DSD1 HW1

1. $453.67_{10} = 111001001.1010111_2$

/2 = 226	r1	1 C 5	.67 x 2 = 1.34
/2 = 113	r0		.34 x 2 = 0.68
/2 = 56	r1	1C5.A8	.68 x 2 = 1.36
/2 = 28	r0		.36 x 2 = 0.72
/2 = 14	r0		.72 x 2 = 1.44
/2 = 7	r0		.44 x 2 = 0.88
/2 = 3	r1		
/2 = 1	r1		
/2 = 0	r1		

2. $3F5.F7_{16}$

$= 001111110101.11110111$

0 0 512 256 128 64 32 16 0 4 0 1 $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{8}$ $\frac{1}{16}$ 0 $\frac{1}{64}$ $\frac{1}{128}$ $\frac{1}{256}$

$= 1013.96484375$

3. $1000110011.1010_2 = 1+2+16+32+512 . \frac{1}{2}+\frac{1}{8}+\frac{1}{32}$
$= 563.65625$

2 3 3 . A 8

$233.A8_{16}$

1000110011.1010_2

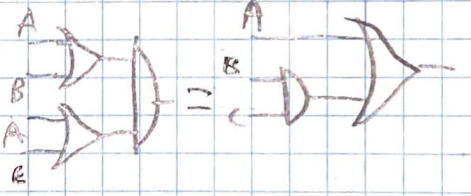
1063.52_8

4. a) $(A+B)(A+C) = A+BC$

$AA + AB + AC + BC = A + BC$

$A(1 + B + C) + BC = A + BC$

$A + BC = A + BC$



b) $(A+C)(AD + \bar{A}D) + AC + C = AD + C$

$AAD + A\bar{A}D + ACD + A\bar{C}D + AC + C = AD + C$

$AD + A\bar{C}D + AC + C = AD + C$

$A(D + \bar{C}D) + (C + C) = AD + C$

$A(D + \bar{C}(D + 1)) + C = AD + C$

$A(D + \bar{C}) + C = AD + C$

$AD + AC + C = AD + C$

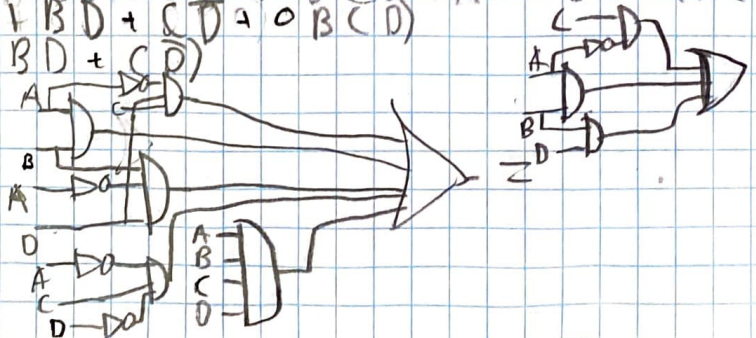
$AD + C = AD + C$

c) $AB + \bar{A}CD + \bar{A}BD + \bar{A}C\bar{D} + ABCD = AB + BD + \bar{A}C$

$AB + \bar{A}C(D + BD + C\bar{D})$

$AB + \bar{A}C(D + B)$

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



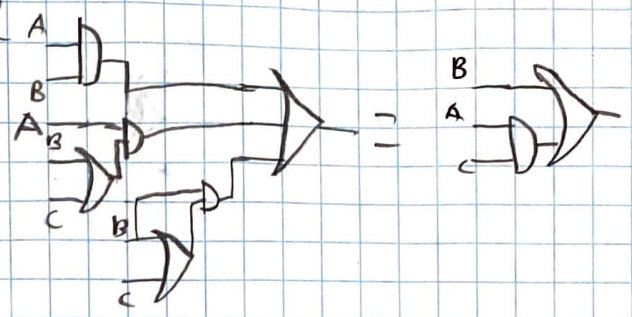
4.

a) $AB + A(B + C) + B(B + C) = B + AC$

$AB + AB + AC + B + BC$

$B(A + A + 1 + C) + AC$

$B + AC = B + AC$



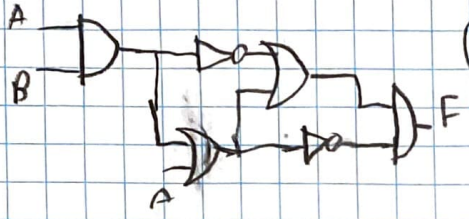
5. $(A + B + C)(A + \overline{B})$

$A + A\overline{B} + AB + AC + \overline{B}C$

$A(1 + \overline{B} + B + C) + \overline{B}C$

$A + \overline{B}C$

6.



$(\overline{AB} + (AB + A))(\overline{AB + A})$

$(A)(\overline{A}\overline{AB})$

$A(\overline{AB}) = A(\overline{A} + \overline{B}) = A\overline{A} + A\overline{B}$

$= A\overline{B}$

7. $(\overline{(\overline{A}A)} + B)(B)$

$(\overline{A}A + B)B = B$

8. $AB + A(B + C) + B(B + C) = B + AC$

A	B	C	AB	A(B + C)	B(B + C)	B + AC
0	0	0	0	0	0	0
0	0	1	0	0	0	0
0	1	0	0	0	1	1
0	1	1	0	0	1	1
1	0	0	0	0	0	0
1	0	1	0	1	0	1
1	1	0	1	1	1	1
1	1	1	1	1	1	1