Q4.

a: standard POS Expression :-

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

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

~~A+B~~

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

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

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

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

b.

A+B is missing variable D or D'

and (C) or (C')

$A+B = A+B+DD'+CC'$

$= (A+B+D)(A+B+D)$

2) Second Term:

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

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

$\because A\cdot\bar{A} = 0$

$(0+B+C)\cdot(B+D)$

$(B+C)(B+D)$ Ans

Q: standard SOP expression from standard POS

Truth table

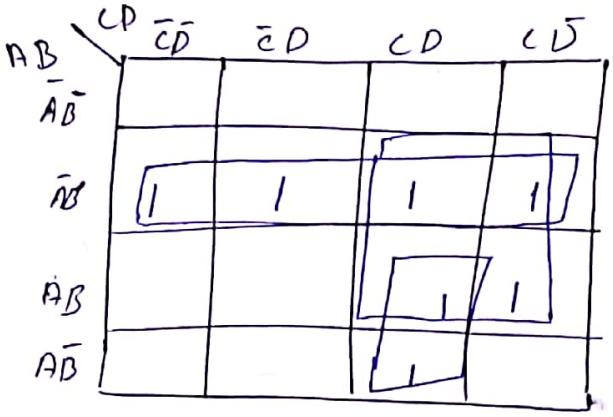
A	B	C	D
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
0	1	1	0
0	1	1	1
1	0	0	1
1	0	1	0
1	0	1	1
1	1	0	0
1	1	0	1
1	1	1	0
1	1	1	1

A B C D
1 1 1 1

from truth table

$\bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}\bar{D} + \bar{A}BC\bar{D} + \bar{A}BCD + A\bar{B}C\bar{D} + A\bar{B}CD + A\bar{B}C\bar{D} + ABCD$.

40. A minimum SoP:



$$S = ACD + \bar{A}B + BC$$