

ASSIGNMENT-09

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Course : CSE231

Section : 10

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Truth Table:

Decimal	Inputs.				Outputs.						
	A	B	C	D	a	b	c	d	e	f	g
0	0	0	0	0	0	1	1	1	1	1	0
1	0	0	0	1	0	1	1	0	0	0	0
2	0	0	1	0	1	1	0	1	1	0	1
3	0	0	1	1	1	1	1	1	1	0	1
4	0	1	0	0	0	1	1	0	0	1	1
5	0	1	0	1	1	0	1	1	0	1	1
6	0	1	1	0	1	0	1	1	1	1	1
7	0	1	1	1	1	1	1	0	0	0	0
8	1	0	0	0	1	1	1	1	1	1	1
9	1	0	0	1	1	1	1	1	0	1	1

Assignment :

(a)

AB		CD	00	01	11	10
		00	1	0	1	1
		01	0	1	1	1
A	11	X	X	X	X	X
	10	1	1	X	X	X

D C B

$$\therefore F_1(A, B, C, D) = A + C + BD + \bar{B}\bar{D}$$

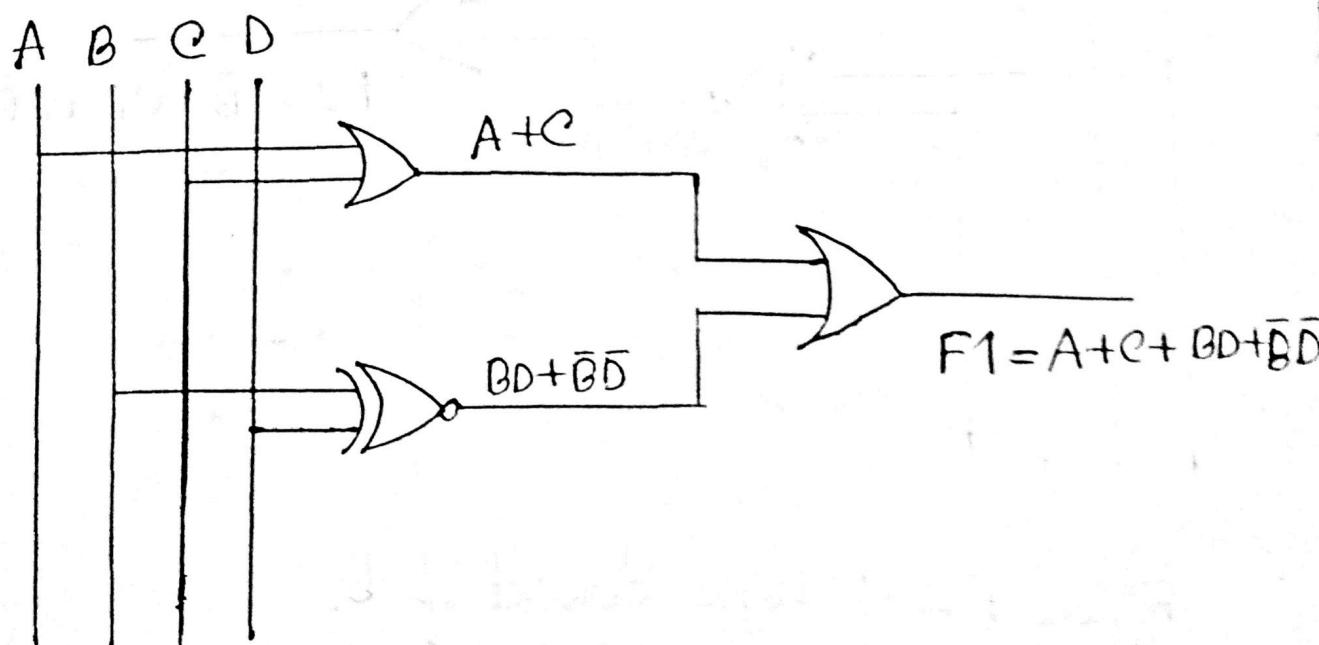


Figure F1 : Logic circuit of a.

(b)

		AB	CD	00	01	11	10
		00	00	1	1	1	1
		01	01	1	0	1	0
		11	11	X	X	X	X
		10	10	1	1	X	X
A		D		B		C	

$$\therefore F_2(A, B, C, D) = \bar{B} + CD + \bar{C}\bar{D}$$

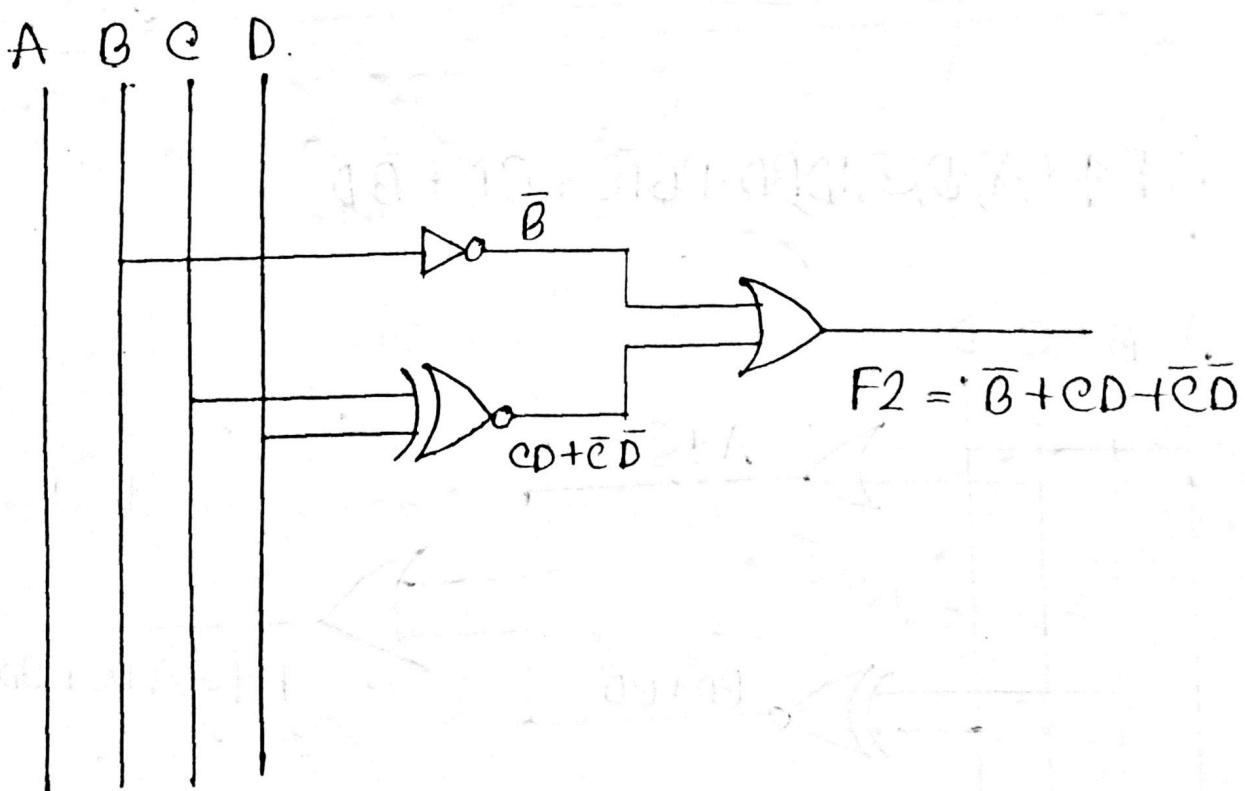


Figure F2 : Logic circuit of b.

(C)

$A\backslash B$	$C\backslash D$	00	01	11	10
00	1	1	1	1	0
01	1	1	1	1	1
11	X	X	X	X	X
10	1	1	1	X	X

D.

$$\therefore F_3(A, B, C, D) = B + \bar{C} + D.$$

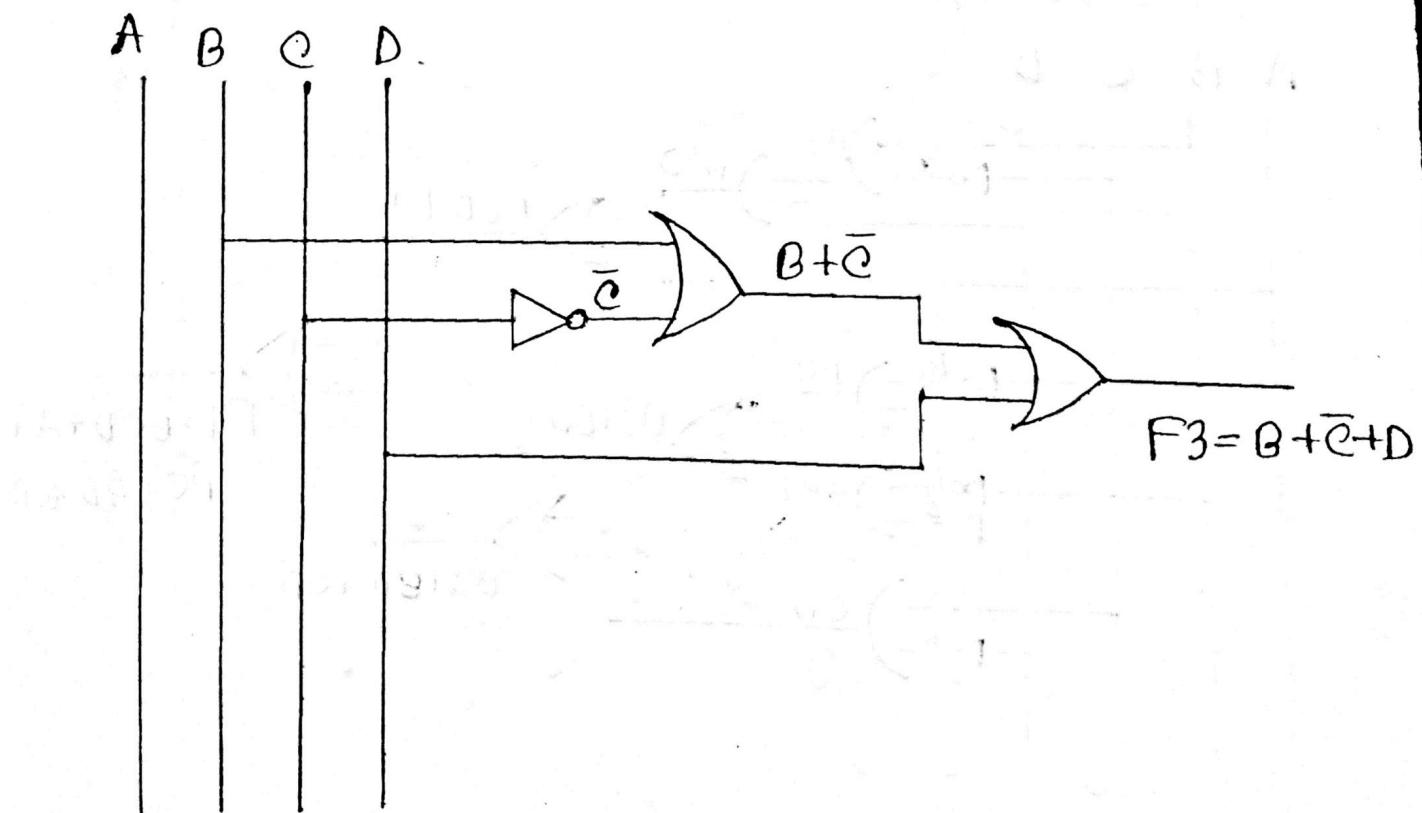


Figure F3 : Logic circuit of c.

(d)

		00		01		11		10	
		00	1	0	1	1	1	1	
A		01	0	1	0	0	1	1	B
00	00	X	X	X	X	X	X	X	
01	11	1	X	1	X	X	X	X	
10	10	1	1	1	X	X	X	X	
									D

$$\therefore F_4(A, B, C, D) = B\bar{C}D + A + \bar{B}C + \bar{B}\bar{D} + C\bar{D}$$

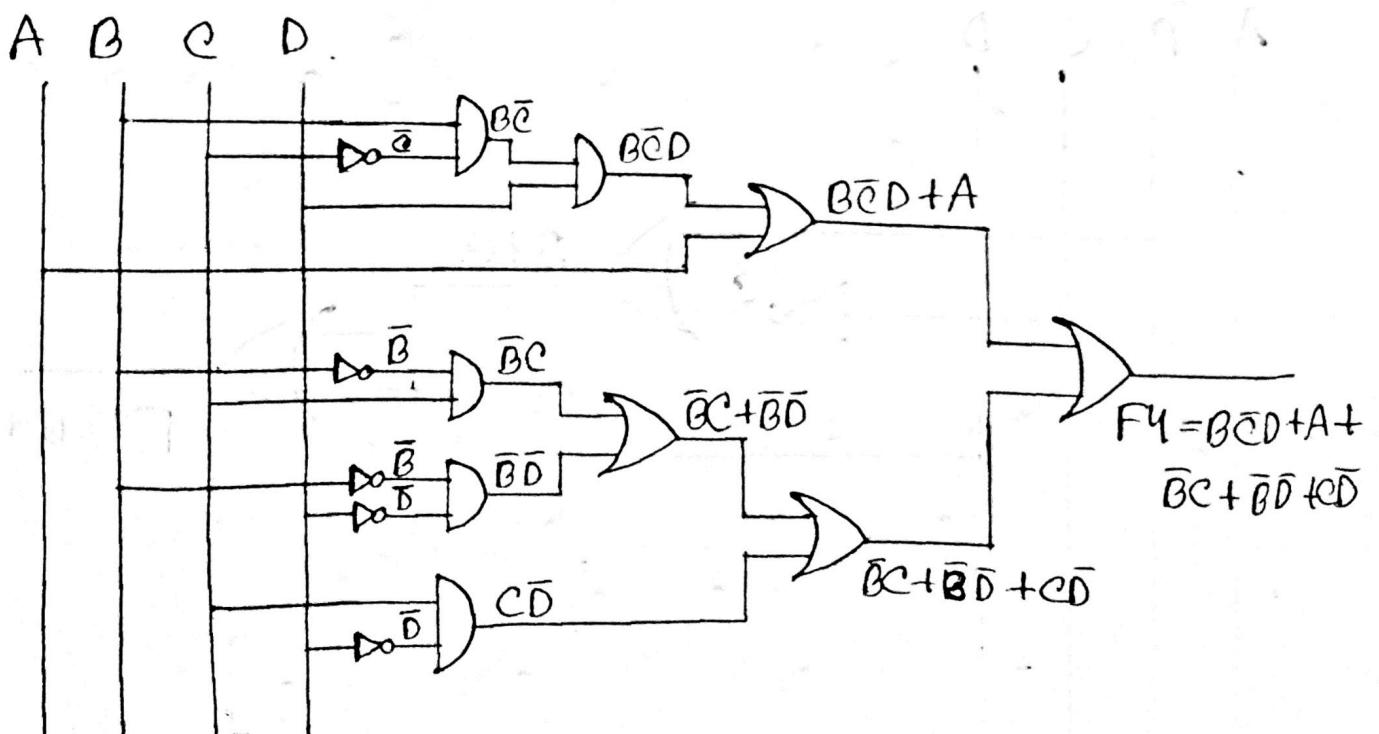


Figure F4 : Logic circuit of d.

(e)

$A\backslash B\backslash C\backslash D$	00	01	11	10
00	1	0	0	1
01	0	0	0	1
11	X	X	X	X
10	1	0	X	X

$A \quad D$

$$\therefore F_5(A, B, C, D) = \overline{BD} + \overline{CD}$$

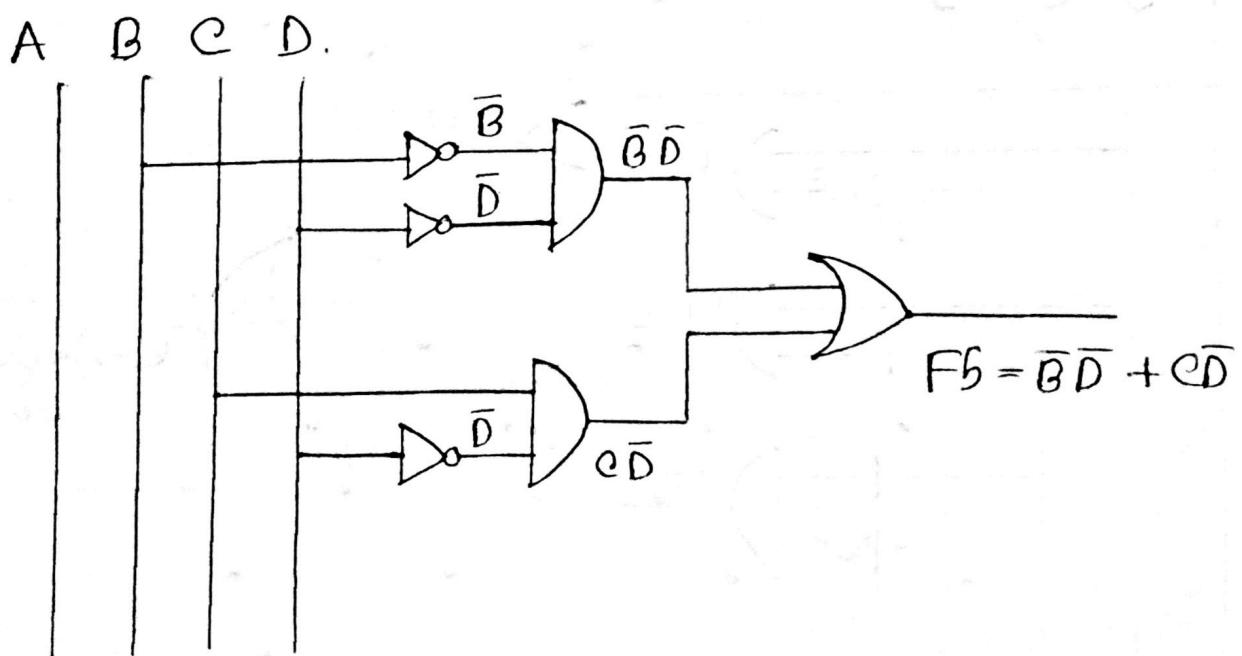


Figure F5 : Logic circuit of e.

(F)

		00	01	11	10
		00	0	0	0
		01	1	0	0
A		1			
			1		
		X		X	
				X	
				X	
					X
					X
B					1
					X
					X
					X

D

$$F_6(A, B, C, D) = A + B\bar{C} + B\bar{D} + \bar{C}\bar{D}$$

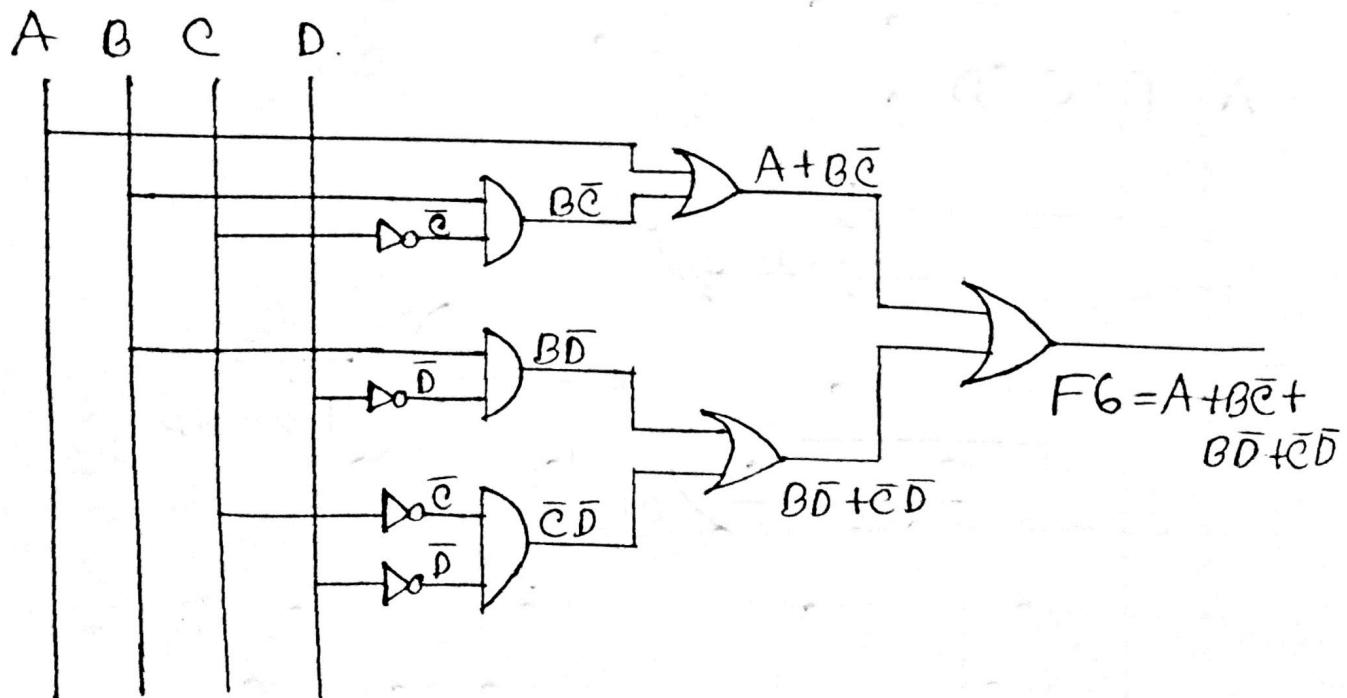


Figure F6 : Logic circuit of f.

(j)

$A\backslash B\backslash C\backslash D$	00	01	11	10
00	0	1	1	1
01	1	1	0	1
11	X	X	X	X
10	1	1	X	X

$$F_7(A, B, C, D) = A + B\bar{C} + \bar{B}\bar{C} + C\bar{D}$$

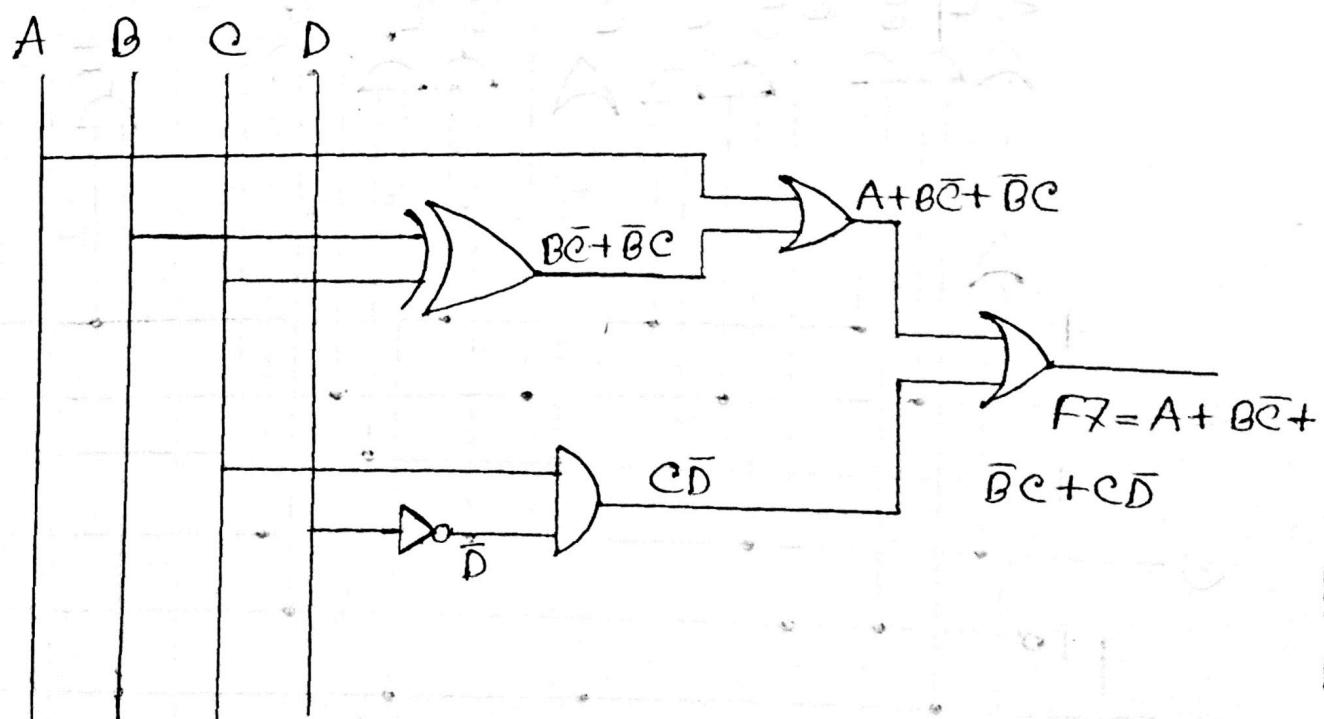


Figure F7 : Logic circuit of j.

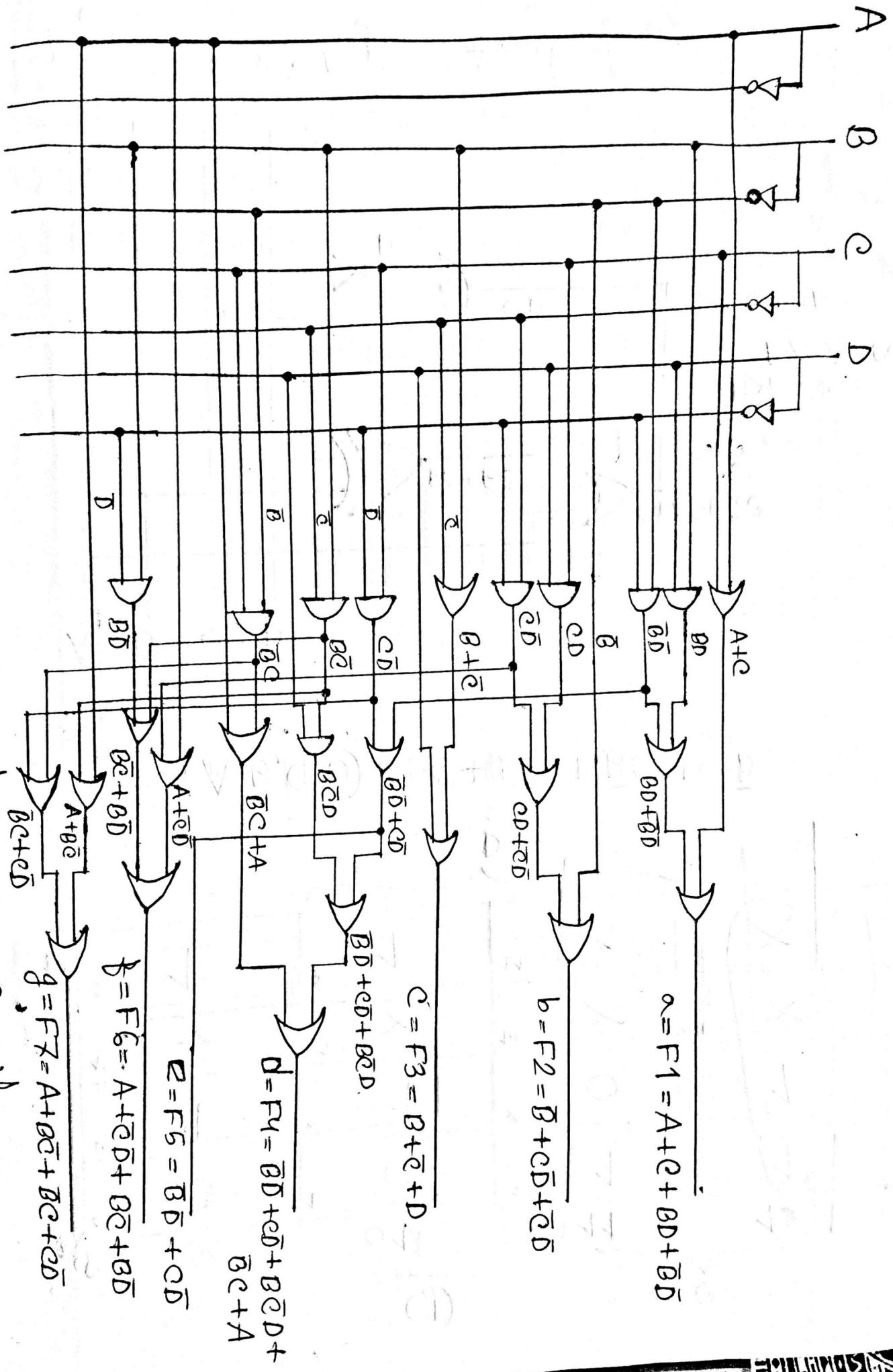


Figure : The Seven Segment Decoder Circuit.