CSE370 Homework1 Solutions

A.1

    b)   108

    f)   83

    i)   942

A.2

    a)   11_0101

    h)   FA0

A.4

    b)   1000_0011_1111

    f)   1000_1111_1100

A.7

    c)   101_0101

    d)   101_1010

A.13

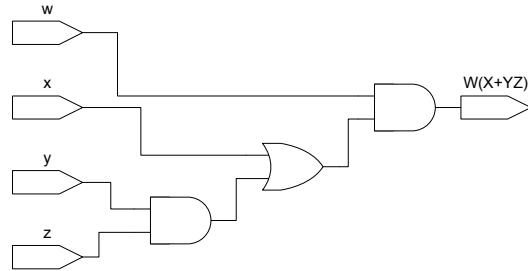   a)   11_0011

    b)   10_0101

    c)   11_1011

A.14

    c)   10_0100
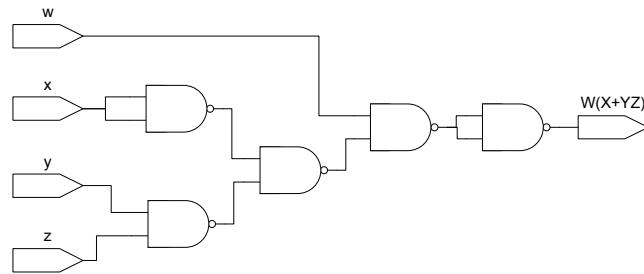
1.5

$d29 = m8' \cdot m4' \cdot m2 \cdot m1' \cdot leap$

$d30 = (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2 \cdot m1') + (m8 \cdot m4' \cdot m2' \cdot m1) + (m8 \cdot m4' \cdot m2 \cdot m1)$

$d31 = (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2' \cdot m1') + (m8' \cdot m4 \cdot m2' \cdot m1')$

1.6 $d31 = d28' \cdot d29' \cdot d30'$

2.2e

2.2e NAND

2.6d

$(x+y)(x'+z) = xx' + xz + x'y + yz$	distributivity
$xx' + xz + x'y + yz = xz + x'y + yz$	complementarity dual
$xz + x'y + yz = xz + x'y + (x+x')yz$	complementarity
$xz + x'y + (x+x')yz = xz + x'y + xyz + x'yz$	distributivity
$xz + x'y + xyz + x'yz = xz + xyz + x'y + x'yz$	commutativity
$xz + xyz + x'y + x'yz = xz(1+y) + x'y(1+z)$	distributivity
$xz(1+y) + x'y(1+z) = xz + x'y$	null

2.8c

a	b	c	(a+b)(a'+c)	ac+a'b
0	0	0	0	0
0	0	1	0	0
0	1	0	1	1
0	1	1	1	1
1	0	0	0	0
1	0	1	1	1
1	1	0	0	0
1	1	1	1	1

2.11b

$[a'bc + (a'+b+d) \cdot (abd'+b')]'$ $=$ $(a'bc)' \cdot [(a'+b+d)' + (abd'+b')']$

$(a'bc)' \cdot [(a'+b+d)' + (abd'+b')']$ $=$ $(a+b'+c) \cdot [ab'd' + (a' + b' + d) \cdot b]$