

**Birzeit University**  
**Department of Electrical & Computer Engineering**  
 Digital Systems – ENCS 2340  
 Second Semester 2024/2025

Quiz #2

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A) Simplify the following Boolean expressions to a minimum number of literals

$xyz + x'y + xyz'$

a)  $x+yz$

b)  $xyz'$

c)  $x'y$

d)  $y$

e) none of the above

1 & 3  $xy(z+z')$   
 $xy+x'y$   
 $y(x+x')$

$x \quad x'$   
 $0 \quad 1 = 1$   
 $1 \quad 0 = 1$

B) Determine which the implicants prime are essential:

$F(w, x, y, z) = \Sigma(1, 3, 6, 7, 8, 9, 12, 13, 14, 15)$

a)  $wy', xy, w'x'z$

b) 0

c)  $xy, w'x'z$

d)  $wy'$

e) none of the above

3

10  
10

C) Use Boolean algebra to simplify the function to a minimum number of literals

$F = xy'z + x'y'z + w'xy + wx'y + wxy$

a)  $y'z + xy + wy$  6 lit

b)  $y'z + y(w+x)$  5 lit

c)  $y'z$

d)  $xy + wy$

e) none of the above

~~4 & 5~~  $wy(x'+x)$   
~~3 & 5~~  $xy(w'+w)$   
 3  $y'z(x+x')$   
 $wy + xy + y'z$   
 $y(w+x) + y'z$

		$yz$			
		00	01	10	11
00	0	1	1	0	0
01	4	0	0	1	1
11	12	1	1	1	1
10	8	1	0	0	0

prime  $w'x'z + w'yz + xy$   
 + not  $wx + wy$   
 prime

good luck