

1. The input/output table below specifies a Boolean function f .

x	y	z	$f(x, y, z)$
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

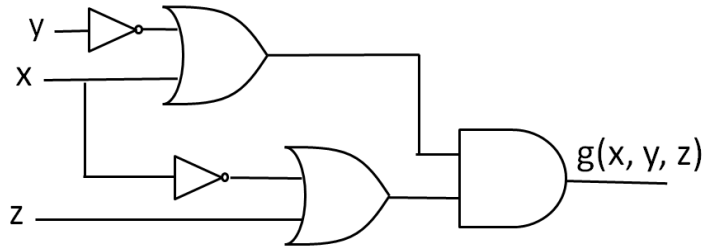
- (a) Give a Boolean expression in DNF form that is equivalent to the function f .

- (b) Give a Boolean expression in CNF form that is equivalent to the function f .

2. Is the following Boolean expression on variables x, y, z satisfiable? If it is, give an assignment to the variables showing that it is satisfiable.

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

3. Fill in the input/output table below so that it specifies the same function that is computer by the circuit in the diagram.



x	y	z	$g(x, y, z)$
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

4. Fill in the table below indicating which Boolean expressions are in DNF and CNF form. Put an "X" in the box if the corresponding Boolean expression has the property.

Expression	DNF?	CNF?
$\bar{x}yz + x\bar{z}$		
$x + \bar{y} + \bar{z}$		
$(x + \bar{u} + \bar{z})(xy + z)$		
$(x + \bar{u} + \bar{z})(\bar{x} + y)u$		
$\bar{x}yz\bar{u}$		