

Name: Umama Tashnuva A212ID: 21301570 Section: 05Answer of question no. 01.

$$f(A, B, C, D) = \sum(0, 2, 7, 11, 12, 14) + d(3, 4, 5, 6)$$

When number of '1's are grouped :-

0	0000	(0, 2)	00-0		
		(0, 4)	0-00	(0, 2, 4, 6)	0--0
2	0010	(2, 3)	001-		
4	0100	(2, 6)	0-10	(2, 3, 6, 7)	0-1-
		(4, 12)	-100		
		(4, 5)	010-		
		(4, 6)	01-0	(4, 6, 12, 14)	-1-0
12	1100	(12, 14)	11-0		
3	0011	(3, 7)	0-11	(4, 5, 6, 7)	01--
5	0101	(3, 11)	-011		
6	0110	(5, 7)	01-1		
		(6, 7)	011-		
7	0111	(6, 14)	-110		
11	1011				
14	1110				

	0	2	7	11	12	14
$B'C'D$	*			*		
$A'D'$	*	*				
$A'C$		*	*			
BD'					*	*
$A'B$				*		

Therefore,

$$E_{xp} = A'D' + B'C'D + A'C + BD'$$

Answer of question no. 02

$$F(A, B, C, D) = \sum (0, 1, 2, 7, 8, 10, 11, 13, 15)$$

When the number of '1's are grouped:

0	0000	(0, 1)	000-		
		(0, 2)	00-0	(0, 2, 8, 10)	-0-0
		(0, 8)	-000		
1	0001			(0, 2, 8, 10)	0-0-0
2	0010	(2, 10)	-010		
8	1000	(8, 10)	10-0		
10	1010	(10, 11)	101-		
7	0111	(7, 15)	-111		
11	1011	(11, 15)	1-11		
13	1101	(13, 15)	11-1		
15	1111				

	0	1	2	7	8	10	11	13	15
$A'B'C'$	*	*							
$AB'C$					*	*			
BCD				*					*
ACD						*			*
ABD							*		*
$B'D'$	*			*	*	*	*		

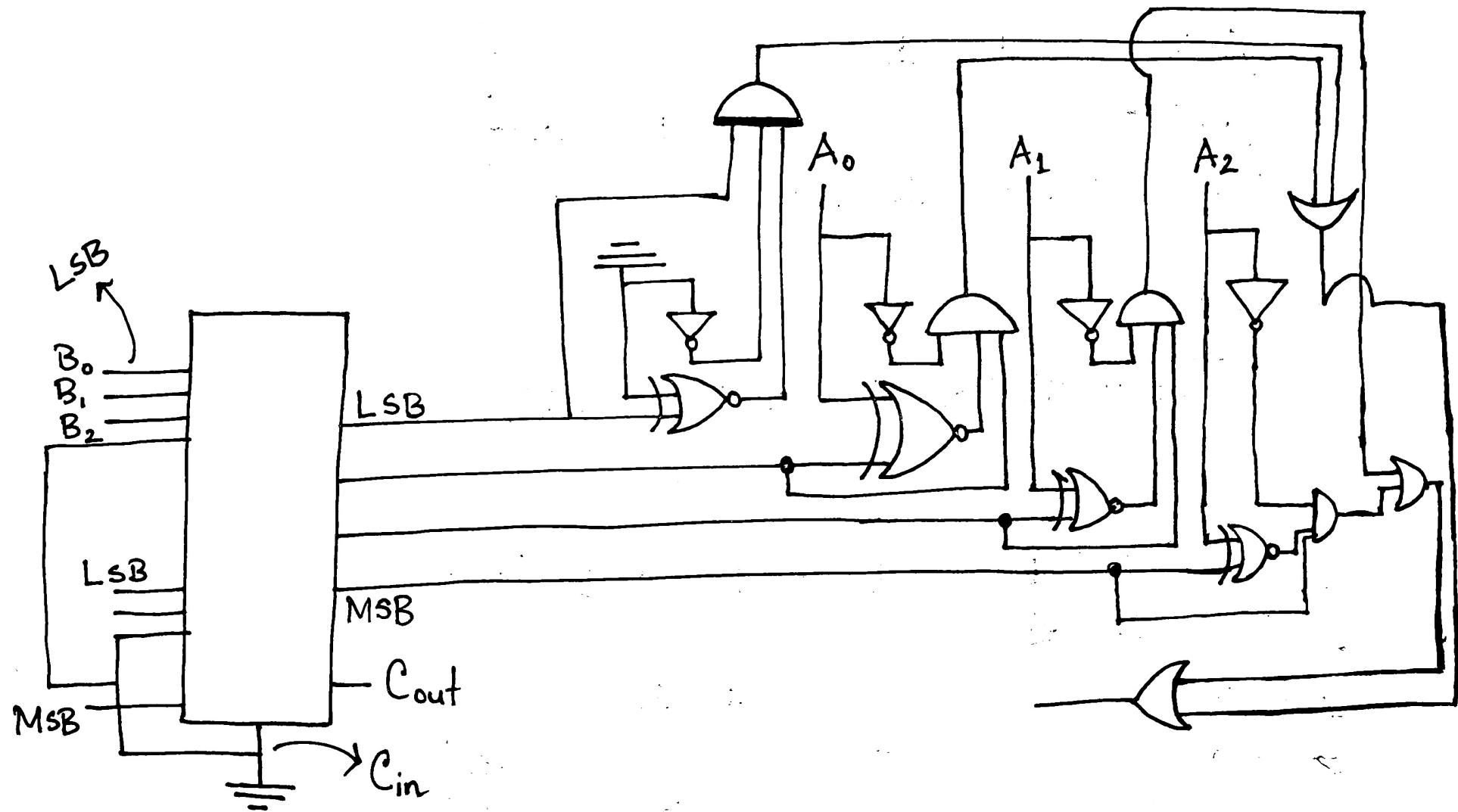
Therefore,

$$Z_{xp} = A'B'C' + B'D' + BCD + AB'C + ABD.$$

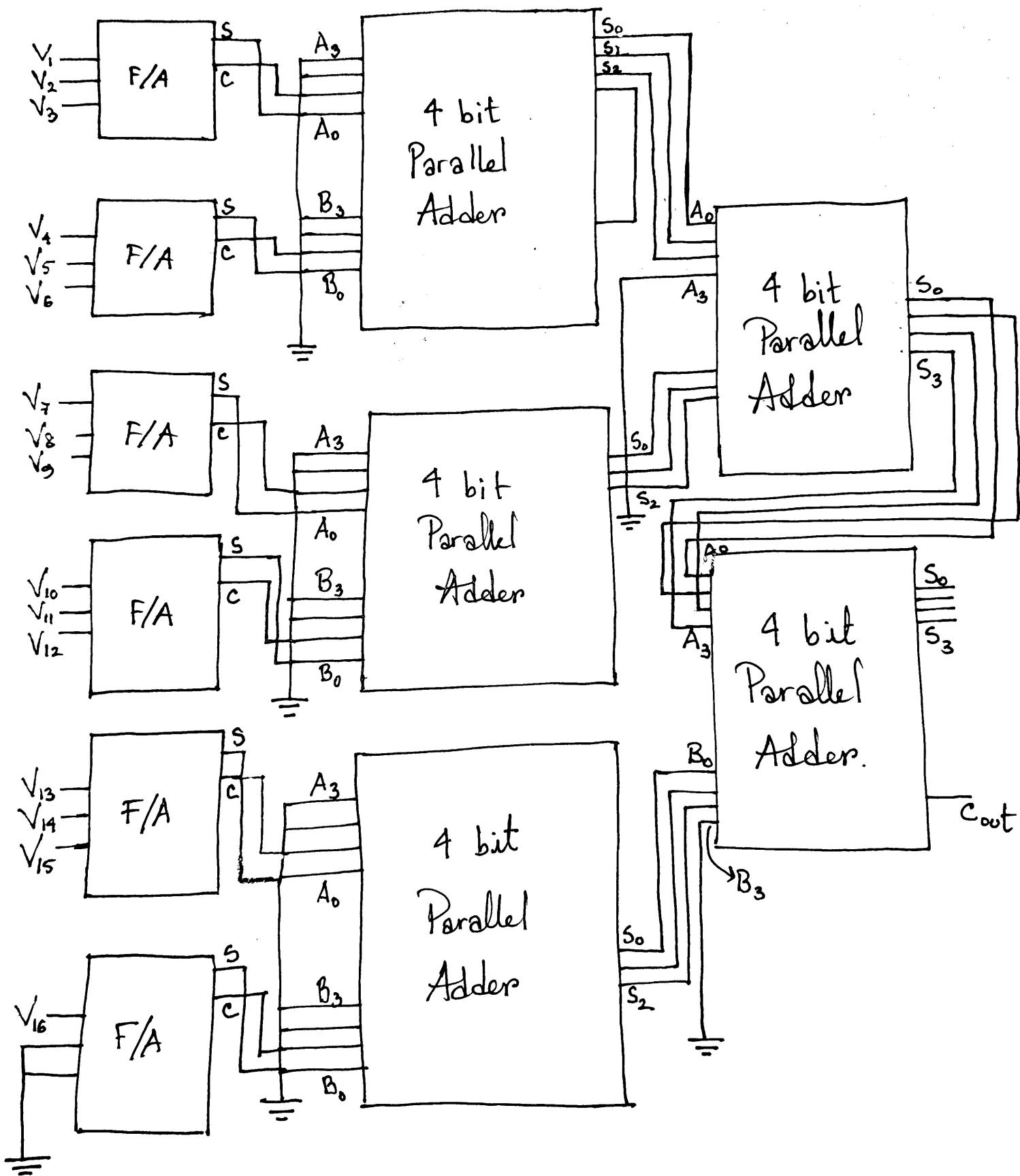
Answer of question no. 03

Output = 1 ; if $A - 3 < B$

Output = 0 ; otherwise



Answer of question no. 04



Answer to of question no. 05

Design of BCD to excess 5 system using necessary parallel adders :-

