

Worksheet 3

1.

OR gate

A B output

0	0	0	✓
0	1	1	✓
1	0	1	✓
1	1	1	✓

AND gate

A B output

0	0	0	✓
0	1	0	✓
1	0	0	✓
1	1	1	✓

AND gate

A B output

0	0	0	✓
0	1	0	✓
1	0	0	✓
1	1	1	✓

NOR gate

A B output

0	0	1	✓
0	1	0	✓
1	0	0	✓
1	1	0	✓

NAND gate

A B output

0	0	1	✓
0	1	1	✓
1	0	1	✓
1	1	0	✓

OR gate

A B output

0	0	0	✓
0	1	1	✓
1	0	1	✓
1	1	1	✓

EXOR gate

A B output

0	0	0	✓
0	1	1	✓
1	0	1	✓
1	1	0	✓

EXNOR gate

A B output

0	0	1	✓
0	1	0	✓
1	0	0	✓
1	1	1	✓

Not gate (inverter)

A output

0	1	✓
1	0	✓

2. (a) 00111101,

00010101

00111101 ✓ Bitwise OR

00010101 ✓ Bitwise AND

00101000 Bitwise XOR

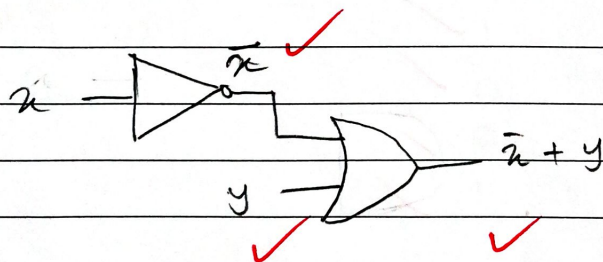
✓

(b) 00 010 101
 01 011 111
 01 011 111 ✓ bitwise OR
 00 010 101 ✓ bitwise AND
 01 001 010 ✓ bitwise XOR

(c) 00 011 111
 01 001 001
 01 011 111 ✓ bitwise OR
 00 001 001 ✓ bitwise AND
 01 010 110 ✓ bitwise XOR

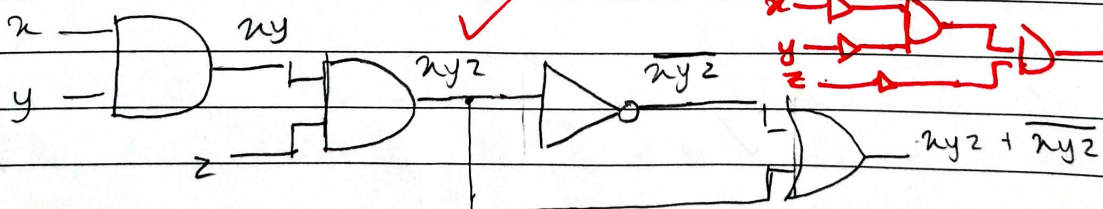
(d) 00 111 001
 00 110 101
 00 111 101 ✓ bitwise OR
 00 110 001 ✓ bitwise AND
 00 001 100 ✓ bitwise XOR

3 (a)

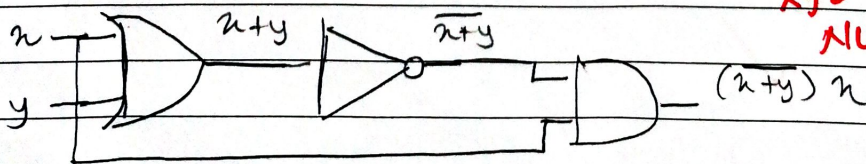


For (b) - (d)
 refer to the
 attachment.

(b)

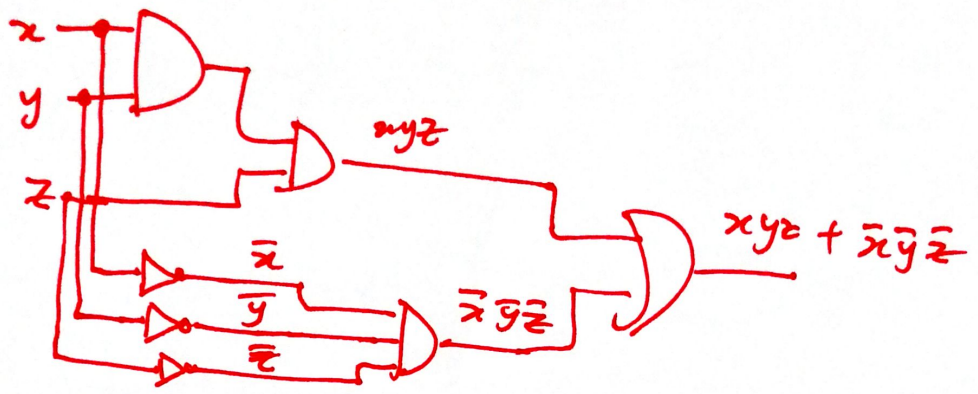


(c)

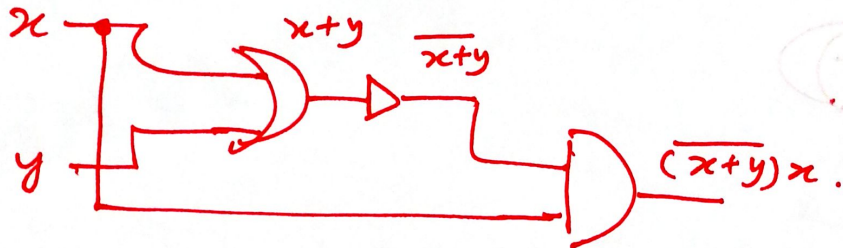


$\overline{xyz} \neq \bar{x}\bar{y}\bar{z}$
 Not equivalent.

(b)



(c)



(d)

