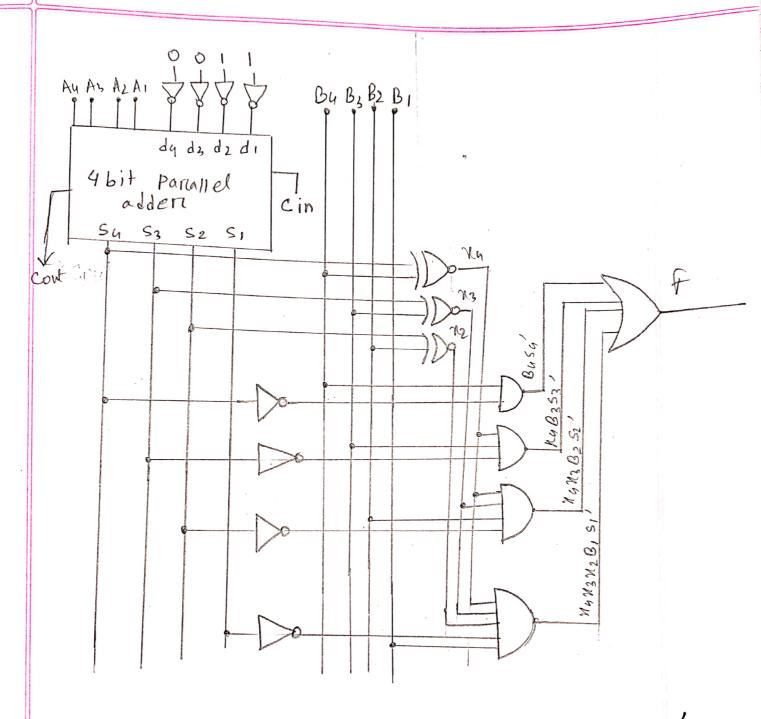
13 1101 x (3/12) 1-11 11 1011 x (11/12) 1-11 111 (3/12) x 1110 ±

v //// 31

### Answer to the or no 3

Criven condition for circuit output = 1 when A-3 < B output = 0 when otherwise Let, A-3 = S; output = S453 S2 S1 Again, A = A4A3A2A1 and B = B4B3B2B1 (3)10 = (0011)2 [: AG, BG are MSB] After building A-3= S substructor using 4 bit parallel adden, for comparing bits of B with S, we have to check which digits are errual : and greater. WE Know, F(A=B) = AOB F(A)B)= AB', here F(Bi)Si)=BiSi · f(Bi = Si) = BiOSi = Ki; i= 9,3,2,1 : F(B) S) = (B4) S4) + (B4 = S4) (B3) S2)+ (By=Sy) (B3=S3) (B2) S2) + (By=Sy)(B3=S3)(B2=S2)(B1)S1)

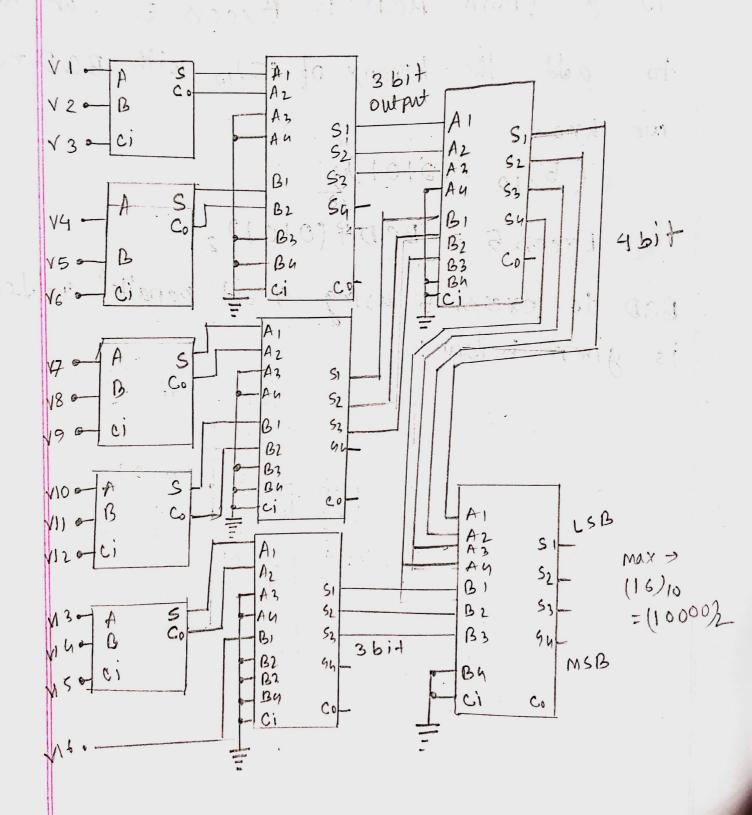
condition for B> A-3 will be, F(B) A-3) = By Sy' + Xy B3 S3'+Ng N3 B2 S2'+ X4N3N2B1S1'



F= Busu'+ KuB3S3'+ Ky K3B2S2'+ Ky X3H2B1S1'

## Ans to the or no 9

16 people votete system using parallel alders:



## Ans to the or no 5

To gx from BCD to Excess 5, we have to add the binary of (5)10 with BCD number. We know,

Excess = BCD+(0101)2

BCD to excess 5 using 4 bit parallel addernis given below:

