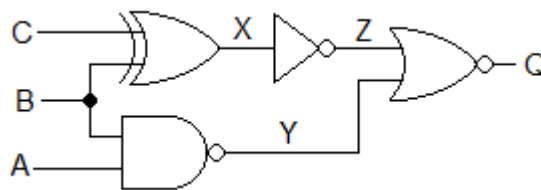


1 Complete the truth table for this circuit.
Which Boolean algebra expression describes the behaviour of the circuit?



C	B	A	X	Y	Z	Q
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

$Q = C.B.A$

$Q = \bar{C}.B.A$

$Q = C.\bar{B}.A$

$Q = C.B.\bar{A}$

$Q = \bar{C}.\bar{B}.A$

$Q = C.\bar{B}.\bar{A}$

2 Link each Boolean algebra expression with its logic gate and truth table.

algebra	logic gate	truth table															
$Q = \bar{A}$		<table border="1"> <thead> <tr><th>B</th><th>A</th><th>Q</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	B	A	Q	0	0	0	0	1	0	1	0	0	1	1	1
B	A	Q															
0	0	0															
0	1	0															
1	0	0															
1	1	1															
$Q = A + B$		<table border="1"> <thead> <tr><th>B</th><th>A</th><th>Q</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>0</td></tr> </tbody> </table>	B	A	Q	0	0	1	0	1	0	1	0	1	1	1	0
B	A	Q															
0	0	1															
0	1	0															
1	0	1															
1	1	0															
$Q = A.B$		<table border="1"> <thead> <tr><th>B</th><th>A</th><th>Q</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>0</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	B	A	Q	0	0	0	0	1	1	1	0	1	1	1	1
B	A	Q															
0	0	0															
0	1	1															
1	0	1															
1	1	1															

3 Link each OR and AND operation to its result.

OR	result	AND
$A + \bar{A}$	0	$A.\bar{A}$
$A + A$	1	$A.A$
$A + 1$	A	$A.1$
$A + 0$	\bar{A}	$A.0$

4 Link each **sum of terms** with its **equivalent** expression.

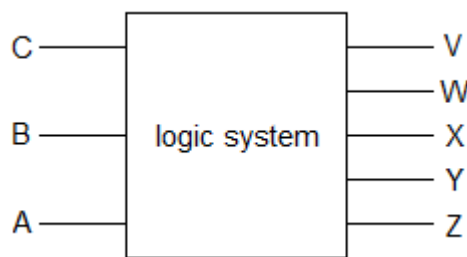
sum of terms
$X.\bar{Y}.Z + \bar{X}.\bar{Y}.Z$
$X.\bar{Y}.\bar{Z} + X.Y.\bar{Z} + X.Z$
$X.\bar{Y} + X.\bar{Z}.Y + X.\bar{Z}.\bar{Y}$
$X.Y.Z + X.Y.\bar{Z} + \bar{X}.Y.Z$

equivalent
X
$\bar{Y}.Z$
$Y.(X + Z)$
$X.(\bar{Y} + \bar{Z})$

5 A logic system has three inputs (C, B, A) and five outputs (V, W, X, Y, Z).

The truth table is shown below.

Select the correct sum of terms for each for each output.



$$C.\bar{B}.A + \bar{C}.\bar{B}.A + C.\bar{B}.\bar{A} + \bar{C}.\bar{B}.A$$

$$\bar{C}.\bar{B}.\bar{A} + C.\bar{B}.A + C.\bar{B}.\bar{A} + \bar{C}.\bar{B}.A$$

$$C.\bar{B}.A + \bar{C}.\bar{B}.\bar{A} + C.B.A + \bar{C}.\bar{B}.\bar{A}$$

$$C.\bar{B}.A + C.B.A + \bar{C}.\bar{B}.A + \bar{C}.\bar{B}.\bar{A}$$

$$\bar{C}.\bar{B}.\bar{A} + C.B.A + \bar{C}.\bar{B}.A + C.\bar{B}.\bar{A}$$

C	B	A	V	W	X	Y	Z
0	0	0	1	0	1	0	0
0	0	1	1	1	0	0	1
0	1	0	0	0	1	1	1
0	1	1	0	1	0	1	0
1	0	0	1	1	0	1	0
1	0	1	0	1	1	1	1
1	1	0	0	0	0	0	0
1	1	1	1	0	1	0	1