

3.

$$T = \frac{1}{f} = \frac{1}{4 \text{ MHz}} = 4 \mu\text{s}$$

a.

$$16 \text{ bits} \cdot 4 \text{ inputs} = 64 \text{ bits}$$

$$\frac{64 \text{ bits}}{4 \mu\text{s}} = \frac{16 \text{ bits}}{\mu\text{s}} = 1.6 \times 10^7 \frac{\text{bits}}{\text{s}}$$

b.

$$\frac{64 \text{ bits}}{16 \mu\text{s}} = 4 \text{ bits}/\mu\text{s} = 4 \times 10^6 \text{ bits}/\text{s}$$

Chapter 2

1.

a. $1024 \rightarrow 100|0000|0000$ ²⁰

b.

0xBBBB

1011 1011 1011 1011

c.

-2048 ^{2's complement} $2048 \rightarrow 0000\ 1000\ 0000\ 0000$
 $1111\ 0111\ 1111\ 1111$ ^{invert}
 $+1$

2.

a. $65\ 535 \rightarrow 1111\ 1111\ 1111\ 1111 \rightarrow 0xFFFF$ ^{binary}
 $1111\ 1000\ 0000\ 0000$ ^{hex}

b.

$1000\ 1000\ 1000\ 1000 \rightarrow 0x8888$ ^{hex}

3.

$$\frac{1024}{8} = 128.0$$

$$\frac{128}{8} = 16$$

$$\frac{16}{8} = 2$$

$$\frac{2}{8} = 0.25 \times 8 = 2$$

0002

4.

a. 8 bit changes

b. 1100

c.i 16 distinct angles

ii 22.5°

d. 5.6°

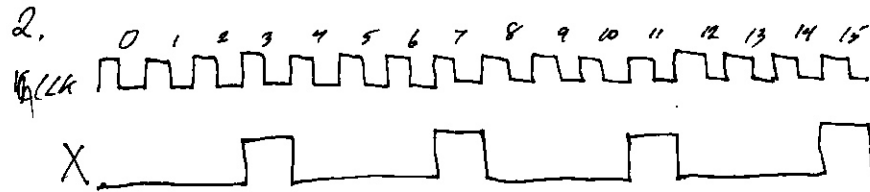
Chapter 3

1.

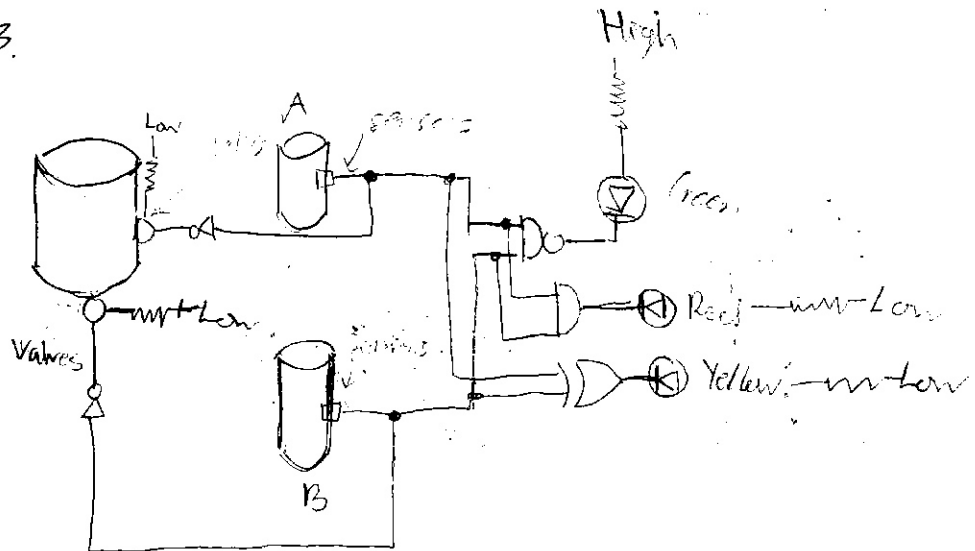
ab

a	b	X
1	0	0
0	1	0
0	0	0
1	1	1

AND



3.



Chapter 4

1.

a.

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

b.

AB \ CD	00	01	10	11
00	1	1	0	0
01	0	0	0	0
10	0	0	0	0
11	0	0	1	1

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

c.

D is irrelevant to the state of the portfolio

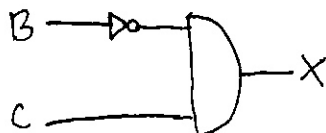
2.

a.

AB \ C	0	1
00	0	1
10	0	1
01	0	0
11	0	0

$$\begin{aligned} X &= \bar{A}\bar{B}C + A\bar{B}C \\ &= \bar{B}C(\bar{A} + A) \\ X &= \bar{B}C \end{aligned}$$

b.



Chapter 5

1.

