5/1/22, 7:36 PM _____A-B-C-D_____m_5-7-8____d_0-9-10-11-13____option-0____989781875872882386684

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
\overline{A} .B	0	1	1	0
A.B	0	X	0	0
$A.\overline{B}$	1	\mathbf{X}	\mathbf{X}	X

Map Layout

	$\overline{\text{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(8,9,10,11)	$A.\overline{B}$
(5,7)	\overline{A} .B.D

$$y = AB' + A'BD$$

$$\overline{A}$$
 \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

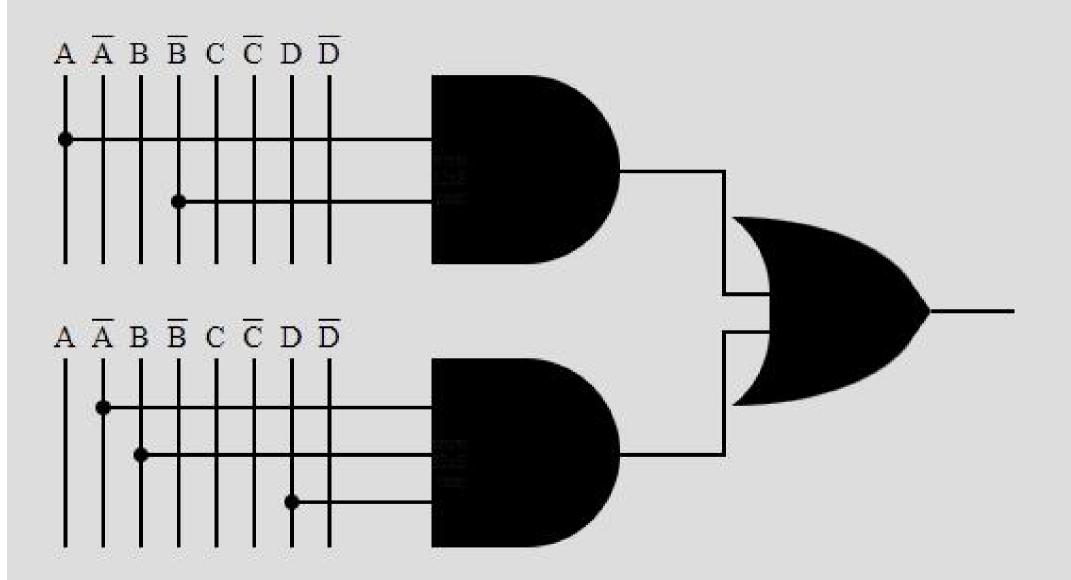
www. 32x8 .com

 $A \overline{A} B \overline{B} C \overline{C} D \overline{D}$

Truth Table

	A	В	C	D	Y
0	0	0	0	0	X
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	1
8	1	0	0	0	1
9	1	0	0	1	X
10	1	0	1	0	X
11	1	0	1	1	X
12	1	1	0	0	0
13	1	1	0	1	X
14	1	1	1	0	0
15	1	1	1	1	0

y = AB' + A'BD



5/1/22, 7:38 PM

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	1	1	0	1
\overline{A} .B	0	X	X	0
A.B	1	1	1	0
$A.\overline{B}$	1	1	1	1

Map Layout

	$\overline{\text{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(0,1,8,9)	B.C
(0,2,8,10)	B.D
(8,9,12,13)	$A.\overline{C}$
(9,11,13,15)	A.D

$$y = B'C' + B'D' + AC' + AD$$

$$\overline{A}$$
 \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

 \overline{A} \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

_____A-B-C-D_____m_0-1-2-8-9-10-11-12-13-15_____d_5-7____option-0____899788865872824592729

32x8 .com

 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

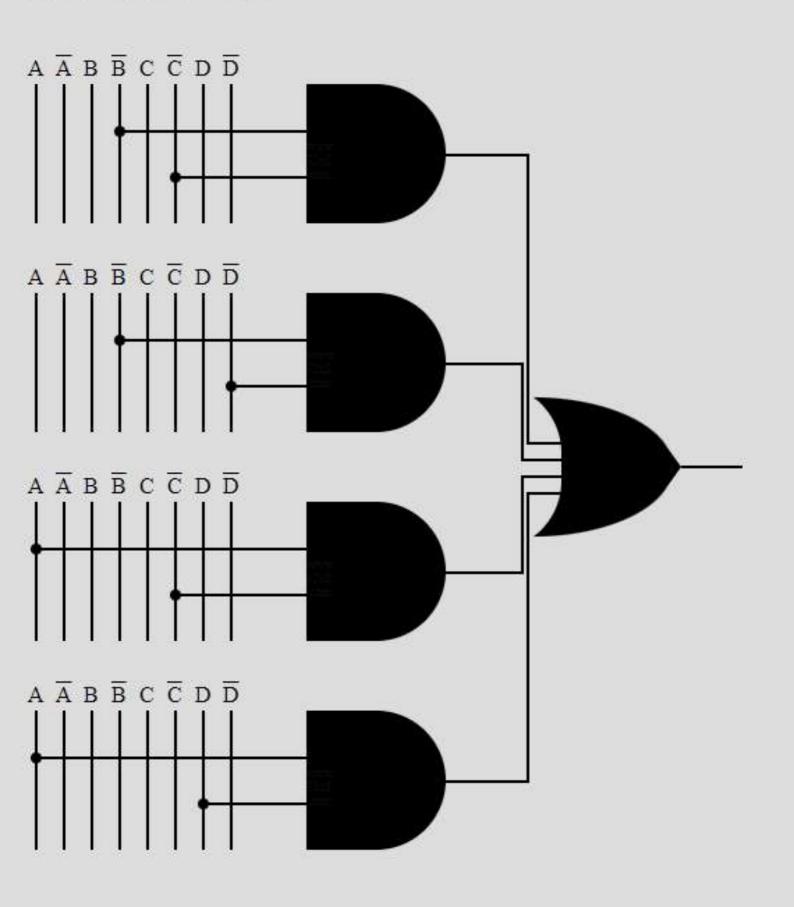
 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

Truth Table

	A	В	C	D	Y
0	0	0	0	0	1
1	0	0	0	1	1
2	0	0	1	0	1
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	X
6	0	1	1	0	0
7	0	1	1	1	X
8	1	0	0	0	1
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	1

y = B'C' + B'D' + AC' + AD



5/2/22, 12:40 AM _____A-B-C-D_____m_0-5-7-8-9-10-11-12-13_____option-0____999782866571824592723

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{\mathrm{A.B}}$	1	0	0	0
\overline{A} .B	0	1	1	0
A.B	1	1	0	0
$A.\overline{B}$	1	1	1	1

Map Layout

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
$\overline{\mathbf{A}}.\mathbf{B}$	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(8,9,10,11)	$A.\overline{B}$
(8,9,12,13)	$A.\overline{C}$
(0,8)	$\overline{B}.\overline{C}.\overline{D}$
(5,7)	\overline{A} .B.D

$$y = AB' + AC' + B'C'D' + A'BD$$

$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

www. 32x8

 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

32x8 .com

 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

32x8 .com

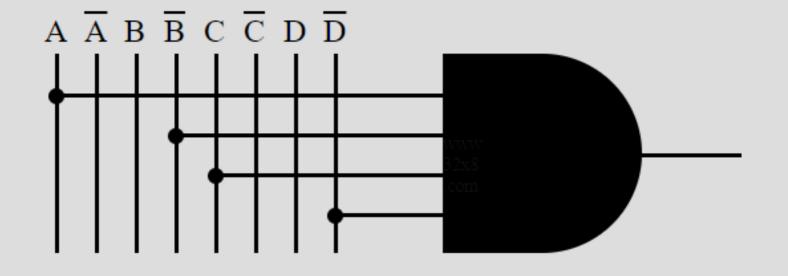
 $A \overline{A} B \overline{B} C \overline{C} D \overline{D}$

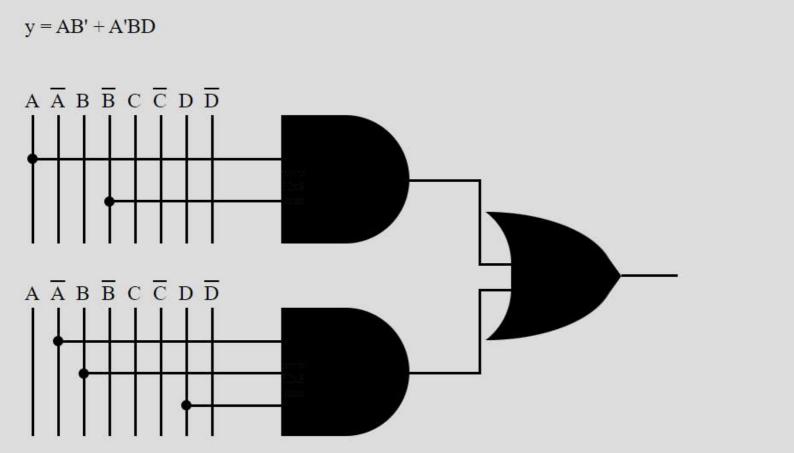
www. 32x8 .com

Truth Table

	A	В	C	D	Y
0	0	0	0	0	1
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	1
8	1	0	0	0	1
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	0

y = AB'CD'





SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	1	1	0	1
\overline{A} .B	0	1	X	0
A.B	1	1	1	0
$A.\overline{B}$	1	1	1	1

Map Layout

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(0,2,8,10)	B.D
(1,5,9,13)	C.D
(8,9,12,13)	$A.\overline{C}$
(9,11,13,15)	A.D

$$y = B'D' + C'D + AC' + AD$$

$$\overline{A}$$
 \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

32x8 .com

 $A \overline{A} B \overline{B} C \overline{C} D \overline{D}$

www. 32x8 .com

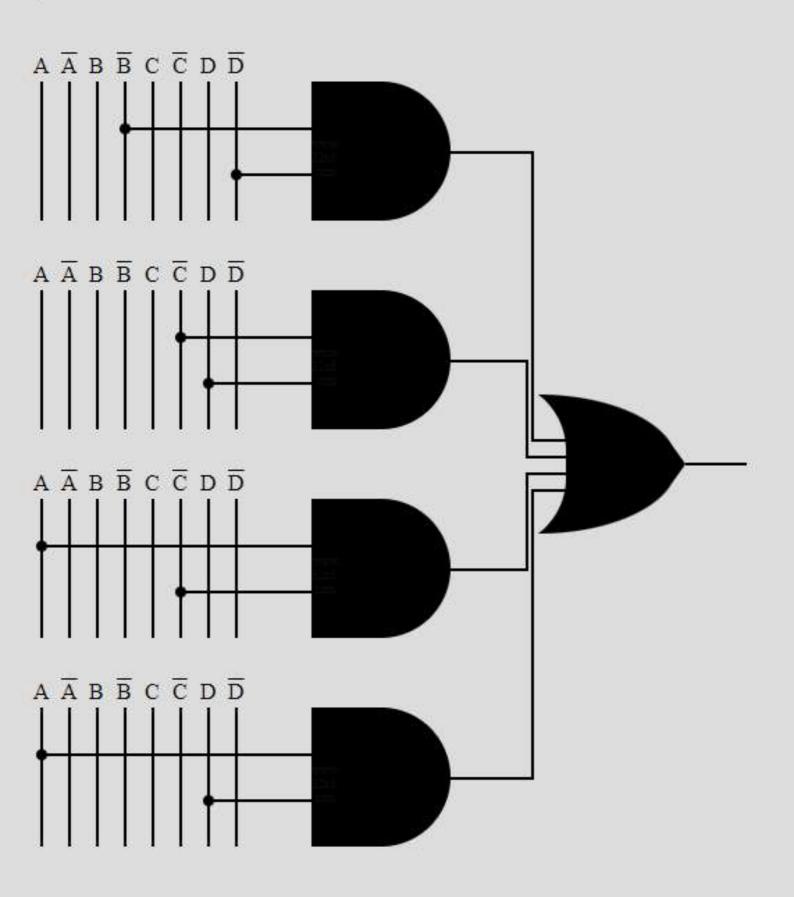
 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

Truth Table

	A	В	C	D	Y
0	0	0	0	0	1
1	0	0	0	1	1
2	0	0	1	0	1
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	X
8	1	0	0	0	1
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	1

$$y = B'D' + C'D + AC' + AD$$



www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
$\overline{\mathbf{A}}.\mathbf{B}$	0	1	X	0
A.B	X	1	0	0
$A.\overline{B}$	0	0	0	X

Map Layout

	$\overline{\text{C.D}}$	\overline{C} .D	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$y = BC'D$$

$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

www. 32x8 .com

	A	В	C	D	Y
0	0	0	0	0	X

1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	X
8	1	0	0	0	0
9	1	0	0	1	0
10	1	0	1	0	X
11	1	0	1	1	0
12	1	1	0	0	X
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	0

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
\overline{A} .B	0	0	0	0
A.B	X	X	0	0
$A.\overline{B}$	0	X	0	1

Map Layout

	$\overline{\mathrm{C}}.\overline{\mathrm{D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
$\overline{\mathbf{A}}.\mathbf{B}$	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$(10)$$
 A. $\overline{\text{B}}$.C. $\overline{\text{D}}$

$$y = AB'CD'$$

$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

www. 32x8 .com

	A	В	C	D	Y
0	0	0	0	0	X

1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	0
8	1	0	0	0	0
9	1	0	0	1	X
10	1	0	1	0	1
11	1	0	1	1	0
12	1	1	0	0	X
13	1	1	0	1	X
14	1	1	1	0	0
15	1	1	1	1	0

5/2/22, 12:31 AM _____A-B-C-D____m_0-9-11-12-13_____option-0____899780866971820592709

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	1	0	0	0
$\overline{\mathbf{A}}.\mathbf{B}$	0	0	0	0
A.B	1	1	0	0
$A.\overline{B}$	0	1	1	0

Map Layout

	$\overline{\mathrm{C}}.\overline{\mathrm{D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(9,11)	$A.\overline{B}.D$
(12,13)	$A.B.\overline{C}$
(0)	$\overline{A}.\overline{B}.\overline{C}.\overline{D}$

$$y = AB'D + ABC' + A'B'C'D'$$

$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

www. 32x8 .com

 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}





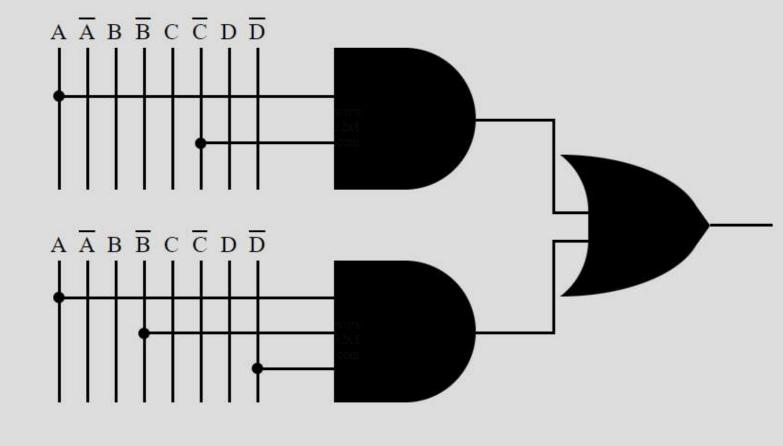
 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

Truth Table

	A	В	C	D	Y
0	0	0	0	0	1
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	0
8	1	0	0	0	0
9	1	0	0	1	1
10	1	0	1	0	0
11	1	0	1	1	1
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	0

y = AC' + AB'D'



5/2/22, 1:24 AM _____A-B-C-D_____m_9-10____d_0-8-12-13____option-0____899798975570893289720

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
$\overline{\mathbf{A}}.\mathbf{B}$	0	0	0	0
A.B	X	X	0	0
$A.\overline{B}$	X	1	0	1

Map Layout

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(8,9,12,13)	$A.\overline{C}$
(8,10)	$A.\overline{B}.\overline{D}$

$$y = AC' + AB'D'$$

$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

32x8 .com

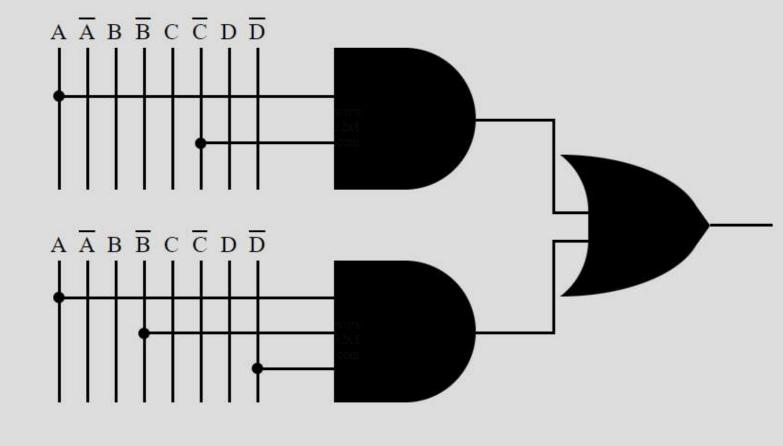
 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

Truth Table

	A	В	C	D	Y
0	0	0	0	0	X
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	0
8	1	0	0	0	X
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	0
12	1	1	0	0	X
13	1	1	0	1	X
14	1	1	1	0	0
15	1	1	1	1	0

y = AC' + AB'D'



www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
\overline{A} .B	0	1	1	0
A.B	X	X	0	0
$A.\overline{B}$	X	1	1	1

Map Layout

	$\overline{\mathrm{C}}.\overline{\mathrm{D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
$\overline{\mathbf{A}}.\mathbf{B}$	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

(8,9,10,11)	$A.\overline{B}$
(5,7)	\overline{A} .B.D

$$y = AB' + A'BD$$

$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

32x8 .com

 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

Truth Table

	A	В	C	D	Y
0	0	0	0	0	X
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	1
8	1	0	0	0	X
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	X
13	1	1	0	1	X
14	1	1	1	0	0
15	1	1	1	1	0

5/1/22, 8:13 PM _____A-B-C-D____m_12-13____d_0-1-2-8-9-10-11-15____option-0____882688962068847694678

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{\mathrm{A.B}}$	X	X	0	X
\overline{A} .B	0	0	0	0
A.B	1	1	X	0
$A.\overline{B}$	X	X	X	X

Map Layout

	$\overline{\text{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$(8,9,12,13)$$
 A. \overline{C}

$$y = AC'$$

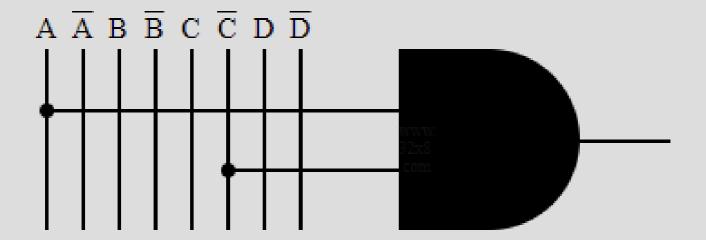
$$\overline{A}$$
 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

	A	В	C	D	Y
0	0	0	0	0	X

1	0	0	0	1	X
2	0	0	1	0	X
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	0
8	1	0	0	0	X
9	1	0	0	1	X
10	1	0	1	0	X
11	1	0	1	1	X
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	X

y = AC'



www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	\overline{C} .D	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	X	0	X
\overline{A} .B	0	0	X	0
A.B	X	0	X	0
$A.\overline{B}$	X	X	X	X

Map Layout

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$y = 0$$

	A	В	C	D	Y
0	0	0	0	0	X
1	0	0	0	1	X
2	0	0	1	0	X
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	X

5/1/22, 8:11 PM _____A-B-C-D_____d_0-1-2-7-8-9-10-11-12-15____option-0____992785264071895486656

8	1	0	0	0	X
9	1	0	0	1	X
10	1	0	1	0	X
11	1	0	1	1	X
12	1	1	0	0	X
13	1	1	0	1	0
					_
14	1	1	1	0	0

www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{\mathrm{A.B}}$	X	X	0	X
\overline{A} .B	0	0	0	0
A.B	1	X	X	0
$A.\overline{B}$	X	X	X	X

Map Layout

	$\overline{\text{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$(8,9,12,13)$$
 A. \overline{C}

$$y = AC'$$

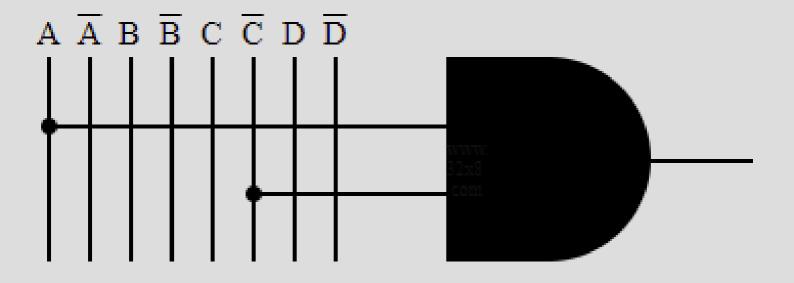
$$\overline{A}$$
 \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{D}

www. 32x8 .com

	A	В	C	D	Y
0	0	0	0	0	X

1	0	0	0	1	X
2	0	0	1	0	X
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	0
8	1	0	0	0	X
9	1	0	0	1	X
10	1	0	1	0	X
11	1	0	1	1	X
12	1	1	0	0	1
13	1	1	0	1	X
14	1	1	1	0	0
15	1	1	1	1	X

y = AC'



www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	\overline{C} .D	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
$\overline{\mathbf{A}}.\mathbf{B}$	0	1	1	0
A.B	X	X	0	0
$A.\overline{B}$	X	0	X	0

Map Layout

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$y = A'BD$$

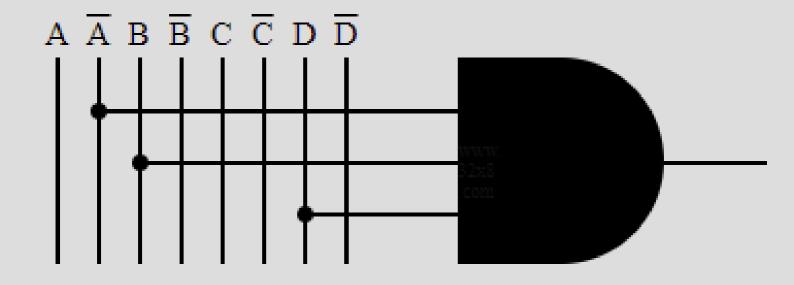
$$A \overline{A} B \overline{B} C \overline{C} D \overline{D}$$

www. 32x8 .com

	A	В	C	D	Y
0	0	0	0	0	X

1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	1
8	1	0	0	0	X
9	1	0	0	1	0
10	1	0	1	0	0
11	1	0	1	1	X
12	1	1	0	0	X
13	1	1	0	1	X
14	1	1	1	0	0
15	1	1	1	1	0

y = A'BD



www.32x8.com

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	0	0	0
$\overline{\mathbf{A}}.\mathbf{B}$	0	0	0	0
A.B	0	X	0	0
$A.\overline{B}$	X	0	X	0

Map Layout

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{\mathrm{A.B}}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$y = 0$$

	A	В	C	D	Y
0	0	0	0	0	X
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	0
5	0	1	0	1	0
6	0	1	1	0	0
7	0	1	1	1	0

8	1	0	0	0	X
9	1	0	0	1	0
10	1	0	1	0	0
11	1	0	1	1	X
12	1	1	0	0	0
12 13	1	1	0	0	0 x
-	1 1 1	1 1 1		0 1 0	

5/1/22, 8:01 PM

SUM of PRODUCTS

Map

	$\overline{\mathrm{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	X	X	X	X
\overline{A} .B	X	X	X	X
A.B	X	X	X	X
$A.\overline{B}$	X	X	\mathbf{X}	X

Map Layout

	$\overline{\text{C.D}}$	$\overline{\mathrm{C}}.\mathrm{D}$	C.D	$C.\overline{D}$
$\overline{A}.\overline{B}$	0	1	3	2
\overline{A} .B	4	5	7	6
A.B	12	13	15	14
$A.\overline{B}$	8	9	11	10

Groups

$$y = 0y = 1$$

	A	В	C	D	Y
0	0	0	0	0	X
1	0	0	0	1	X
2	0	0	1	0	X
3	0	0	1	1	X
4	0	1	0	0	X
5	0	1	0	1	X
6	0	1	1	0	X
7	0	1	1	1	X

8	1	0	0	0	X
9	1	0	0	1	X
10	1	0	1	0	X
11	1	0	1	1	X
			_	_	
12	1	1	0	0	X
12 13	1	1	0	1	X
\vdash	1 1 1	1 1 1			