10.) A) $1 / (2.67 \times 10^9)$ sec
$= 0.374$ ns

B) $1 / (3.13 \times 10^9)$ sec
$= 0.319$ ns

C) $1 / (4.78 \times 10^9)$ sec
$= 0.209$ ns

11.)

A	B	C	~B	~A	① A⊕C	② C·~B	③ ~A·B	④ B⊕C	② + ④
0	0	0	1	1	0	0	0	0	0
0	0	1	0	1	1	0	0	1	0
0	1	0	1	1	0	0	0	1	0
0	1	1	0	1	1	0	0	0	0
1	0	0	1	0	1	0	0	0	0
1	0	1	0	0	0	0	0	1	1
1	1	0	1	0	1	1	1	1	1
1	1	1	0	0	0	0	0	0	0

2.) A.) 165d
$\frac{128}{37}$
$\frac{32}{5}$
10100101
∴True

B) 8Ah
10001010
∴True

C) 01101000b
∴False

D) 72C9h
11001001
∴True

E) 0936DE07
00000111
∴False

F) 666d
$\frac{512}{154}$
$\frac{128}{26}$
$\frac{16}{10}$
$\frac{8}{2}$
101001010
∴True

3.) A) DB79:ED19
DB790
+ED19
EA4A9

B) 61BC:23C5
61BC0
+23C5
63F85

C) 95EA:42CA
95EA0
+42CA
9A16A

4.) A) F0AEEh

seg.	EF9D0	ED7B0	
off.	111E	333E	
addr.	F0AEEh	F0AEEh	
	EE8C	EF8B0	
	222E	123E	
	F0AEEh	F0AEEh	

8ADCDh

89B90	87BB0
123D	321D
8ADCDh	8ADCDh
89CB0	85870
11D	555D
8ADCDh	8ADCDh

5.) A) 84.94

34
34
20
16
4

1010100

.94	x2	1.88	1
.88	x2	1.76	1
.76	x2	1.52	1
.52	x2	1.04	1
.04	x2	0.08	0
.08	x2	0.16	0
.16	x2	0.32	0
.32	x2	0.64	0
.64	x2	1.28	1
.28	x2	0.56	0
.56	x2	1.12	1
.12	x2	0.24	0
.24	x2	0.48	0
.48	x2	0.96	0
.96	x2	1.92	1
.92	x2	1.84	1
.84	x2	1.68	1

01010100.1111000010100011
(fractional part)

$01.0101001111000010100011 \times 2^6$ → normalized

127 + 6 = 133
128
5
4
1

→ 10000101 → biased exp.

0 10000101 01010011110000101000111

normalized exponent

B) 0.33

0

.33	x2	0.66	0
.66	x2	1.32	1
.32	x2	0.64	0
.64	x2	1.28	1
.28	x2	0.56	0
.56	x2	1.12	1
.12	x2	0.24	0
.24	x2	0.48	0
.48	x2	0.96	0
.96	x2	1.92	1
.92	x2	1.84	1
.84	x2	1.68	1
.68	x2	1.36	1
.36	x2	0.72	0
.72	x2	1.44	1
.44	x2	.88	0
.88	x2	1.76	1
.76	x2	1.52	1

*

.52	x2	1.04	1
.04	x2	0.08	0
.08	x2	0.16	0
*16	x2	0.32	0
.32	x2	0.64	0

0.0101 0100 0111 1010 1110 00

$1.0101\ 0001\ 1110\ 1011\ 1000\ 010 \times 2^{-2}$

127 - 2 = 125
64
61
32
29
16
13
8
5
4
1

01111101

0 0111 1101 0101 0001 1110 1011 1000 010

0.)A) 1000 0000 1010 1010 0000 0000 0000 0000

Sign = 1

Biased exp. = 128

- Unbiased exp = 1
- Normalized = $1.1010\ 1010\ 0000\ 0000\ 0000\ 0000 \times 2^{1}$
- Unnormalized = $11.01\ 0101\ 0000\ 0000\ 0000\ 0000$ (4, 16, 64)

Whole number: 3

Decimal number: $\frac{1}{4} + \frac{1}{16} + \frac{1}{64} = \frac{21}{64} = 0.328125$

- -3.328125

B) 0 0111 1101 .1100 0000 0000 0000 0000 0000

- Sign = 0
- Biased exp. = 125
- Unbiased exp = -2
- Normalized = $1.1100\ 0000\ 0000\ 0000\ 0000\ 0000 \times 2^{-2}$
- Unnormalized = $00.1110\ 0000\ 0000\ 0000\ 0000\ 0000$ (4, 8)
- Whole number = 0
- Decimal number = $\frac{1}{4} + \frac{1}{8} = \frac{3}{8} = 0.375$
- 0.375

7.) -276.63

276
256
20
16
4

1.00010100

.63	x2	1.26	1
.26	x2	0.52	0
.52	x2	1.04	1
.04	x2	0.08	0
.08	x2	0.16	0
.16	x2	0.32	0
.32	x2	0.64	0
.64	x2	1.28	1
.28	x2	0.56	0
.56	x2	1.12	1
.12	x2	0.24	0
.24	x2	0.48	0
.48	x2	0.96	0
.96	x2	1.92	1
.92	x2	1.84	1
.84	x2	1.68	1
.68	x2	1.36	1
.36	x2	0.72	0
.72	x2	1.44	1
.44	x2	0.88	0
.88	x2	1.76	1
.76	x2	1.52	1
.52	x2	1.04	1

1023 + 8 = 1031
1024
7

100 0000 0111
↓
Biased exponent

1000.1010 0.1010 0001 0100 0111 1010 11 → Fractional

1.0001 0100 1010 0001 0100 0111 1010 1110 0001 0100 0111 1010 1110

100 0000 0111 | 0001 0100 1010 0001 0100 0111 1010 1110 0001 0100 0111

→ 1010 1110