

3) Type - 3

Simplify the Boolean function : $f(w, x, y, z) = w\bar{z}\bar{y} + \bar{w}\bar{x}\bar{y} + \bar{w}y + \bar{w}\bar{y}^2$

wx	$\bar{w}\bar{x}$	$y\bar{z}\bar{y}$	$\bar{y}\bar{z}$	$y\bar{z}$	$\bar{y}\bar{z}$
*					
$\bar{w}x$	*				
wx					
$w\bar{x}$		1	1	1	1

where ever the variables are
(Comma mark as ①)

1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1

$$(y\bar{z}\bar{y}) + (\bar{y}\bar{z}) \\ \therefore y = (y\bar{z}) + (w\bar{y}) + (w\bar{x}) //$$

4) Type - 4

$$f(w, x, y, z) = (w + x + \bar{y}) \cdot (w + y) \cdot (\bar{w} + \bar{y} + \bar{z})$$

$w+x$	$\bar{y}+2$	$\bar{y}+\bar{2}$	$\bar{y}+2$	$\bar{y}+2$
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

$$y = (\bar{y} + \bar{z}) \cdot (w + \bar{x}) + (w + y)$$

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

$$(w + \bar{x} + y) \cdot (w + y) \cdot (w + \bar{y} + \bar{z})$$

$$\text{Ans}(w + \bar{x} + y) \cdot (w + y) \cdot (w + \bar{y} + \bar{z})$$

5) Type - 5 with don't care d or q

$$\text{Given } f(A, B, C, D) = \sum m(1, 3, 7, 11, 15) + \sum d(0, 2, 4)$$

	$\bar{C}\bar{D}$	$\bar{C}D$	$C\bar{D}$	CD
$\bar{A}\bar{B}$	(x)	1	1	x
$\bar{A}B$	x	3	1	0
$A\bar{B}$	12	13	1	7
AB	9	14	0	10

$$Y = \bar{A}\bar{B} + CD$$

6) Type - 6 simply π will be there instead of \sum This ~~is~~ put complements for 0 & 1

7) SOP \rightarrow Sum of products (Type 1)

POS \rightarrow Product of sum (Type 2)

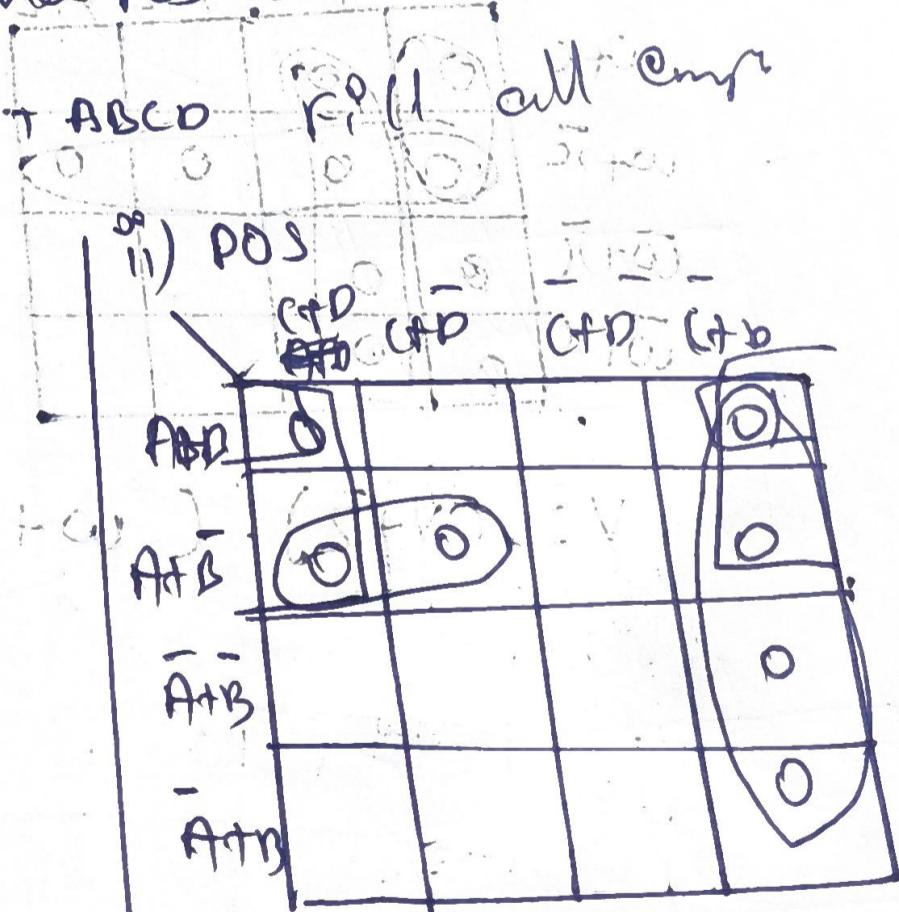
8) Type - 8 Map for. SOP and POS

$$\text{Given } A\bar{C} + \bar{B}D + \bar{A}CD$$

i) SOP

	$\bar{C}\bar{D}$	$\bar{C}D$	$C\bar{D}$	CD
$\bar{A}\bar{B}$		1	1	
$\bar{A}B$			1	
$A\bar{B}$	1	1	1	
AB	1	1	1	

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



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

If more
order the
ex f(x)

OC OF

101 Tr

MO

7) If more variables are given put 2 4×4 K-map and
order the sequential

Ex $F(A, B, C, D)$

OC	OF	A	
1	0	1	3
1	1	5	7
1	2	13	15
1	3	17	16
1	4	11	10
1	5	8	9

BC	DE	A	
1	6	7	11
1	20	4	23
1	28	28	31
1	27	5	27
1	26	1	1

10) There are three variable too for that use 2×3

Magnitude Comparator

① Bit Comparator