

Parshvanath Charitable Trust's

A. P. SHAH INSTITUTE OF TECHNOLOGY

(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai) (Religious Jain Minority)

Subject: DLCA SEM: III

Explain Demorgan's theorem.

Demorgan's first law:

$$\overline{AB} = \overline{A} + \overline{B}$$

Inp	uts	Output		
Α	В	ĀB	Ā + B	
0	0	1	1	
0	1	1	1	
1	0	1	1	
1	1	Ιo	0	
1	0	1 0	1 0	

$$\begin{array}{c}
A \\
B
\end{array} = \begin{array}{c}
A \\
B
\end{array} = \begin{array}{c}
A + \overline{B}
\end{array}$$
NAND

Negative-OR

$$\overline{A \cdot B} = \overline{A} + \overline{B}$$

A	В	A • B	$\overline{\mathbf{A} \bullet \mathbf{B}}$		$\overline{\mathbf{A}}$	$\overline{\mathbf{B}}$	$\overline{A} + \overline{B}$
0	0	0	1		1	1	1
0	1	0	1		1	0	1
1	0	0	1		0	1	1
1	1	1	0		0	0	0
EQUAL							

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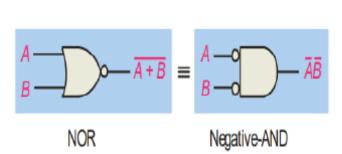
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Demogan's Second law:

$$\overline{A+B} = \overline{A} \cdot \overline{B}$$



A B A + B AB 0 0 1 1 0 1 0 0 1 0 0 0	Inputs		Output			
4 0 0 0	Α	В	A + B	ĀĒ		
1 0 0	0	0	1	1		
1000	0	1	0	0		
	1	0	0	0		
1 1 0 0	1	1	0	0		

$$\overline{A + B} = \overline{A} \cdot \overline{B}$$

A	В	A + B	$\overline{\mathbf{A} + \mathbf{B}}$	Ā	4	$\overline{\mathbf{B}}$	AxB
0	0	0	1]	L	1	1
0	1	1	0	1	L	0	0
1	0	1	0	()	1	0
1	1	1	0	()	0	0

