Exam 1 Part 2 Key

1) 58 = 0x 3A

16 | 58 R 10 = A
16 | 3 R 3
0

2) 7 bits

→ 2^7 = 128 distinct items

3) 256 = 0x 100

16 | 256 R 0
16 | 16 R 0
16 | 1 R 1
0

4) 011010 →

a) +26

b) +26

c) +26

d) 26 - 32 = -6

5) -13 13 → 001101

a) 110101

b) 001101 → 110010

c) 110010 +1 = 110011

d) -13 + 32 = 19 → 010011

6) 100000 = -32
+ 111111 = -1
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(1) 011111 ≠ -33

1 1 1 1 1
011111 = +31
+ 000001 = +1

100000 ≠ +32

7) $xxxx\ xxxx$

XOR $0000\ 0001$

$xxxx\ xxx\bar{x}$

8) $1\ \underbrace{00110010}_{50}\ 1110110\ \ldots$

$= -1.1110110 \times 2^{50-127}$

$= -1.1110110 \times 2^{-77}$

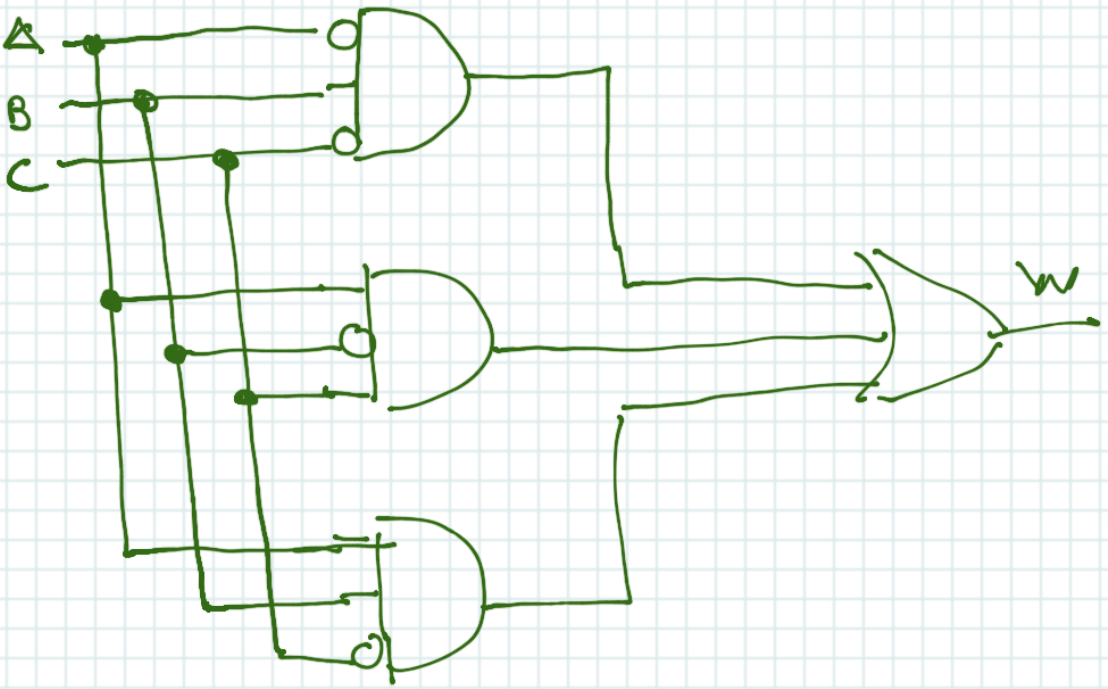
9) $-17.63 = -10001.101$

$0.63 \times 2 = 1.26$

$0.26 \times 2 = 0.52$

$0.52 \times 2 = 1.04$

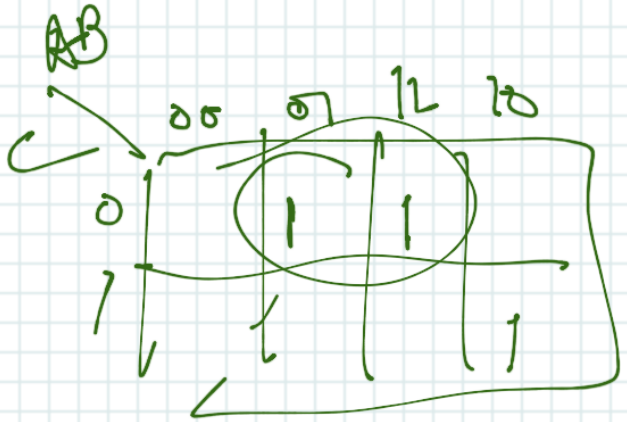
10)



11)

A	B	C	x
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

NOR gate



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